



**Niagara Rail Service Expansion
Environmental Study Report
GO Transit**

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Executive Summary

This Executive Summary highlights the findings of the Niagara Rail Service Expansion Class Environmental Assessment (EA) Study with particular emphasis on the preferred alternative design concept and the main issues identified during the study process. This EA Study is being undertaken in accordance with GO Transit's Class EA document, dated December 2003 (as amended August 2005).

E.1 Why Undertake this Study?

GO Transit currently operates the Lakeshore West GO Rail train service between Union Station in downtown Toronto and the Hamilton GO Centre station (formerly TH&B Station) in downtown Hamilton. A feasibility study was undertaken in 2009 to evaluate the viability of extending GO train service into the Niagara Region and providing Hamilton with full day service. The study concluded that the extension of GO train service to the Niagara Peninsula is technically feasible along the CN corridor.

Over the next twenty years, the expected growth in population and employment in Toronto, Peel, Halton, Hamilton and Niagara municipal regions are forecast to generate a significant transportation demand, which will require additional transportation facilities. At the present time, the primary mode of travel in the Niagara / Hamilton corridor is via auto primarily utilizing the Queen Elizabeth Way corridor to access the Greater Toronto Area (GTA). To a lesser extent VIA Rail, inter-regional bus providers and GO buses accommodate inter-regional travel by public transit within Niagara Region.

E.2 Selection of a Preferred Rail Corridor

Early during the EA study, a review of the two primary rail corridors that operate between Hamilton and the Niagara Peninsula were evaluated to select the preferred corridor for the GO Rail expansion. These two rail corridors were:

- Canadian National Railway (CNR) Grimsby Subdivision (S/D); and,
- Canadian Pacific Railway (CPR) Hamilton S/D.

Each of the rail corridor alternatives was evaluated based on the following criteria:

- Total track mileage;
- Track speed;
- Transit time;
- Train traffic control; and,
- Ridership potential.

Based on the evaluation of alternative rail corridors, the existing CNR Grimsby S/D corridor was selected as the recommended corridor for the Niagara rail service expansion.

E.3 What is the Preferred Solution?

In accordance with good environmental practice, an evaluation framework was developed to analyze various alternative solutions within the CNR Grimsby S/D corridor including:

- *“Do Nothing” Alternative:* This is a mandatory alternative for consideration under the GO Transit Class EA, as it serves as a reference point for comparing other alternatives. The “Do Nothing” alternative would mean no improvements or changes would be undertaken to address the problem. The existing mainline track would continue to be used by freight and passenger rail traffic.
- *Transportation Demand Management:* This alternative would involve the implementation of strategies or policies to encourage commuters to use alternatives to traveling alone (i.e., education through marketing). Some of these strategies could include High Occupancy Vehicle (HOV) and Reserved Bus Lanes (RBL), area traffic/transit signal priority, parking management, congestion pricing, ridesharing, land use density increases and telecommuting.
- *New or Expanded Commuter Rail Service:* This alternative would involve the expansion of rail service from Hamilton to Niagara Falls. This alternative would include construction of new commuter rail stations, corridor rail line improvements, and commuter train layover site to provide required train service to the Niagara Region. Current GO commuter rail service would be expanded within the study area, providing opportunities for increased ridership to/from the Greater Toronto Area (GTA) and within the expanded corridor.
- *New or Expanded Bus Service:* This alternative would involve the expansion of bus service on existing major arterial roadways and highways. The expanded service would be primarily an express service to enable the most efficient travel time for inter-regional commuter traffic. In order to improve the frequency and reliability of bus services, transit signal priority, rush-hour reserved bus lanes or dedicated bus-only roadways / transit-ways may be considered. Additional infrastructure would be required to support the increased number of buses such as new bus terminals and maintenance and storage facilities.
- *Expand Road Capacity:* This alternative would involve one of two measures. As a first approach, the implementation of traffic management improvements could enable more efficient use of the existing roadway networks. Improvements could include enhanced traffic signalization controls and HOV lanes. However, the most effective means of increasing road capacity is by widening existing roadways and highways in order to serve increasing inter and intra-regional commuter traffic.

Based upon the analysis and evaluation of alternative solutions, New or Expanded Commuter Rail Service was recommended as the preferred solution. This preference was presented and accepted by the public at Public Information Centres in Hamilton, Grimsby, St. Catharines and Niagara Falls.

E.4 Corridor Demand for Commuter Rail Travel

GO Rail passenger volumes in the study corridor between Hamilton and Niagara Falls are forecasted in the short term (2016) to be:

- 2,010 peak period trips; and,
- 3,830 daily trips.

By 2031, the passenger volumes are estimated to be 3,170 peak period trips and 5,850 daily trips.

E.5 What Alternative Design Concepts Were Considered?

Following the identification of the preferred solution, alternative design concepts for station sites, train layover facilities and track improvements were considered. The alternative design concepts for station sites and train layover facilities were assembled into two evaluation matrices and presented to the public for consideration. The matrices which included natural environment, social/cultural environment, economic considerations and technical factors were used to select preferred alternative designs and locations for stations and train layover sites.

The following potential station sites were considered for evaluation:

- Construct a new station in Hamilton at James Street North, Centennial Parkway (two sites), Fruitland Road, Fifty Road (two sites);
- Construct a new station in Grimsby at Casablanca Boulevard, existing Grimsby VIA Station, Bartlett Avenue;
- Construct a new station in Beamsville at Ontario Street;
- Construct a new station in Vineland at Victoria Avenue;
- Construct a new station in St. Catharines at the existing VIA Station; and,
- Construct a new station at Niagara Falls at the existing VIA Station.

Based on the results of the evaluation process and public input, the following station sites were considered as options for future rail expansion into the Niagara Peninsula:

- Hamilton – James Street North, Centennial Parkway West (Confederation Station Site¹), Fifty Road (as a future station²);

¹ This site was initially referred to as "Centennial Parkway West", and is still identified and labeled as such in some of the reports completed by sub-consultants provided in the appendices. However, since there is already a GO train station named "Centennial" within the current GO Transit system (located on the Stouffville Line), the project team, in consultation with the City of Hamilton decided to refer to this site as Confederation to avoid confusion for potential future operations. Therefore, within this document, the station names "Centennial Parkway West" and "Confederation" are synonymous.

- Grimsby – Casablanca Boulevard;
- Beamsville – Ontario Street (as a future station);
- St. Catharines – Existing VIA Station; and,
- Niagara Falls – Existing VIA Station.

The following train layover sites were considered for evaluation:

- Hamilton – James Street North, Centennial Parkway, Lewis Road;
- St. Catharines – First Street, Vansickle Road, Glendale Avenue; and,
- Niagara Falls – Existing VIA Station.

Based on the results of the evaluation process and public input, the following sites were considered as options for future rail layover facilities:

- Hamilton – Lewis Road;
- St. Catharines – Glendale Avenue; and,
- Niagara Falls – Existing VIA Station.

E.6 Summary of Recommended Design Concepts

The following summarizes the recommended four options and their preliminary design concepts for GO train service, stations, train layover facility and track improvements.

E.6.1 Proposed GO Train Service

It is estimated that GO commuter service could begin in the corridor as soon as 2015, however this timing is contingent upon funding approvals and authorization to proceed. Four implementation options are put forth, namely:

- Extension to James Street North and Centennial Parkway (Confederation Station) with a train layover at Lewis Road;
- Extension to Casablanca Boulevard with a train layover at Lewis Road;
- Extension to St. Catharines with a train layover at Glendale Avenue with possible future stations at Beamsville and Fifty Road; and,
- Extension to Niagara Falls with a train layover in Niagara Falls.

As well, two broad service scenarios (Opening Day and Future) are discussed in this document within the context of options. The Opening Day service scenario would consist of four Toronto-bound trains in the

² Based upon public input following the second round of PIC's it was determined that, at this time, a Fifty Road station will be considered as a future potential station site subject to the City of Hamilton extending LRT services to Fifty Road and suitable lands for a combined LRT / GO rail station become available.

morning peak period and four Niagara-bound trains in the evening peak period including mid day service to Confederation station. The Future service scenario is defined as full two-way service, 7 days per week with 20 minute peak period service and 1 hour off-peak service.

E.6.2 Proposed Stations

The following station facilities are proposed. As noted above, the timing of implementation of these GO Stations is dependent on approvals, funding and authorizations as well as ridership.

Hamilton - James Street North GO Station

A James Street North station would include a station building and platform along the south side of the new GO Track which is along the south side of the CNR mainline, along with parking, bus bays and a Kiss and Ride area to allow for drop-offs and taxi patrons. Initial parking would be sized to accommodate 300 spaces. For full day service implementation an island platform on the south side of the CNR mainline would have a pedestrian tunnel / bridge including stairs and elevator between south and north platforms and possible connections to James, MacNab and Bay Streets with potential expansion of parking to the north side. In order to accommodate additional parking at this location, further consideration could be given for the construction of a multi-level parking facility. It is expected that the James Street station is to be serviced by GO trains in conjunction with the existing Hamilton GO Centre station. This would allow for GO Transit to service both the north and south population centres of Hamilton.

Hamilton – Confederation GO Station

A Confederation station would include a station building along the north side of the CNR mainline along with parking, bus bays and a Kiss and Ride area to allow for drop-offs and taxi patrons. Initial parking would be sized to accommodate 425 spaces. An island platform would be constructed on the south side of the CNR mainline along with a pedestrian tunnel including stairs and elevator connecting the north parking lot with the south platform. Future improvements would allow for a platform on the north side of the CNR mainline along with bus bays and a Kiss and Ride area to allow for drop-offs and taxi patrons as well as parking capacity to accommodate 270 additional spaces.

Grimsby – Casablanca Boulevard GO Station

A Casablanca Boulevard station would include a station building along the north side of the CNR mainline, along with parking, bus bays and a Kiss and Ride area to allow for drop-offs and taxi patrons. Initial parking would be sized to accommodate 470 spaces. The train platform would be constructed on the south side of the CNR mainline along with a pedestrian tunnel including stairs and elevator connecting the north parking lot with the south platform. Future improvements would allow for a platform on the north side of the CNR mainline and parking capacity to accommodate 970 additional spaces.

St. Catharines – GO Station at Existing VIA Station

A St. Catharines station would require minimal work for operation and would take advantage of the existing platform along the north side of the mainline CNR. Upgrades would include refurbishing the existing north platform (expansion to east to accommodate 12-car GO trains), alterations to existing VIA station building

to accommodate GO ticketing staff, construction of south side parking area to accommodate 240 spaces, construction of a south side Kiss and Ride, bus bays; and pedestrian tunnel including stairs and elevators. Future improvements would include construction of a platform on the south side of the mainline CNR, a Kiss and Ride area on the north side and additional parking capacity on the north side to accommodate 420 more spaces.

Niagara Falls – GO Station at Existing VIA Station

A Niagara Falls station would require minimal work for operation and would take advantage of the existing platform along the north side of the mainline. Upgrades would include refurbishing the existing north platform (expansion to west to accommodate 12-car GO trains), alterations to existing VIA station building to accommodate GO ticketing staff, expansion of parking area to accommodate 770 spaces, construction of a north side Kiss and Ride, bus bays; and pedestrian tunnel including stairs and elevators. Future improvements would include expansion of the existing south side platform and expansion of parking area to provide a total of 1,160 spaces. Extension of service to the Niagara Falls VIA site will be largely dependent upon negotiations between GO and the St. Lawrence Seaway as a result of potential delays that could occur with the existing lift bridge over the Seaway.

E.6.3 Future Potential Stations

The following sites are considered for future potential stations.

Hamilton – Fifty Road GO Station

The development of the Fifty Road GO Station will be conducted in the future, subject to the City of Hamilton extending LRT service to Fifty Road and lands being available to construct a combination LRT/GO rail station hub. During the course of the EA study, significant effort was made to identify potential lands for a GO rail station site to the east or west of Fifty Road. Planning by the City of Hamilton for the transit elements of a Fifty Road node in relation to proposed developments is currently in progress. A preferred site for a future station at this location will be selected in conjunction with that work. Metrolinx/GO Transit will continue to work with the City of Hamilton as these studies progress.

Beamsville – Ontario Street GO Station

The development of a Beamsville station will be, to a large extent, based on ridership needs. A preliminary station design has been developed at Ontario Street and would include a station building and platform along the north side of the CNR mainline, along with parking, bus bays and a Kiss and Ride area to allow for drop-offs and taxi patrons. Initial parking would be sized to accommodate 630 spaces. Future improvements would include construction of a platform on the south side of the mainline CNR along with a pedestrian tunnel including stairs and elevator connecting the north and south platforms. Parking capacity would allow for approximately 1,570 additional spaces.

E.6.4 Train Layover Facilities

The following facilities are proposed for the train layover sites identified along the study corridor. As noted above, the timing of implementation of the train layovers is dependent on approvals, funding and authorizations as well as ridership.

Hamilton – Lewis Road Layover

The Lewis Road layover is located on a green field site, immediately east of Lewis Road at Mile 31.67 of the Grimsby Guelph S/D. The site is located within lands designated as Business Park. The Opening Day scenario accommodates a layover site for four trains; a Crew Centre and staff parking; a service roadway connecting to Lewis Road; a fuelling facility consisting of dispensers and storage tanks; an electrical substation, power house and wayside power cabinets and yard lighting; security surveillance system and fencing. In the future, the Lewis Road site could accommodate eight storage tracks, however, at this time; the Lewis Road layover is seen as interim layover to service initial expansion. Further expansion into Niagara Region will warrant a layover further to the east (either at Glendale Avenue in St. Catharines or at the existing Niagara Falls VIA Station) which also has the ability to accommodate eight tracks.

St. Catharines – Glendale Avenue Layover

The Glendale Avenue layover is located on industrial lands approximately 2.6 miles east of the existing St. Catharines VIA Station at Mile 9.24 of the Grimsby S/D. The Opening Day scenario accommodates a layover site for four trains; a Crew Centre and staff parking; a service yard road; a fuelling facility consisting of dispensers and storage tanks; an electrical substation, power house and wayside power cabinets. In the future, the Glendale Avenue layover site would accommodate an additional four storage tracks (to make eight in total). As GO train ridership continues to increase along the Grimsby S/D, so may the need for additional GO train maintenance facilities along this corridor. The Glendale Avenue site provides sufficient space to accommodate for Progressive Maintenance (PM) Bays as well as an ancillary building.

Niagara Falls – VIA Station Layover

The Niagara VIA layover is located adjacent to the Niagara Falls downtown core. The layover is located at Mile 0.54 of the Grimsby S/D and in close proximity to the Niagara Falls/Buffalo border. The Opening Day scenario accommodates a layover site for four trains; a Crew Centre and staff parking; a service yard road; a fuelling facility consisting of dispensers and storage tanks; an electrical substation, power house and wayside power cabinets. In the future, the Niagara Falls layover site would accommodate an additional four storage tracks (to make eight in total). As GO train ridership continues to increase along the Grimsby S/D, so may the need for additional GO train maintenance facilities along this corridor. The existing Niagara Falls VIA site provides sufficient space to accommodate for PM Bays as well as an ancillary building.

E.6.5 Mainline Track Improvements

The proposed expansion of commuter rail services to the Niagara Peninsula beyond Grimsby will require track improvements to increase capacity of the rail corridor. In general, this will be achieved by the

construction of a double mainline track of about 2.6 miles long through Hamilton Yard area to the east of the Confederation station and approximately 10 miles long between Nelles Road and 15th Street. As part of these works, some additional track work will be required in the Centennial Parkway area to ensure freight and passenger train operations are separated. Construction of this additional mainline track will minimize or eliminate conflicts between passenger and freight trains. A double mainline track will increase the efficiency and reliability of the proposed time sensitive GO weekday AM/PM services thus avoiding major disruptions to service, especially during winter. Track improvements in the Hamilton area are included in the Hamilton Junction Feasibility Study (Hatch 2011), which is located in **Appendix E**.

It should be noted, that dependent upon the phasing/implementation of station/layovers selected for construction, the design may require adjustments to accommodate a pocket track in cases where a station is east of the proposed layover.

E.7 Cost Estimates

The following table presents the cost estimates for four basic options to extend commuter rail service from Hamilton to Niagara Falls. The costs shown in the following table and in **Appendix G** are preliminary reflecting the level of detail completed as part of the ESR. All cost sharing is suggested only and subject to agreement between all applicable parties. A potential cost sharing agreement between GO, CNR, VIA and local municipalities is to be determined during detailed design. As noted earlier, timing of the implementation of service options is contingent upon funding approvals and authorization to proceed.

Option	Description	Opening Day	Future	Total Cost
1	James Street North	\$17,200,000	\$11,400,000	\$28,600,000
	Confederation	\$16,600,000	\$7,400,000	\$24,300,000
	Lewis Road Layover	\$33,500,000		\$33,500,000
	Grade Separations	\$11,700,000		\$11,700,000
	Rail Corridor Improvements	\$98,800,000		\$98,800,000
	Total Option 1	\$177,800,000	\$19,100,000	\$196,900,000
2	James Street North	\$17,200,000	\$11,400,000	\$28,600,000
	Confederation	\$16,600,000	\$7,400,000	\$24,300,000
	Lewis Road - Layover	\$33,500,000		\$33,500,000
	Casablanca Boulevard	\$10,000,000	\$12,600,000	\$22,600,000
	Grade Separations	\$11,700,000		\$11,700,000
	Rail Corridor Improvements	\$98,800,000		\$98,800,000
	Total Option 2	\$187,800,000	\$31,700,000	\$219,500,000
3	James Street North	\$17,200,000	\$11,400,000	\$28,600,000
	Confederation	\$16,600,000	\$7,400,000	\$24,300,000
	Casablanca Boulevard	\$10,000,000	\$12,600,000	\$22,600,000
	St. Catharines VIA	\$14,000,000	\$2,800,000	\$16,800,000
	Glendale Avenue - Layover	\$33,500,000		\$33,500,000
	Grade Separations	\$11,700,000	\$63,300,000	\$75,000,000
	Rail Corridor Improvements	\$100,800,000	\$53,900,000	\$154,700,000
	Total Option 3	\$203,800,000	\$151,700,000	\$355,500,000
4	James Street North	\$17,200,000	\$11,400,000	\$28,600,000
	Confederation	\$16,600,000	\$7,400,000	\$24,300,000
	Casablanca Boulevard	\$10,000,000	\$12,600,000	\$22,600,000
	St. Catharines VIA	\$14,000,000	\$2,800,000	\$16,800,000
	Niagara Falls VIA	\$68,300,000	\$7,200,000	\$75,500,000
	Grade Separations	\$11,700,000	\$63,300,000	\$75,000,000
	Rail Corridor Improvements	\$100,800,000	\$53,900,000	\$154,700,000
	Welland Canal Grade Separation	\$750,000,000		\$750,000,000
Total Option 4	\$988,600,000	\$158,900,000	\$1,147,500,000	

E.8 The Importance of Consultation

This Environmental Assessment Study was undertaken in accordance with GO Transit's Class EA document, dated December 2003 (as amended August 2005). One of the key features of successful planning and approval under the Environmental Assessment Act involves early consultation with affected parties. This study was organized so that affected parties were:

- Involved throughout the study at appropriate times;

- Provided access to information;
- Provided sufficient time to respond to questions and data requests; and,
- Encouraged to participate.

A stakeholder contact list containing various federal and provincial government agencies/ministries, municipalities, utility companies, and other interest groups was developed and maintained throughout the course of the study. Notices and contact letters were distributed by mail to the stakeholders informing them of the study commencement, invitation to attend Public Information Centres (PICs), and informing them of the study completion and final filing of the ESR with the Ministry of Environment (MOE).

The following methods of notification were used to contact the general public and to encourage interested individuals to participate:

- Newspaper advertisements were placed in the Hamilton Community News (including Ancaster News, Dundas Star, Hamilton Mountain News, and Stoney Creek News), St. Catharines Standard, Welland Port Colborne Tribune, Niagara Free Press (Notice of Study Commencement only), Niagara This Week and Niagara Falls Review.
- A mailing list of all interested stakeholders was established and updated throughout the course of the study. The purpose of this list was to ensure that these individuals were kept informed of upcoming events and the progress of the study.
- A webpage was established on the GO Transit/Metrolinx website which provided updated postings throughout the study including all study Notices, PIC display materials and comment forms, and the final ESR document.

The public was formally involved in the decision making process through two rounds of open house format Public Information Centres (PICs) in Hamilton, Grimsby, St. Catharines and Niagara Falls. The first set of PICs were held in late January / early February 2010 to describe the proposed project, present the results of the preliminary constraints analysis, as well as encourage, gather, and respond to public input and feedback, present additional studies to be undertaken, and to identify the next steps in the process. The second set of PICs were held in May 2010 to present the preliminary preferred GO Station locations and GO train layover locations. Based on feedback received from PIC #2, the study team revisited some of the proposed design concepts for a few of the preferred stations at Fifty Road and Casablanca Boulevard. In addition, a new recommended station site concept (named Confederation) was developed west of Centennial Parkway. An Information Bulletin was circulated to all stakeholders and posted on the GO Transit/Metrolinx website to present the proposed changes and offer stakeholders an opportunity to provide further feedback. As a result of public input to the Information Bulletin:

- A Confederation GO rail station has been recommended;
- The proposed Fruitland Road GO rail station was dropped from consideration; and
- A Fifty Road GO rail station has been deferred pending a resolution on the City of Hamilton's LRT extension to Fifty Road and lands being made available for a combined LRT / GO rail station.

Table of Contents

1.0 Introduction 1

1.1 Background and Previous Studies 1

1.2 Project Description 1

1.3 Clarification of Station Naming 4

1.4 Project Team 4

1.5 GO Transit Class Environmental Assessment Process 4

1.6 Ministry of Infrastructure Class Environmental Assessment Process 5

1.7 Study Schedule 7

2.0 Problem/Opportunity Statement and Study Purpose 7

2.1 Problem and Opportunity Statement 7

2.2 Ridership Demand Forecast 7

2.2.1 Overview of Corridor Travel Demand 7

2.2.2 GO Rail Ridership Estimates 9

2.3 Purpose of the Project 10

3.0 Existing Infrastructure 11

3.1 General Description of the Corridor 11

3.2 Transportation Infrastructure 11

3.2.1 Rail Infrastructure 11

3.2.2 Road Infrastructure 12

3.2.3 Transit Infrastructure 13

3.2.4 Future Transit Planning 14

4.0 Existing Environment 15

4.1 Planning Context 15

4.1.1 Provincial Planning Policies 15

4.1.2 Official Plans 16

4.1.3 Land Uses at Station and Train Layover Alternatives 17

4.2 Natural Environment 18

4.2.1 Climate and Air Quality 18

4.2.2 Noise and Vibration 18

4.2.3 Physiography and Hydrogeology 19

4.2.4 Agricultural Lands 20

4.2.5 Hydrology and Water Quality 21

4.2.6 Aquatic Environment 22

4.2.7 Terrestrial Environment 26

4.3 Social/Cultural Environment 33

4.3.1 Population and Employment Characteristics 33

4.3.2 Built and Cultural Heritage 34

4.3.3 Archaeology 35

5.0 Concept Alternatives 36

5.1 Description of Concept Alternatives 36

5.1.1 Do Nothing 36

5.1.2 Transportation Demand Management 36

5.1.3 New or Expanded Commuter Rail Service 36

5.1.4 New or Expanded Bus Service 36

5.1.5 Expanded Road Capacity 36

5.2 Evaluation of Concept Alternatives 36

5.2.1 Do Nothing 39

5.2.2 Transportation Demand Management 39

5.2.3 New or Expanded Commuter Rail Service (Preferred Concept Alternative) 39

5.2.4 New or Expanded Bus Service 39

5.2.5 Expand Road Capacity 39

6.0 Preliminary Design Alternatives 40

6.1 Station Alternatives 40

6.2 Station Alternatives Evaluation 40

6.2.1 Hamilton - James Street North 49

6.2.2 Hamilton – Confederation 49

6.2.3 Hamilton – Centennial Parkway 49

6.2.4 Hamilton – Fruitland Road 49

6.2.5 Hamilton – Fifty Road 49

6.2.6 Grimsby – Casablanca Boulevard 50

6.2.7 Grimsby – VIA Station 50

6.2.8 Grimsby – Bartlett Avenue 50

6.2.9 Beamsville – Ontario Street 50

6.2.10 Vineland – Victoria Avenue 50

6.2.11 St. Catharines – VIA Station 50

6.2.12 Niagara Falls – VIA Station 50

6.3 Train Layover Facility Alternatives 51

6.4 Layover Facility Alternatives Evaluation 57

6.4.1 Hamilton – James Street North 57

6.4.2 Hamilton – Centennial Parkway 57

6.4.3 Hamilton – Lewis Road 57

6.4.4 St. Catharines – First Street 57

6.4.5 St. Catharines – Vansickle Road 57

6.4.6 St. Catharines – Glendale Avenue 57

6.4.7 Niagara Falls - VIA Station 57

7.0 Public and Agency Consultation 58

7.1 Consultation Activities 58

7.1.1 Initial Contact 58

7.1.2 Public Information Centres 58

7.1.3 Information Bulletin 61

7.1.4 Record of Meetings 70

7.2 Aboriginal Correspondence..... 70

7.3 Agency Correspondence..... 71

7.4 Elected Official Correspondence..... 79

7.5 General Stakeholder Correspondence..... 79

7.6 Media Releases 79

8.0 Description of Proposed Project 83

8.1 Project Implementation Options 83

8.2 Railway Improvements..... 83

8.2.1 Opening Day 83

8.2.2 Future..... 83

8.2.3 Rail /Ties/Ballast 84

8.2.4 Roadway Grade Crossings 84

8.3 Station Location and Preliminary Site Layouts..... 88

8.3.1 Hamilton James Street North 88

8.3.2 Hamilton – Confederation Station 89

8.3.3 Hamilton – Fifty Road..... 89

8.3.4 Grimsby – Casablanca Boulevard..... 89

8.3.5 Beamsville – Ontario Street 90

8.3.6 St. Catharines – VIA Station 90

8.3.7 Niagara Falls – VIA Station 91

8.4 Layover Location and Preliminary Site Layouts 91

8.4.1 Hamilton – Lewis Road 91

8.4.2 St. Catharines – Glendale Avenue..... 91

8.4.3 Niagara Falls – VIA Station 92

8.5 Detailed Design Requirements 92

8.5.1 Property Acquisition 92

8.5.2 Stations and Layover Facility 93

8.6 Construction Phase..... 94

8.6.1 Track Bed Construction..... 94

8.6.2 Retaining Wall Construction..... 94

8.6.3 Bridge/Grade Separations..... 95

8.6.4 Station / Layover Work..... 96

8.7 Stormwater Management..... 96

8.7.1 Railway..... 96

8.7.2 James Street North 96

8.7.3 Hamilton – Confederation 96

8.7.4 Hamilton – Fifty Road..... 96

8.7.5 Hamilton – Lewis Road 96

8.7.6 Grimsby – Casablanca Boulevard..... 96

8.7.7 Beamsville – Ontario Street97

8.7.8 St. Catharines – VIA Station97

8.7.9 St. Catharines – Glendale Avenue.....97

8.7.10 Niagara Falls – VIA Station.....97

8.8 Operations/Maintenance Phase 97

8.9 Cost Estimate 97

8.10 Vegetation, Wildlife/Habitat..... 98

8.11 Agricultural and Tender Fruit Lands..... 99

8.12 Surface Water, Soils and Sedimentation 99

8.13 Groundwater 100

8.14 Fish and Fish Habitat..... 100

8.15 Land Use 101

8.16 Archaeology / Cultural Heritage..... 101

8.17 Noise/Vibration 101

8.18 Air Quality 102

8.19 Human Health and Safety..... 103

8.20 Transportation Infrastructure..... 103

9.0 Approvals104

10.0 Future Commitments.....104

10.1 Pre-Construction Monitoring/Inspection..... 104

10.2 Monitoring/Inspection during Construction..... 104

10.3 Post-Construction Monitoring/Inspection 104

11.0 References106

11.0 References106

12.0 Document Approval.....107

Tables

Table 1.1 Evaluation of Alternative Rail Corridors2

Table 1.2 Summary of GO Project Team and Consultant Team4

Table 1.3 Summary of Sub-Consultants4

Table 2.1 Population and Employment Forecast8

Table 2.2 Station Ridership Estimates with Niagara Falls Station9

Table 3.1 Summary of Rail Corridor Crossings.....13

Table 4.1 Existing Sound Levels Throughout Rail Study Corridor18

Table 4.2 Existing Sound Levels at Alternative Station Locations19

Table 4.3 Existing Sound Levels at Alternative Train Layover Locations19

Table 4.4 Quaternary Geology of the Study Area19

Table 4.5 Employment in Agricultural Industries.....20

Table 4.6 Agricultural Policies at Select Station and Layover Alternatives20

Table 4.7 Current Agricultural Use and Soil Capability21

Table 4.8	Major Watercourses in Study Area.....	21
Table 4.9	Designated Sites	26
Table 4.10	Designated Flora	27
Table 4.11	Designated Fauna	28
Table 4.12	Populations in Study Area (Cities).....	33
Table 4.13	Populations in Study Area (Towns).....	33
Table 4.14	Labour Force Activity in Study Area (Cities).....	33
Table 4.15	Labour Force Activity in Study Area (Towns).....	33
Table 4.16	Place of Work (Cities).....	34
Table 4.17	Place of Work (Towns).....	34
Table 4.18	Mode of Transportation to Work (Cities).....	34
Table 4.19	Mode of Transportation to Work (Towns).....	34
Table 4.20	Approximate Percentage of Archaeological Potential for Each Alternative.....	35
Table 5.1	Evaluation Summary of Concept Alternatives	37
Table 6.1	Evaluation of Alternative Station Locations (Part 1 of 2)	41
Table 6.1	Evaluation of Alternative Station Locations (Part 2 of 2)	45
Table 6.2	Evaluation of Alternative Layover Locations (Part 1 of 2).....	52
Table 6.2	Evaluation of Alternative Layover Locations (Part 2 of 2).....	54
Table 7.1	PIC #1 Feedback.....	58
Table 7.2	PIC #2 Feedback.....	59
Table 7.3	Information Bulletin Summary of Comments	63
Table 7.4	Record of Meetings	70
Table 7.5	Summary of Agency Correspondence.....	72
Table 7.6	Summary of General Stakeholder Correspondence.....	80
Table 8.1	Proposed Crossing Improvements	84
Table 8.2	Property Requirements	93
Table 8.3	Summary of Vegetation/Habitat Loss	98
Table 8.4	Summary of Agricultural / Tender Fruit Land Loss	99
Table 8.5	Summary of Rail Traffic Noise Effects.....	102
Table 8.6	Summary of Station Noise Effects.....	102
Table 8.7	Summary of Layover Noise Impact	102
Table 8.8	Air Dispersion Modelling Results.....	103

Figures

Figure 1.1	Study Area.....	4
Figure 1.2	GO Transit Class EA Planning and Design Process	6
Figure 2.1	2006 Corridor Travel Demands* (HBW + HBSch).....	8
Figure 2.2	2016 Corridor Travel Demands* (HBW + HBSch).....	9
Figure 2.3	2031 Corridor Travel Demands* (HBW + HBSch).....	9
Figure 2.4	2016 Corridor GO Rail Demands* (HBW + HBSch).....	10
Figure 2.5	2031 Corridor GO Rail Demands*	10
Figure 3.1	CNR “Bridge 6” Lift Bridge – Welland Canal	12
Figure 8.1	Implementation Options	83

Additional Figures (at end of Report)

4.1 Municipal Boundaries Through Study Area

“Storm Drainage Concepts” (DR Series)

DR-1	Hamilton - James Street North
DR-2	Hamilton - Fruitland Road
DR-3	Hamilton - Lewis Road
DR-4	Hamilton - Fifty Road
DR-5	Grimsby - Casablanca Boulevard
DR-6	Beamsville - Ontario Street
DR-7	St. Catharines - VIA Station
DR-8	St. Catharines - Glendale Avenue
DR-9	Niagara Falls - Niagara Falls VIA

“Existing Conditions – Natural and Social Environment Features Through Study Area” (E Series)

E-1	Mile 39 Oakville Subdivision to Mile 39 Grimsby Subdivision
E-2	Mile 38 to Mile 33 - Grimsby Subdivision
E-3	Mile 32 to Mile 26 - Grimsby Subdivision
E-4	Mile 25 to Mile 20 - Grimsby Subdivision
E-5	Mile 19 to Mile 14 - Grimsby Subdivision
E-6	Mile 13 to Mile 8 - Grimsby Subdivision
E-7	Mile 7 to Mile 1 - Grimsby Subdivision

“Alternative Station and Layover Sites” (LA Series)

LA1	Niagara Falls - Niagara Falls VIA (Station/Layover Alternative)
LA2	St. Catharines - Glendale Avenue (Layover Alternative)
LA3	St. Catharines - VIA Station (Station Alternative)
LA4	St. Catharines – Vansickle Road (Layover Alternative)
LA5	St. Catharines – First Street (Layover Alternative)
LA6	Vineland – Victoria Avenue (Station Alternative)
LA7	Beamsville – Ontario Street (Station Alternative)
LA8	Grimsby – Barlett Avenue (Station Alternative)
LA9	Grimsby – VIA Station (Station Alternative)
LA10	Grimsby – Casablanca Boulevard (Station Alternative)
LA11	Hamilton – Fifty Road (Station Alternative)
LA12	Hamilton – Fruitland Road (Station Alternative)
LA13	Hamilton - Centennial Parkway (Station/Layover Alternative)
LA14	Hamilton – Confederation (Station Alternative)

- LA15 Hamilton - James Street North (Station Alternative)
- LA16 Hamilton – Lewis Road (Layover Alternative)

“Existing Conditions – Natural and Social Environment Features at Site Level” (N Series)

- N-1 Hamilton - James Street North - Mile 39.5 Oakville Subdivision
- N-2 Hamilton – Confederation – Mile 38.04 Grimsby Subdivision
- N-3 Hamilton - Centennial Parkway - Mile 38.04 Grimsby Subdivision
- N-4 Hamilton - Fruitland Road - Mile 34.84 Grimsby Subdivision
- N-5 Hamilton - Lewis Road - Mile 32.69 Grimsby Subdivision
- N-6 Hamilton - Fifty Road - Mile 31.80 Grimsby Subdivision
- N-7 Grimsby - Casablanca Boulevard - Mile 29.37 Grimsby Subdivision
- N-8 Grimsby - VIA Station - Mile 27.4 Grimsby Subdivision
- N-9 Grimsby - Bartlett Avenue - Mile 25.67 Grimsby Subdivision
- N-10 Beamsville – Ontario Street – Mile 23.21 Grimsby Subdivision
- N-11 Vineland - Victoria Avenue - Mile 18.93 Grimsby Subdivision
- N-12 St.Catharines -First Street - Mile 12.86 Grimsby Subdivision
- N-13 St.Catharines -Vansickle Road - Mile 12.55 Grimsby Subdivision
- N-14 St.Catharines –VIA Station - Mile 11.8 Grimsby Subdivision
- N-15 St.Catharines -Glendale Avenue - Mile 9.24 Grimsby Subdivision
- N-16 Niagara Falls – VIA Station – Mile 0.54 Grimsby Subdivision

“Proposed Tracks Schematics” (SC Series)

- SCH-1
- SCH-2
- SCH-3
- SCH-4
- SCH-5
- SCH-6
- SCH-7
- SCH-8
- SCH-9
- SCH-10

“Conceptual Design Layouts” (ST Series)

- ST1 Hamilton - James Street North - Mile 39.5 Oakville Subdivision
- ST2 Hamilton - Confederation - Mile 38.04 Grimsby Subdivision
- ST3 Hamilton - Lewis Road - Mile 32.69 Grimsby Subdivision
- ST4 Hamilton - Fifty Road - Mile 31.80 Grimsby Subdivision
- ST5 Grimsby - Casablanca Boulevard - Mile 29.37 Grimsby Subdivision

- ST6 Beamsville - Ontario Street - Mile 23.21 Grimsby Subdivision
- ST7 St.Catharines - VIA Station - Mile 11.8 Grimsby Subdivision
- ST8 St.Catharines -Glendale Avenue - Mile 9.24 Grimsby Subdivision
- ST9 Niagara Falls - VIA Station - Mile 0.54 Grimsby Subdivision

“Track Design Alternatives” (T Series)

- T-1 STA. 69+200 to STA. 70+334 Grimsby Subdivision
- T-2 STA. 67+100 to STA. 69+200 Grimsby Subdivision
- T-3 STA. 65+000 to STA. 67+100 Grimsby Subdivision
- T-4 STA. 62+900 to STA. 65+000 Grimsby Subdivision
- T-5 STA. 60+800 to STA. 62+900 Grimsby Subdivision
- T-6 STA. 58+700 to STA. 60+800 Grimsby Subdivision
- T-7 STA. 56+600 to STA. 58+700 Grimsby Subdivision
- T-8 STA. 54+500 to STA. 56+600 Grimsby Subdivision
- T-9 STA. 52+400 to STA. 54+500 Grimsby Subdivision
- T-10 STA. 50+300 to STA. 52+400 Grimsby Subdivision
- T-11 STA. 48+200 to STA. 50+300 Grimsby Subdivision
- T-12 STA. 46+100 to STA. 48+200 Grimsby Subdivision
- T-13 STA. 44+000 to STA. 46+100 Grimsby Subdivision
- T-14 STA. 41+900 to STA. 44+000 Grimsby Subdivision
- T-15 STA. 39+800 to STA. 41+900 Grimsby Subdivision
- T-16 STA. 37+700 to STA. 39+800 Grimsby Subdivision
- T-17 STA. 35+600 to STA. 37+700 Grimsby Subdivision
- T-18 STA. 33+500 to STA. 35+600 Grimsby Subdivision
- T-19 STA. 31+400 to STA. 33+500 Grimsby Subdivision
- T-20 STA. 29+300 to STA. 31+400 Grimsby Subdivision
- T-21 STA. 27+200 to STA. 29+300 Grimsby Subdivision
- T-22 STA. 25+100 to STA. 27+200 Grimsby Subdivision
- T-23 STA. 23+000 to STA. 25+100 Grimsby Subdivision
- T-24 STA. 20+900 to STA. 23+000 Grimsby Subdivision
- T-25 STA. 18+800 to STA. 20+900 Grimsby Subdivision
- T-26 STA. 16+700 to STA. 18+800 Grimsby Subdivision
- T-27 STA. 14+600 to STA. 16+700 Grimsby Subdivision
- T-28 STA. 12+500 to STA. 14+600 Grimsby Subdivision
- T-29 STA. 10+400 to STA. 12+500 Grimsby Subdivision
- T-30 STA. 8+300 to STA. 10+400 Grimsby Subdivision
- T-31 STA. 6+200 to STA. 8+300 Grimsby Subdivision
- T-32 STA. 4+100 to STA.6+200 Grimsby Subdivision
- T-33 STA. 2+000 to STA. 4+100 Grimsby Subdivision
- T-34 STA. 0+837 to STA. 2+000 Grimsby Subdivision
- T-35 STA. 2+000 to STA. 0+837 Grimsby Subdivision

Appendices

A	Ridership Forecasts Report (Paradigm Transportation Solutions Ltd.)
B	Rail Service Schedules (VIA, Amtrak) and Prototype GO Train Schedule
C1	Air Quality Assessment Report (Ortech Environmental)
C2	Environmental Noise and Vibration Assessment Report (Aercoustics Engineering Ltd.)
C3	Summary of Vegetation Communities in Study Area
C4	Cultural Heritage Assessment (Archaeological Services Inc.)
C5	Stage 1 Archaeological Assessment (Archaeological Service Inc.)
D1	Notice of Commencement, Letters and Mailing Lists
D2	Notice of Public Information Centre #1, Letters and Mailing Lists
D3	Public Information Centre #1 Summary Report
D4	Notice of Public Information Centre #2, Letters and Mailing Lists
D5	Public Information Centre #2 Summary Report
D6	Information Bulletin
D7	Meeting Minutes
D8	Aboriginal, Agency and Elected Official Correspondence
D9	General Stakeholder Correspondence
D10	Media Releases/Articles
E	Hamilton Junction Feasibility Study
F	Welland Canal Improvements
G	Cost Estimate

Glossary

CEAA	Canadian Environmental Assessment Act
CNR	Canadian National Railway
CPR	Canadian Pacific Railway
CTC	Centralized Traffic Control
CWR	Continuous Welded Rail
DFO	Department of Fisheries and Oceans
EA	Environmental Assessment
ESA	Environmentally Sensitive Area
ESR	Environmental Study Report
HCA	Hamilton Conservation Authority
MCL	Ministry of Culture
MOE	Ministry of the Environment
MTO	Ministry of Transportation
NPCA	Niagara Peninsula Conservation Authority
OCS	Occupancy Control System
ORC	Ontario Realty Corporation
PIC	Public Information Centre
PM	Progressive Maintenance
PPS	Provincial Policy Statement
PSW	Provincially Significant Wetland
ROW	Right-of-Way
S/D	Subdivision
TTS	Transportation Tomorrow Survey

1.0 Introduction

1.1 Background and Previous Studies

The existing Lakeshore West GO Rail corridor runs west along the Canadian National Railway (CNR) line from Union Station in downtown Toronto, with stations in Mississauga, Oakville, Burlington and Hamilton. The Lakeshore West rail service currently terminates service at the Hamilton GO Centre Station in downtown Hamilton. A feasibility study was conducted to evaluate the feasibility of extending GO train service from Hamilton to the Niagara Peninsula. This study involved an estimation of the potential ridership that could be attracted as a result of the extension, required rail corridor improvements and a review of potential station and train layover sites. This study concluded that the extension of the GO train service to the Niagara Peninsula is technically feasible.

1.2 Project Description

In November 2009, GO Transit/Metrolinx initiated a Class Environmental Assessment (EA) for the Hamilton to Niagara Peninsula Rail Expansion (refer to Section 1.4). The study includes a review of the need and justification for the extension, alternatives solutions for stations and train layover sites, rail corridor improvements, alternative preliminary designs and an evaluation of the impacts on all aspects of the environment.

Rail Corridor Determination

Prior to the review of potential alternative station and layover sites within the study area, the study team evaluated the two primary rail corridors that operate through the rail expansion study area from Hamilton Junction, Mile 37.3, Oakville Subdivision (S/D) to the Niagara Peninsula, namely:

- Canadian National Railway (CNR) Grimsby S/D; and,
- Canadian Pacific Railway (CPR) Hamilton S/D.

Each of the rail corridor alternatives was evaluated (see Table 1.1) utilizing a “reasoned argument method” to select the preferred corridor for the GO Rail expansion. This method highlights the differences associated with each of the various alternatives. Based on the differences between criteria used to evaluate, a relative importance or weighting is placed on each alternative to provide a clear rationale for a preferred alternative. The criteria for evaluation of the two rail corridors were:

- Total Track Mileage;
- Track Speed;
- Transit Time;
- Method of Train Traffic Control;
- Ridership Potential; and,
- Rail Infrastructure Impact.

Based on the evaluation of the alternatives for the rail corridor (see Table 1.1), the existing CNR Grimsby corridor was recommended to move forward within the EA Study to determine the CNR corridor improvements that are required to implement a GO Transit commuter rail service to Niagara Falls. The following is the key justification for eliminating the CPR corridor from consideration at this time:

- Travel time from Union Station to Niagara Falls via the CNR corridor is estimated at 128 minutes with express trains from Oakville to Union (105 minutes Union Station to St. Catharines).
- CPR circuitous route on Hamilton S/D and CNR’s Stamford S/D, of an additional length of about 20 miles, and much slower track, could increase the travel time by 1 hour or more.
- The Centralized Traffic Control (CTC) system on the CNR corridor is considered superior to the Occupancy Control System (OCS) on the CPR corridor, as it provides a higher level of safety with live track circuits which can detect broken rails and non-authorized open switches, etc. Also CTC provides operating flexibility, especially in the ‘recovery mode’ when a serious delay incident occurs.
- The 10-mile single track between 15th Street and Nelles Road on the CNR corridor can be easily upgraded to double track on a cost-effective basis within the existing track bed.
- The existing single mainline track through Hamilton Yard to Centennial Parkway can be upgraded by constructing a new mainline on the south side of the existing mainline from Hamilton Junction to Grimsby S/D.
- The existing track/signal plant on the CNR corridor can move passenger trains at 65 mph thus reducing run times.
- The potential GO rail stations along the CNR corridor are readily accessible from the QEW Highway along the north side of the rail corridor and Highways, No. 8 and No. 88 on the south side of the rail corridor.
- GO has the flexibility to augment the rail service with bus service along the QEW corridor.
- The CNR corridor passes through the most populous areas.
- Potential GO rail ridership is considerably higher on the CNR corridor.

Table 1.1 Evaluation of Alternative Rail Corridors

CRITERIA FOR EVALUATING ALTERNATIVES	ALTERNATIVE RAIL CORRIDORS EVALUATED	
	Canadian Pacific Railway	Canadian National Railway
A Total Track Mileage – Hamilton Junction to Niagara Falls <i>Rating:</i>	●	●
	65 Miles	45 Miles
B Track Speed <i>Rating:</i>	●	●
	50 mph	65 mph
C Transit Time <i>Rating:</i>	●	●
	180 Minutes. Transit time for CP corridor is from Union Station to Niagara Falls.	128 Minutes. Transit time for CN corridors is from Union Station to Niagara Falls.
D Method of Train Traffic Control <i>Rating:</i>	●	●
	Occupancy Control System (OCS) ³	Centralized Traffic Control (CTC) ⁴
E Ridership (2016 AM Peak) <i>Rating:</i>	●	●
	160. CP corridor runs through smaller communities.	410. CNR corridor runs adjacent to the QEW through major population centres within the Niagara Peninsula. Will also allow for easy integration with potential GO Bus services.

³ Occupancy Control System (OCS) is a system in which OCS rules apply. Train movements are controlled on non-signalized track or on CTC territory when the signal system fails. There are several rules under OCS governing the safe movement of trains. For example, the conductor could be ordered to go from A to B only using 'south track'.

⁴ Centralized Traffic Control (CTC) is a system in which CTC rules apply. All train movements on CTC territory are governed by signal indication and the signals are controlled by the 'RTC' or dispatcher located in the control centre. For CNR the control centre is located at MacMillan Yard in Toronto and for CPR the control centre is located in Montreal.

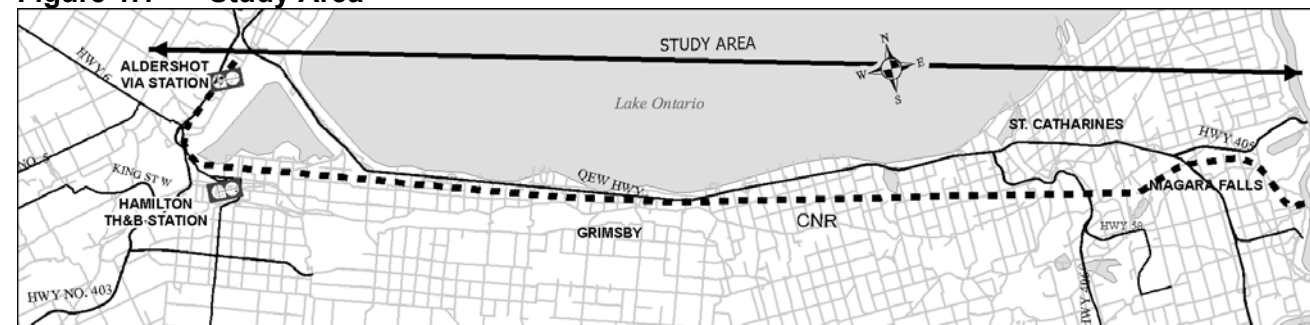
ALTERNATIVE RAIL CORRIDORS EVALUATED		
CRITERIA FOR EVALUATING ALTERNATIVES	Canadian Pacific Railway	Canadian National Railway
F Rail Infrastructure Rating:	●	●
	Single track Continuous Welded Rail (CWR) (fair/good condition). A great portion of the track is within the Niagara Escarpment with steep grades which would require significant improvements to accommodate service.	Large majority is double track CWR (good condition). A section of single track exists between 15 th Street and Nelles Road (approximately 10 Miles).
SUMMARY		
RECOMMENDATION	Not recommended.	Recommended.



Study Area

The initial study area within the scope of the previous feasibility study encompassed the entire Niagara Peninsula from the eastern portion of the City of Hamilton to Niagara Falls as the study team was evaluating both major rail routes connecting Hamilton to Niagara Falls – the Canadian National Railway (CNR) and the Canadian Pacific Railway (CPR). As noted earlier, the study team determined that the CNR route was preferred over the CPR route. Based on this determination, the study area was refined to cover the area between Hamilton and Niagara Falls along the CNR corridor only as shown in Figure 1.1.

Figure 1.1 Study Area



1.3 Clarification of Station Naming

During the course of the EA study, the project team evaluated several alternative station and layover sites. One of the recommended station sites is located to the west of Centennial Parkway in East Hamilton (see further discussion of the evaluation of alternative station and layover site in Section 6.0). Initially, this site was referred to as “Centennial Parkway West”, and is still identified and labelled as such in some of the reports completed by sub-consultants provided in the appendices. However, since there is already a GO train station named Centennial within the current GO Transit system (located on the Stouffville Line), the project team, in consultation with the City of Hamilton decided to refer to this site as Confederation to avoid confusion for potential future operations. Therefore, within this document, the station names “Centennial Parkway West” and “Confederation” are synonymous.

1.4 Project Team

The project team is composed of staff from GO Transit/Metrolinx, the lead consultant, R.J. Burnside & Associates Limited (Burnside) and several sub-consultants who have assisted on particular aspects of the project. Table 1.2 provides a summary of the project team members from GO Transit/Metrolinx and Burnside and their roles for the project. Table 1.3 provides a list of the sub-consultants involved with this project and their defined responsibilities.

Table 1.2 Summary of GO Project Team and Consultant Team

Project Team Member	Organization	Role / Responsibility
Greg Ashbee	GO Transit/Metrolinx	Project Manager
Andreas Grammenz	GO Transit/Metrolinx	EA Project Leader
Julie Kingdom	GO Transit/Metrolinx	Project Coordinator
Emilia Marceta	GO Transit/Metrolinx	Communications Specialist
Leonard Rach	Burnside	Project Manager (PM)
Doug Keenie	Burnside	Project Director/Deputy PM
Terry Keenie	Burnside	Rail Corridor Specialist
Fiona Christiansen	Burnside	Senior EA Specialist
Jim Georgas	Burnside	Deputy Rail Manager / Rail Designer
Jennifer Vandermeer	Burnside	EA Coordinator
Chris Pfohl	Burnside	Aquatic Resource Specialist
Tricia Radburn	Burnside	Terrestrial Ecologist

Table 1.3 Summary of Sub-Consultants

Sub-Consultant	Responsibility
Paradigm Transportation Solutions Limited	Transit Ridership and Demand Forecasting
Archaeological Services Inc. (ASI)	Stage 1 Archaeological Assessment and Built Heritage and Cultural Landscapes Assessment
Aercooustics Engineering Ltd.	Noise and Vibration Assessment
Ortech Environmental	Air Quality Assessment
Terraprobe	Geotechnical Assessment

1.5 GO Transit Class Environmental Assessment Process

This study is being undertaken in accordance with GO Transit’s Class EA document, dated December 2003 (as amended August 2005). The GO Transit Class EA document outlines an approved process for project planning and implementation in accordance with the requirements of the *Ontario Environmental Assessment Act*. As the work proposed for this project involves a GO Transit “Rail Route Extension”, it is categorized as a Group “B” undertaking. This project is only being taken to the preliminary design level and not the detailed design level at this stage; therefore Stages 1, 2 and 3 of the GO Transit Class EA process were followed. The completion of this Environmental Study Report (ESR) marks the end of Stage 3.

This ESR outlines the decision-making process, which has been followed to satisfy the requirements of the GO Transit Class EA document including public and agency consultation, evaluation of alternatives,

assessment of the net effects on the environment, and identification of measures to mitigate any adverse effects.

A summary of the GO Transit Class EA process is provided in a flow chart format on Figure 1.2.

1.6 Ministry of Infrastructure Class Environmental Assessment Process

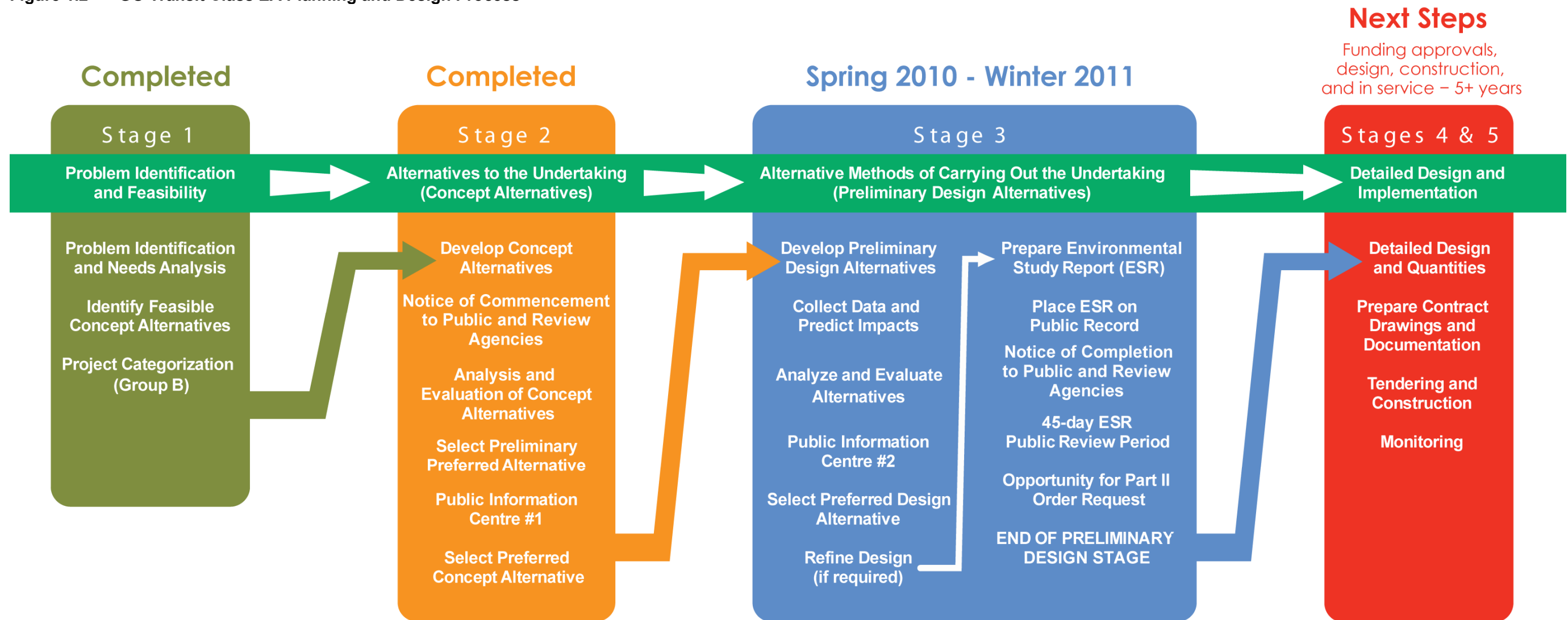
The proposed rail expansion may directly or indirectly affect lands or facilities owned by the Ministry of Infrastructure (MOI) and managed by Ontario Realty Corporation (ORC). There are several sections along the corridor that fall within Hydro One lands or have Hydro One towers. ORC is required, by the Ministry of Environment (MOE) and the *Environmental Assessment Act* to follow the Ministry of Energy and Infrastructure Class EA Process for Realty Activities Other Than Electricity Projects (April 2004, as amended September 2008) prior to any activities on ORC managed lands. The Ministry of Energy and Infrastructure Class EA for Realty Activities Other Than Electricity Projects sets out how the MOI proposes to meet EA Act requirements. The Ontario Minister of the Environment has approved the MOI Class EA pursuant to Section 9(1) of the EA Act. *The MOI Class EA is triggered for GO Transit's proposed rail expansion to the Niagara Peninsula due the presence of MOI land rights within the study area.*

Under the MOI Class EA, the proponent of a project that is potentially impacting MOI lands is required to ensure that MOI/ORC's minimum EA requirements are met. Any realty activity on ORC managed lands, including those managed by Hydro One, on behalf of ORC, are subject to these EA requirements. If the proponent is undertaking their EA under another Class EA process, in this case, the GO Transit Class EA, it is possible for ORC to defer to the alternative Class EA process provided the ORC/MOI Class EA requirements are met.

The MOI Class EA describes a seven-point analysis which requires the collection and analysis of information from various sources. This information may be gathered during the consultation process. A seven point analysis examines municipal official plan and zoning designations, contaminants, Environmentally Significant Areas (ESAs), cultural heritage, servicing capacity, environmental features and socio-economic effects. A record of consultation activities is to be kept, issues identified and resolved, environmental effects and any necessary mitigation measures. This Class EA document includes information that is consistent with the seven-point analysis of the MOI Class EA.

Records of consultation with ORC with regard to the MOI Class EA process are provided further in Section 7.3

Figure 1.2 GO Transit Class EA Planning and Design Process



1.7 Study Schedule

This study was initiated in November 2009. The anticipated completion of the EA process is Winter 2010/11. Depending on the approval of the EA and support from the Province, who would ultimately decide on the appropriate timeline for expansion, GO train service to the Niagara Peninsula could be initiated as early as 2015. Assuming that the project moves forward without delay, the preliminary schedule for design and construction would be as follows:

Detailed Design, Property Acquisition and Tender	2011 - 2012
Construction	2012 - 2014

All dates are preliminary and are dependent upon approvals, funding and authorizations.

2.0 Problem/Opportunity Statement and Study Purpose

2.1 Problem and Opportunity Statement

In the 2020 Strategic Plan (GO Transit, 2008), GO Transit identified possible service area extensions to provide peak-period bus or train service for Kitchener/Waterloo, Cambridge, Niagara/St. Catharines, Brantford and Peterborough as demand warrants. Consideration was also given to possible service area extensions to provide all-day bus or train service as demand warrants. This study is meant to expand upon the broad level opportunities identified in the 2020 Strategic Plan and to evaluate in more detail the opportunity to expand rail service beyond Hamilton into the Region of Niagara.

2.2 Ridership Demand Forecast

Paradigm Transportation Solutions Ltd. (Paradigm) was retained by Burnside to assist with the assessment of travel patterns in the study corridor and to prepare estimates of transit ridership that could be expected with future rail services. A copy of Paradigm's report documenting the investigations and findings carried out in the development of ridership estimates for the study is provided in **Appendix A**. Key findings of the report are provided in Sections 2.2.1 and 2.2.2 below.

2.2.1 Overview of Corridor Travel Demand

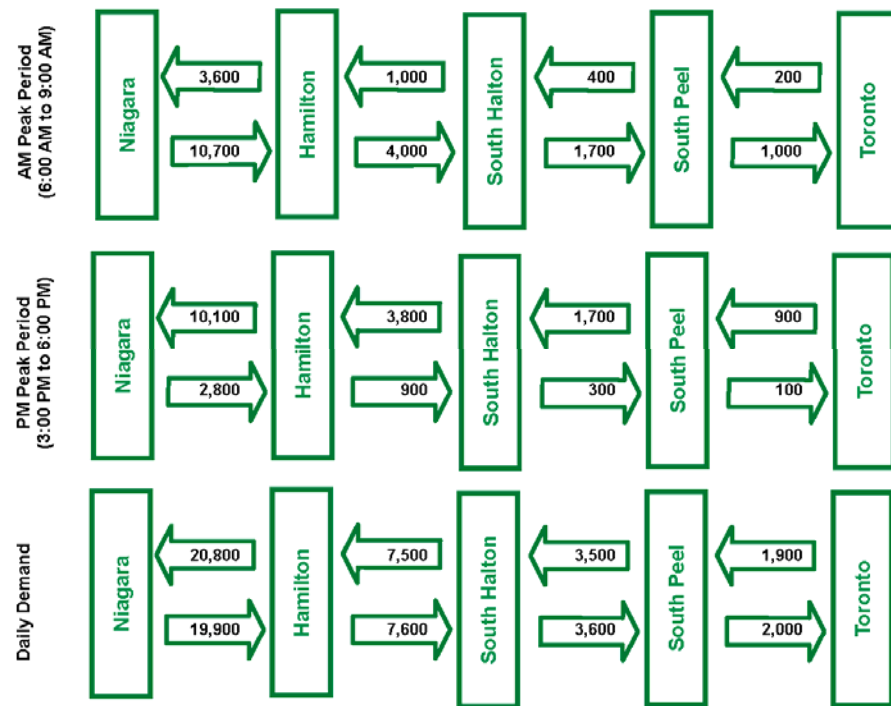
For the purposes of developing GO Rail ridership estimates, the travel demand corridor that would potentially be serviced by an expansion of the Lakeshore West Go rail line was assumed to consist of the entire Region of Niagara. The existing Lakeshore West GO Rail corridor extends from Hamilton through Burlington, Oakville and Mississauga and into the City of Toronto to Union Station. Therefore, for travel demand analysis purposes, the study corridor was defined as the Region of Niagara, City of Hamilton, Halton Region, Peel Region and the City of Toronto.

The existing travel demand within the study corridor was based upon data obtained from the 2006 Transportation Tomorrow Survey (TTS) whereby a sampling of travel data was collected for all trip purposes and trip modes by area residents over a 24 hour period. For future travel demand, a growth factor model was employed based upon existing corridor demand (2006 TTS data) in combination with population and employment growth estimates provided in the Provincial Places to Grow Plan for all municipalities in the study corridor with the exception of the Region of Niagara where population and employment growth estimates were provided directly from the Region of Niagara.

2.2.1.1 Existing Travel Demand

When analyzing the potential trip market segments for GO Transit service, the journey to work demand (HBW) and the journey to school demand (HBSch) are the markets for the greatest potential to attract GO ridership. The AM peak, PM peak and daily 2006 HBW and HBSch trips within the study between Niagara Region and the City of Toronto are shown on Figure 2.1.

Figure 2.1 2006 Corridor Travel Demands* (HBW + HBSch)



* Demand shown is work and school travel demand to/from Niagara Region

The following characteristics of the travel demand in this corridor are noted:

- The most significant travel activity occurs between Niagara Region and City of Hamilton with about 20,000 trips daily in each direction with some 7,500 trips passing through Hamilton. The travel demand between these two areas is about 10,000 to 11,000 trips in the peak direction during the weekday peak period with the peak being Toronto-bound in the AM and Niagara-bound in the PM. The non-peak direction travel is much lower than the peak direction travel.
- The travel demand generated by the Niagara Region to south Halton Region is also significant with about 4,000 trips daily in each direction.
- The travel demand generated by the Niagara Region tends to decrease towards Toronto, indicating that many of the inter-regional trips generated are to and from the closer areas of Hamilton and south Halton Region.

The existing travel demand characteristics in the study corridor are established based on the trip to work demand and the trip to school for post secondary students demand from the 2006 Transportation Tomorrow Survey (TTS) travel data. In the Niagara – Hamilton – Greater Toronto Area corridor, there are currently approximately 20,000 daily person trips in each direction that are Niagara-based i.e. they have a trip origin or destination in Niagara. The most significant component of this travel occurs between Niagara Region and Hamilton with about 60% of the Niagara-based trips starting or ending in Hamilton. The amount of Niagara-based travel declines further east along the corridor towards downtown Toronto.

The TTS data indicates that private automobiles are currently the dominant mode of travel in the study corridor with GO Rail trips to and from Niagara amounting to less than 1% of the total trips in the corridor. This is related to the relatively long distance that needs to be traveled to reach GO Rail terminals from the study area.

2.2.1.2 Future Travel Demand

The future travel demand estimates for 2016 and 2031 were based on a growth trip model in combination with population and employment forecasts provided by the Provincial Places to Grow plan with the exception of forecasts within Niagara Region which were provided by the Region of Niagara. The growth forecasts for the study corridor are illustrated in Table 2.1.

Table 2.1 Population and Employment Forecast

Region/Municipality	Population*			Employment*		
	2006	2016	2031	2006	2016	2031
Grimsby - Lincoln	48	55	63	19	21	25
West Lincoln - Pelham	31	36	41	8	9	12
Niagara Falls – Niagara-On-The-Lake	101	112	130	53	58	69
St Catharines - Thorold	156	163	172	73	76	82
Rest of Niagara	109	120	140	40	44	55
Hamilton	510	565	660	210	250	300
Halton	390	585	780	190	310	390
Peel	1,030	1,045	1,640	530	775	870
Toronto	2,590	2,845	3,080	1,440	1,570	1,640

* The population and employment estimates are in 1000's

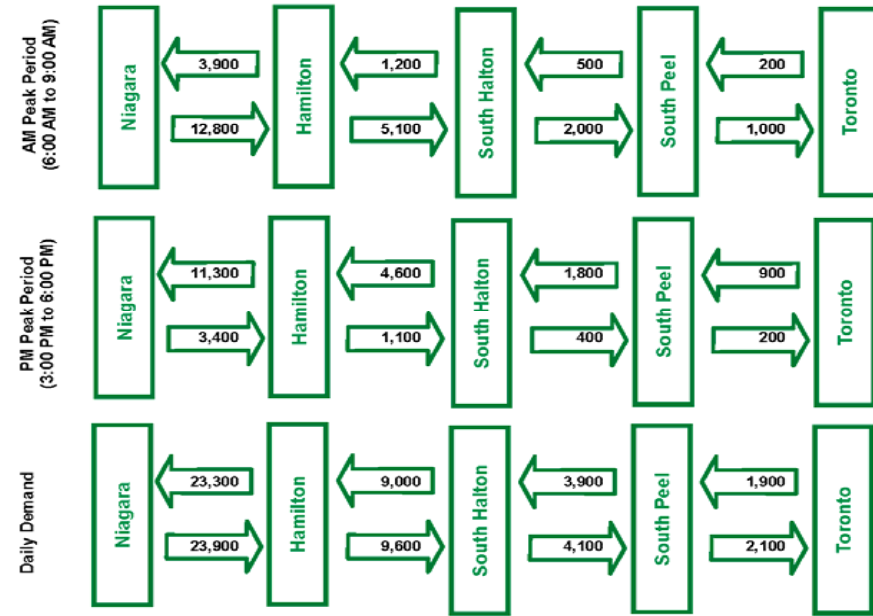
These forecasts indicate steady rates of population and employment growth over the next 25 years. Halton Region and Peel Region are projected to experience significant population and employment growth. Niagara Region population and employment are forecast to increase approximately 20% overall within the 25 years, with the highest growth in the cities of Niagara Falls and Welland.

2.2.1.3 Forecast Corridor Demands

Using the above growth model approach in combination with the Places to Grow population and employment forecasts, estimates of the travel demand for each trip origin – destination interchange were prepared. This data was then reduced to the corridor-type forecasts that were utilized in the existing

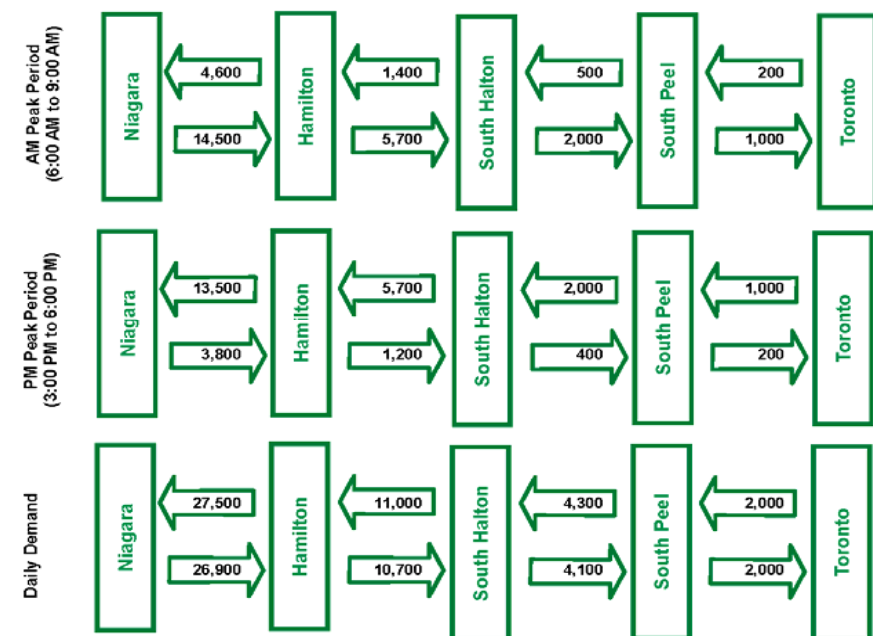
corridor demand estimates. These travel forecasts for years 2016 and 2031 are summarized on Figures 2.2 and 2.3, respectively.

Figure 2.2 2016 Corridor Travel Demands* (HBW + HBSch)



* Demand shown is work and school travel demand to/from Niagara Region

Figure 2.3 2031 Corridor Travel Demands* (HBW + HBSch)



* Demand shown is work and school travel demand to/from Niagara Region

The forecasts indicate that in 25 years the overall study corridor travel demand will increase by approximately 35%. The population and employment in the Niagara Region is expected to increase by approximately 20% within the 25 year horizon; however, the growth in population and employment in the other regions within the corridor is expected to increase the level of inter-regional travel activity. In particular, the travel demand between City of Hamilton and Niagara Region is expected to increase significantly. This is anticipated with the projected increased growth in population and employment rate in these two areas. The City of Hamilton, Halton Region and Peel Region are expected to add nearly 500,000 new jobs in the next 25 years. Therefore, the corridor between Niagara Region and these areas is expected to attract more commuters. The travel demand forecasts recognize these new opportunities and indicate a significant increase in travel demand in the study corridor west of Toronto to the Niagara Region.

2.2.2 GO Rail Ridership Estimates

Figures 2.4 and 2.5 illustrate the 2016 and 2031 estimated GO rail demands expected from the proposed rail expansion in Niagara. It should be understood that the 2016 and 2031 ridership estimates portrayed in Figure 2.4 and 2.5 are for Region of Niagara demand into Hamilton, Oakville, Mississauga and Toronto.

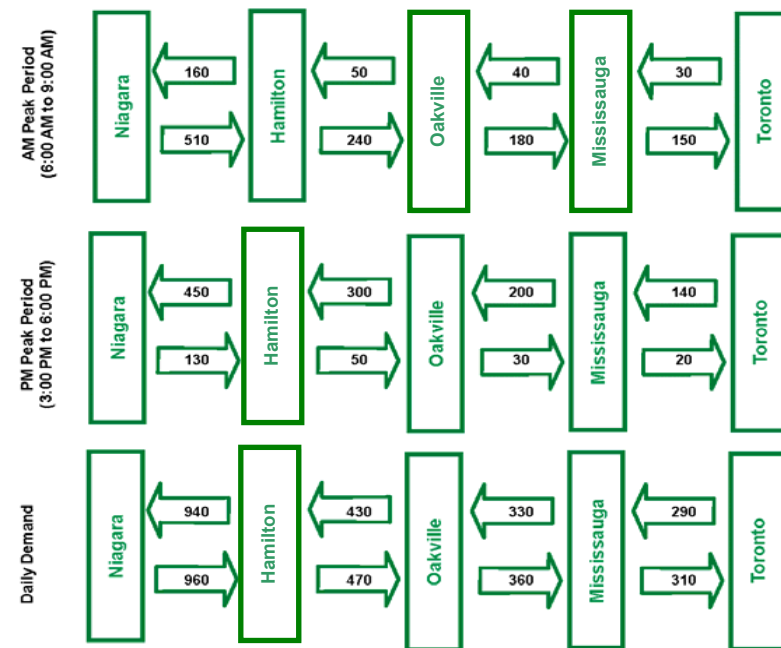
Table 2.2 portrays estimates for 2016 and 2031 potential passenger boarding at stations in Niagara Falls, St. Catharines, Grimsby / Beamsville and Hamilton. These passenger boarding estimates assume:

- Some potential GO riders in the Grimsby area will still choose to drive to the existing Aldershot GO station; and
- Passenger boarding estimates in the Hamilton area stations were based on existing / future demand diverted from existing GO systems to the new Niagara corridor stations.

Table 2.2 Station Ridership Estimates with Niagara Falls Station

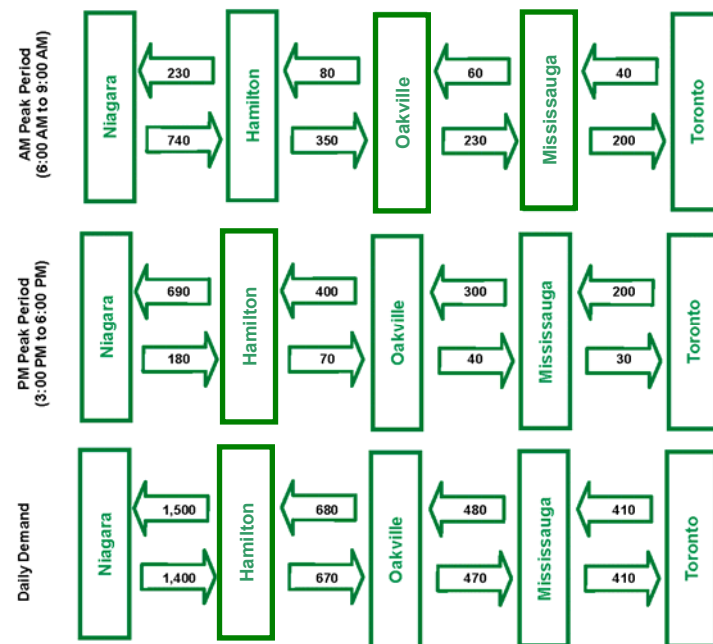
Potential GO Station	2016 Estimates		2031 Estimates	
	AM Peak Period (Passenger Boarding)	Daily (Passenger Boarding)	AM Peak Period (Passenger Boarding)	Daily (Passenger Boarding)
Niagara Falls	80	165	110	225
St. Catharines	150	300	250	475
Grimsby / Beamsville	200	350	350	575
Hamilton	575	1100	875	1650

Figure 2.4 2016 Corridor GO Rail Demands* (HBW + HBSch)



* Demand shown is work and school travel demand to/from Niagara Region

Figure 2.5 2031 Corridor GO Rail Demands*



* Demand Shown is work and school travel demand to/from Niagara Region

2.3 Purpose of the Project

The purpose of this undertaking is to examine the need and resources required to expand GO Train service from Hamilton to the Region of Niagara with the goal to serve more people, stimulate the local economy and support community growth and at the same time reduce road congestion, air pollution and energy consumption.

3.0 Existing Infrastructure

3.1 General Description of the Corridor

Overall, the study corridor from the Aldershot GO Station at Mile 34.6 on the Oakville S/D to the Niagara Falls VIA Station at Mile 0.54 on the Grimsby S/D is approximately 48 miles (77 km) in length. The mainline configuration consists essentially of; three mainlines 2.3 miles long on the Oakville S/D from Aldershot to Bayview Junction, two mainlines 0.4 miles long from Bayview Junction to Hamilton Junction, single mainline of 2.6 miles long from Hamilton Junction to Mile 43.1 Grimsby S/D and double tracked along the majority of the Grimsby S/D with the exception of a 10 mile section between Nelles Road (Mile 26.81) and Jordan Road (Mile 16.63). The Oakville Subdivision from Canpa, Mile 8.4, to Hamilton, Mile 39.3, and the Grimsby Subdivision are owned by CNR. GO Transit/Metrolinx recently purchased a section of the Oakville Subdivision from Union Station to Canpa, Mile 8.4.

Moving east within the study corridor, the mainline runs through the communities of Hamilton, Stoney Creek, Winona, Grimsby, Beamsville, Vineland, St. Catharines and Niagara Falls.

The width of the Railway Right-Of-Way (ROW) along the rail corridor varies but in most cases it is approximately 100 feet (30.48 m) wide with most of the grading/drainage for the track structure contained within the rail ROW. The track grades over the Grimsby S/D are considered light (0 to 0.5%) grade for the most part with a moderate (0.5% to 1%) grade east of the Welland Canal.

3.2 Transportation Infrastructure

The following sections describe the infrastructure currently in place within the study area, which denotes the dominant modes of transportation between the Hamilton and the Niagara Peninsula.

3.2.1 Rail Infrastructure

The major railway between Hamilton and Niagara Falls through the study area is the CNR. The existing track configuration is depicted schematically on Figures SC-1 to SC-10.

3.2.1.1 Canadian National Railway (CNR) – Grimsby Subdivision (S/D)

This rail line connects to the GO Lakeshore West corridor at Hamilton Junction, located at the west end of Hamilton Harbour. This line runs through the north side of the City of Hamilton and parallels the Queen Elizabeth Way (QEW) from the City of Hamilton to Niagara Falls, where it passes through a number of communities, more specifically, the Town of Grimsby, Beamsville (Town of Lincoln), and the City of St. Catharines where it crosses the Whirlpool Bridge into Niagara Falls, New York.

The CNR corridor is relatively tangent in nature along the Grimsby Subdivision (S/D) for a total route length of 45 miles. Train movements on the CNR corridor are controlled by CTC. Daily traffic over the Grimsby S/D consists of both freight and passenger trains.

Several years ago, a 10-mile section of the south mainline track between 15th Street, Mile 16.6 and Nelles Road, Mile 26.8. was removed by CNR given the lighter freight traffic at that time. Since the track structure through this section of the corridor was originally comprised of double track, the existing right-of-way and track structures can accommodate two tracks in the future through this section thereby accommodating two tracks along the entire study corridor. The CNR corridor track structure consists of 115 lb. Continuous Welded Rail (CWR). A major tie rehabilitation program was recently completed over the entire CNR territory in the Niagara Region. Zone speed for passenger trains is mostly 65 mph with speed restrictions at Hamilton, the Welland Canal and approach to Niagara Falls.

Passenger Train Operations

Currently VIA operates four trains between Aldershot Station and Niagara Falls along the CNR corridor, on its intercity passenger train service between Toronto and Niagara Falls. VIA makes regularly scheduled stops at Aldershot, Grimsby, St. Catharines and Niagara Falls. AMTRAK also services two trains from Toronto into the United States with stops at Aldershot, Grimsby, St. Catharines and Niagara Falls stations. Copies of the current VIA Rail and Amtrak train schedules are provided in **Appendix B**.

In 2009, GO also implemented a seasonal weekend and holiday train service between Niagara Falls and Toronto which included four trains in each direction between Union Station and the Niagara Falls VIA Station including a stop in St. Catharines. This service was offered between June 27, 2009 and October 12, 2009. In 2010, GO operated the Niagara Falls seasonal weekend service again between May 21, 2010 to September 26, 2010, including one train Friday evening and running only three trains per day for the weekend service. In both years, the service was very well received by members of the public.

Freight Train Operations

Currently CNR operates four to six trains along the Grimsby S/D.

Permanent Speed Restrictions – “Slow Orders”

The ‘other than mainline track’ at Hamilton is designated the ‘connecting track’ between the Oakville and Grimsby Subdivisions and it is non-signalled. It is used as a siding as well as switching for the north Hamilton Yard. Train movements on this track are governed by Rule 105⁵ and operate with a maximum speed of 10 mph. Long freight trains normally occupy this siding to allow VIA and GO trains to pass through Hamilton on the south signalized mainline track.

⁵ Canadian Rail Operating Rules includes all the rules governing the safe movement of trains. CPR and CNR trains including GO trains are required to follow these rules. Rule 105 states that:

“A train or engine using non-signalized siding or using other tracks so designated in special instructions must be prepared to stop within half the range of vision of a track unit.” All train crews, maintenance of way personnel, etc. or others working around tracks/trains must know these rules. They receive instruction, write tests, etc. and receive a certificate when they qualify.

3.2.1.2 St. Lawrence Seaway

A major factor to take into consideration is the Welland Canal and shipping operations managed by the St. Lawrence Seaway (Seaway). From an operational standpoint, the Welland Canal crossing could prove to be a major impediment to maintaining scheduled service for GO Transit.

The Seaway has provided the following details regarding canal operations:

- Seaway Season April – December;
- 12 to 14 Vessels/day (no set schedule);
- 10 to 35 minute delays to train traffic; and,
- Unpredictability of seaway vessels could add significant transit time for commuters.

Below is a description of how the Seaway operations affect the CNR corridor.

The CNR corridor currently crosses the Welland Canal at Bridge 6 (see Figure 3.1), which is an existing lift bridge structure. During the nine month shipping season (April/December), Great Lakes shipping take precedent over rail movements. Shipping traffic has the potential to cause significant negative impacts to a time sensitive commuter service, causing lengthy delays to train service. To avoid ship/train conflicts which occur during the shipping season (resulting in random interruptions of service), consideration could be given to terminating regular GO train service at St. Catharines augmented with a shuttle bus service from St. Catharines to Niagara Falls. Options such as guaranteed train crossing windows for GO rail service; extending GO rail service from St. Catharines to Niagara Falls during the off season period; and the provision of a rail/canal grade separation requires further discussion between GO Transit/Metrolinx and the St. Lawrence Seaway Authority.

The Seaway Authority has indicated that the existing lift span is nearing the end of its service life and Seaway has undertaken preliminary studies for its replacement in kind as well as a rail separation by tunnel or bridge. The Seaway should be consulted as the project proceeds to detailed design. Construction of a new grade separation at the Canal would allow for unimpeded GO Train Service into Niagara Falls.

Figure 3.1 CNR “Bridge 6” Lift Bridge – Welland Canal



3.2.2 Road Infrastructure

The study area follows the GO Transit Lakeshore West Corridor and its proposed expansion to the Niagara Peninsula along the CNR generally and runs along the shore of Lake Ontario from Union Station to Grimsby where it moves inland passing through Beamsville, Vineland, St. Catharines and ending in Niagara Falls. The major highways servicing the transportation demand in this corridor are the Queen Elizabeth Way (QEW) and the Gardiner Expressway in Toronto. At the present time, recurring congestion during peak travel periods combined with increased and unpredictable travel times as a result of collisions, weather, maintenance and road construction activities results in driver frustration and the desire for fast and efficient alternative travel modes. Concurrently, the Ministry of Transportation (MTO) is investigating road improvement options in the corridor to address existing corridor deficiencies and to address future travel demands. Road solution options will take into account the recommendations put forward in this ESR.

Within the rail corridor study area between James Street North on the CNR Oakville S/D and Niagara Falls VIA Station on the CNR Grimsby S/D, the rail corridor is crossed at-grade by 63 public roads and 7 private crossings as listed in Table 3.1.

Table 3.1 Summary of Rail Corridor Crossings

Mileage	Road Name	Road Authority
33.31	King Road	City of Hamilton
43.14	Wellington Street	City of Hamilton
42.99	Victoria Avenue	City of Hamilton
42.61	Wentworth Street	City of Hamilton
42.07	Sherman Avenue	City of Hamilton
41.82	Lottridge Avenue	City of Hamilton
41.54	Gage Avenue	City of Hamilton
41.02	Ottawa Street	City of Hamilton
39.50	Parkdale Avenue	City of Hamilton
39.04	Woodward Avenue	City of Hamilton
38.56	Nash Road	City of Hamilton
38.31	Kenora Road	City of Hamilton
36.97	Gray's Road	City of Hamilton
36.39	Green's Road	City of Hamilton
35.87	Millen Road	City of Hamilton
35.32	Dewitt Road	City of Hamilton
34.29	Jones Road	City of Hamilton
33.74	Glover Road	City of Hamilton
33.22	McNeilly Road	City of Hamilton
32.69	Lewis Road	City of Hamilton
32.17	Winona Road	City of Hamilton
31.67	Fifty Road	City of Hamilton
31.39	Conc. No. 1	City of Hamilton
30.90	Kelson Avenue	City of Hamilton
30.39	Oakes Road N.	Town of Grimsby
29.87	Hunter Road	Town of Grimsby
29.37	Casablanca Boulevard	Town of Grimsby
28.84	Roberts Road	Town of Grimsby
28.32	Kerman Avenue	Town of Grimsby
27.42	Ontario Street	Town of Grimsby
26.79	Nelles Road	Town of Grimsby
24.79	Durham Road	Town of Lincoln
24.27	Mountainview Road	Town of Lincoln
23.74	Lincoln Avenue	Town of Lincoln
23.21	Ontario Street	Town of Lincoln
22.67	Bartlett Road S.	Town of Lincoln
22.13	Sann Road	Town of Lincoln
21.76	Farm Crossing	Town of Lincoln

Mileage	Road Name	Road Authority
21.61	Tufford Road	Town of Lincoln
21.09	Merritt Road	Town of Lincoln
20.59	Farm Crossing	Town of Lincoln
20.51	Maple Grove Road	Town of Lincoln
20.01	Cherry Avenue	Town of Lincoln
19.67	Farm Crossing	Town of Lincoln
19.47	Martin Road	Town of Lincoln
18.65	23rd Street	Town of Lincoln
18.13	21st Street	Town of Lincoln
17.19	Jordan Road Reg. Road 26	Town of Lincoln
16.65	15th Street Louth Twp.	Town of Lincoln
16.50	Farm Crossing	Town of Lincoln
	13th Street	Town of Lincoln
	11th Street	Town of Lincoln
13.39	Third Street Louth Conc. 4	City of St. Catharines
12.85	First Street Louth Townline	City of St. Catharines
12.55	Vansickle Road	City of St. Catharines
12.02	Louth Street Reg. Road 72	City of St. Catharines
9.93	Private	City of St. Catharines
9.24	Glendale Avenue Reg Road 89	City of St. Catharines
	Private	City of Niagara Falls
8.41	Private	City of Niagara Falls
6.35	Gamer Road	City of Niagara Falls
4.39	Dorchester Road	City of Niagara Falls
2.84	Stanley Avenue	City of Niagara Falls
2.63	Church's Lane	City of Niagara Falls

3.2.3 Transit Infrastructure

Overall, the Hamilton to Niagara Falls corridor has limited community to community inter-regional transit service available as a transportation modal option. The City of Hamilton is actively planning the implementation of rapid transit corridors in Hamilton. Niagara Region is in the process of developing an Inter-Municipal Transit Work-Plan. While these are in the planning phase at this time, it is important to note

that one of the prime agency goals is to interface the municipal transit initiatives with the GO rail stations to enhance the shift from auto to transit (see Section 3.2.4).

3.2.3.1 Existing Local Transit/Rail Infrastructure

Hamilton Transit (Hamilton Street Railway)

Hamilton Street Railway operates numerous bus routes throughout the Greater Hamilton Area reaching as far north as Waterdown (with connections to the Aldershot GO Station), as far west as Ancaster, as far south as the Hamilton International Airport and as far east as Jones Road in East Hamilton (near Stoney Creek Municipal Service Centre). Trans-Cab is a shared-ride taxi service between the Hamilton Street Railway and a local taxi provider. Currently, this service is offered in portions of Glanbrook and East Hamilton (City of Hamilton, 2010a).

Grimsby VIA Rail Station

The existing VIA Rail Station in Grimsby is located off Ontario Street. Parking for approximately 15 vehicles is currently reserved on the station property for VIA patrons. At present, there is no local transit service in Grimsby.

St. Catharines VIA Rail Station

The existing VIA Rail Station in St. Catharines is located on Great Western Avenue approximately 1 km from the downtown area of St. Catharines and approximately 2.3 km from Highway 406 interchange at 4th Avenue. Currently, there is limited parking on site reserved for approximately 180 VIA patrons. St. Catharines Transit and Gray Coach service the station. Coach Canada Buses are located approximately 1.5 km from the station site.

Niagara Falls VIA Rail Station

The existing VIA Rail Station in Niagara Falls is located on Bridge Street near the Whirlpool Bridge, approximately 4 km from the Falls and 2 blocks from downtown Niagara Falls. Parking for approximately 50 vehicles is currently reserved on the station property for VIA patrons. The station is serviced by Niagara Transit, Chair-A-Van (provides service to members of public who cannot take conventional transit) and Intercity Bus. There is a Coach Canada bus stop across the street from the station.

New York State High Speed Rail

High Speed Rail infrastructure investments are currently being made in New York State which will involve improved service connections between Niagara Falls to New York City, by way of Buffalo, Rochester, Syracuse and Albany (the Empire Corridor) and connections between Montreal and Plattsburgh to Albany (the Adirondack Corridor). These upgrades will enable track speeds of up to 110 mile per hour. Construction for these infrastructure improvements started in spring 2010 and is anticipated to be completed by 2018. New York State is investing approximately \$4.8 Billion on these projects. The majority of this funding will go to the State's 'Third Track Initiative', which will construct a third rail line along the existing rail corridor that will be dedicated to enhanced passenger service (High Speed Rail NY Coalition, 2010).

3.2.3.2 Existing Inter-Regional Transit Service

Existing GO Bus Service

GO Transit currently provides hourly bus service between the Burlington GO Station and the Niagara Falls VIA Station with stops in East Hamilton (Nash Road North near Barton Street), in Grimsby (Park and Ride / Carpool at Casablanca Boulevard), in St. Catharines (VIA Station and Fairview Mall), and in Niagara Falls (Highway 402/Stanley Avenue and VIA Station).

Other Bus Carriers

Greyhound provides five Toronto-bound buses from Niagara Falls and St. Catharines daily and six return buses from Toronto.

Coach Canada provides 13 Toronto-bound buses daily from Niagara Falls with 16 returning and 14 Toronto-bound buses daily from St. Catharines with 14 returning.

3.2.4 Future Transit Planning

3.2.4.1 City of Hamilton

Stoney Creek Transit Hub Feasibility Study

The City of Hamilton is undertaking a feasibility study to investigate a multi-modal transit hub to be located at the northeast corner the CNR line and Winona Road (just west of the interchange at Fifty Road and the QEW).

Rapid Transit Planning

The City of Hamilton is actively pursuing a 15-year plan to implement rapid transit in Hamilton. Two corridors have been identified. The A-Line is expected to extend from the Waterfront area to the Hamilton International Airport along the James Street / Upper James Street corridor. The B-Line is expected to extend from Eastgate Square / Centennial Parkway to McMaster University along the Main/King corridor with a focus on Light Rail Transit (LRT). Design planning for the B-Line commenced in 2010.

3.2.4.2 Niagara Region

Inter-Municipal Transit Work-Plan

The Niagara Region Inter-Municipal Transit Work-Plan builds on the Niagara 2031 Growth Management Strategy (2008) and the Niagara Transportation Strategy (2002). The Work-Plan considered service concepts, ridership, fare recommendations, governance, and cost-benefit analysis. The study included an on-line public survey, stakeholder meetings and a public information centre. Phase 2 of the Work Plan was issued in May 2010 and included discussion of a three phase approach to inter-municipal transit: Short-Term; Medium-Term; and Long-Term. The short-term plan calls for the introduction of regular weekday inter-municipal services connecting transit hubs in the three large urban areas including St. Catharines, Niagara Falls, and Welland. These triangle services could be introduced and integrated with the existing post-secondary school services in two phases. The medium-term plan (Year 3 to Year 5) calls for improvements to triangle services and the introduction of second-tier services connecting communities with relatively concentrated urban areas and within proximity to the triangle service. It should be noted that the proposed second-tier service implementation is based on projected demand and local municipalities will ultimately decide the actual implementation of the proposed services. The long-term plan would improve service level in the midday and evening periods on second-tier feeder services and introduce rural demand response services to the rest areas of the Region. In May 2010, Regional council approved a proposal received from local municipalities for a 3-year pilot project connecting the three downtowns of St. Catharines, Niagara Falls, and Welland. Details on how the pilot project will be implemented are being worked out. The pilot project will be funded by Niagara Region and operated by the local municipal transit operators.

4.0 Existing Environment

4.1 Planning Context

The study corridor involves several jurisdictions, including the Region of Niagara, City of Niagara Falls, City of St. Catharines, Town of Lincoln, Town of Grimsby and City of Hamilton. The study corridor in relation to these municipal jurisdictions is shown on Figure 4.1.

4.1.1 Provincial Planning Policies

4.1.1.1 Provincial Policy Statement

The Provincial Policy Statement (PPS, 2005) provides general policies on land use patterns, transportation priorities, resources, and public health and safety that guide development across Ontario. Section 1.6.5 and 1.6.6 of the PPS provide policies for Transportation Systems and Corridors. Section 1.6.5.2 states that "Efficient use shall be made of existing and planned [transportation] infrastructure."

The PPS focuses on the need for community-based planning that increases the opportunity for use of public transit, including GO Transit, by building compact and walkable communities. The policies are applicable throughout Ontario. Consistency with the goals, objectives and general policy direction of the PPS is necessary and appropriate for this project.

4.1.1.2 Growth Plan for the Greater Golden Horseshoe

The Growth Plan for the Greater Golden Horseshoe (Growth Plan, 2006) supports the development of a wide variety of transportation modes, including public transit and rail systems. The following sections are most applicable to this GO Transit/Metrolinx project.

Section 3.2.2 c: states that transportation systems should "be sustainable, by encouraging the most financially and environmentally appropriate mode for trip-taking."

Section 3.2.2.3c: states that Ministries of the Crown, public agencies and municipalities will "consider increased opportunities for moving people and goods by rail, where appropriate."

Section 3.2.3.2b: indicates that priority should be placed on "increasing the capacity of existing transit systems to support intensification areas."

Schedule 5 of the Growth Plan shows the corridor between Niagara Falls and Hamilton as an area proposed for improved inter-regional transit by 2031.

4.1.1.3 Greenbelt Plan

The Greenbelt Plan (Plan, 2005) covers much of the study area between St. Catharines and Grimsby. The Plan does not specifically reference public transit or commuter rail services as its focus is on preservation of agricultural lands, which is accomplished in part by setting urban growth limits. Section 4.2 describes policies related to infrastructure and acknowledges that “existing infrastructure must be maintained and new infrastructure will be needed to continue to serve existing and permitted land uses within the Greenbelt.”

Expansions, extensions, operations and maintenance of infrastructure are permitted in the Protected Countryside provided that crossings, or intrusions into, the Natural Heritage System are minimized and negative impacts to key natural heritage or key hydrologic features are minimized. In addition, impacts caused by light intrusion, noise and road salt (among others) should be minimized.

The Plan requires that new and expanded infrastructure must be justified by demonstrating that the initiative is required and has properly screened impacts.

4.1.1.4 Niagara Escarpment Plan

The Niagara Escarpment Plan (NEP, 2005) permits new and reconstructed transportation facilities as long as they are designed and located to minimize impacts on the escarpment environment. Other guidelines in the NEP require blasting, grading and tree removal to be minimized as well as native vegetation species to be used in site rehabilitation, and finished slopes to be graded to a 2:1 slope to minimize surface erosion. Visual impacts should also be minimized to the greatest extent possible. The study area traverses through the NEP Area at Jordon Harbour and east of the Welland Canal to Niagara Falls.

4.1.2 Official Plans

4.1.2.1 City of Hamilton

The City of Hamilton’s approved Official Plan for its rural areas (2006) does not contain policies associated with public transit or rail transportation. The draft Official Plan for urban Hamilton (2009) has been adopted by Council and includes policies in Section C which state that the City will “work in cooperation with other levels of government and government agencies to further develop inter-regional travel plans including expansion of GO Transit in the Hamilton Area...” (Section C.4.1.5). Furthermore, the City supports expansion of GO Transit, particularly to eastern portions of the City (C.4.4.13). The draft Official Plan identifies locations for future inter-modal transportation terminals. Specifically, “the City along with Metrolinx has identified the northern portion of the *Downtown Urban Growth Centre* as the location for the establishment of a GO/VIA transit station” (Section C.4.4.16; identified as LIUNA Station on the Schedule in Appendix B). The intersection of Fifty Road and the QEW has also been identified as a future transportation hub (Section C. 4.4.13.1).

4.1.2.2 Town of Grimsby

The draft Town of Grimsby Official Plan (2009) identifies the Town’s intention “to explore opportunities for the provision of public transit” (Section 5.6.2.1). Sections 6.2 and 6.3 identify requirements for noise and vibration studies associated with development in the vicinity of rail lines.

4.1.2.3 Town of Lincoln

The Town of Lincoln Official Plan (2009) is supportive of public transit and specifically references GO Transit in Section 6.1.4 stating that “Council shall make every effort to promote GO Transit commuter service through Beamsville to St. Catharines. Station facilities shall be coordinated with interregional bus services and any local taxi services.”

4.1.2.4 City of St. Catharines

The City of St. Catharines Official Plan (2006) states that “The City shall cooperate with senior levels of government and other agencies to promote an inter-city transportation network to accommodate residents, and business communities and promote tourism” (Section 11.6.1). The City’s website also notes that an Official Plan review is underway with a Transportation study planned which will identify the importance of “multi modal opportunities, connections, linkages”... and “intra and inter regional transit.”

4.1.2.5 City of Niagara Falls

The City of Niagara Falls Official Plan (1993, as amended January 2010) is supportive of public transportation and states in Part 3 Section 1.5.1 that “The City will provide adequate public transit services to meet the transportation needs of residents, commuters and tourist...”

Section 1.8.1 states, “Where the necessity is demonstrated, Council shall seek to eliminate railway grade crossings on a priority basis...” Section 1.8.1 also notes that “Where appropriate, Council shall seek the elimination of railways within the City and encourage the redevelopment of such lands for public transit, open space and recreation.” It is unclear whether this statement is directed towards industrial freight or all rail traffic. Section 1.8.3 sets out requirements for noise and vibration studies for projects associated with, or in proximity to, rail lines.

4.1.2.6 Niagara Region

The Region of Niagara’s Official Plan (2007) provides a number of objectives associated with public transportation and rail services, including:

- Objective 9.3: To encourage the development of convenient and efficient public transit services throughout the region; and,

- Objective 9.4: To actively support the continuation and improvement of the railway system for the movement of both passengers and goods.

4.1.3 Land Uses at Station and Train Layover Alternatives

Hamilton – James Street North

This site is designated for utility purposes, along the existing rail line, as well as for medium density residential and open space purposes. Although the residential designation applies, no residential units are present. Other residential areas are located to the north and south. LIUNA Station, located to the east of the proposed station site, is identified on Appendix B of the draft City of Hamilton's Official Plan as a proposed new GO Transit centre. LIUNA Station is currently operated as a banquet facility. The West Harbour Planning area, within which this site is located, is subject to a future Ontario Municipal Board hearing.

Hamilton – Confederation

This site is designated as industrial lands. Lands to the north of the ROW are currently owned by the City of Hamilton and are comprised of primarily wooded lands. Lands to the south of the ROW are currently being used for an auto recycling and a small trucking facility.

Hamilton – Centennial Parkway

This site is designated as a district commercial area. It is currently an abandoned industrial site surrounded by arterial commercial lands to the west, north and south and business park uses to the east.

Hamilton – Fruitland Road

Lands within this site and its vicinity are designated for business park uses. The site is currently comprised of open lands. Surrounding properties are being used for industrial and commercial business park uses.

Hamilton – Lewis Road

Lands within this site and its vicinity are designated for business park uses. The site is currently comprised of open lands. Lands south of the site are industrial uses. There are a few farm properties that are being used for agriculture. A large industrial development is proposed to the south of the site.

Hamilton – Fifty Road

Lands north of the rail ROW and west of Fifty Road are designated for district commercial uses while lands east of Fifty Road are for business park use. The area is not currently developed for either use with lands characterized by rural, agricultural or old field conditions. The site northwest of the rail ROW currently contains an abandoned house and old field meadow area that may have been in past agricultural use. Lands south of the rail ROW are designated as Specialty Crop lands; however, the area may become part of the City's urban area and re-designated, subject to an Ontario Municipal Board hearing. The site, south of the rail ROW on the west side of Fifty Road is not currently in agricultural use. A Secondary Plan is pending for the entire area, north and south of the rail ROW.

Grimsby – Casablanca Boulevard

Lands north of the rail ROW are designated as a service commercial area. Lands south of the rail ROW fall within the Tender Fruit and Grape Lands of the Greenbelt Plan and are locally designated as Specialty Crop Area. Lands southwest of the rail ROW are in orchard/fruit production. No agricultural production is currently taking place on remaining portion of the southern property. Residential uses are located to the south and east and an existing GO bus terminal and commuter parking lot is located directly north of the site.

Grimsby – VIA Station

The existing VIA Station is located to the east of Ontario Street. The building is small, does not include a sheltered waiting area and provides limited parking space. The larger, historic railway station is currently used as an antiques and gift shop. Lands south of the rail ROW fall within Grimsby's urban settlement area and are designated as Commercial Core-Transition lands. North of the rail ROW are employment lands.

Grimsby – Bartlett Avenue

This site is located outside of Grimsby's urban boundary and falls within the Tender Fruit and Grape Lands of the Greenbelt Plan. The area is entirely surrounded by developed lands, including the QEW and residential areas to the north and residential lands to the south. A house with a small orchard and greenhouse is present to the east of the site. It appears as though some recent changes in the configuration of the QEW may have altered the south service road and resulted in the removal of other rural residences in the area.

Beamsville – Ontario Street

Lands on both sides of Ontario Street fall within Beamsville's urban boundary. The western portion is designated Prestige Industrial and includes some industrial development as well as an orchard. The portion of the site east of Ontario Street is designated General Commercial although the area is not currently developed.

Vineland – Victoria Avenue

This site is located entirely within an orchard, designated as a Unique Agricultural area in the Town of Lincoln's Official Plan. The Tender fruit and grape designation of the Greenbelt Plan and the Niagara Region's Official Plan also apply to this property. A creek bisects that site and is protected as a Natural Environment area.

St. Catharines – First Street

A train layover is proposed south of the rail ROW at this site. These lands are located within the Tender Fruit and Grape Lands of the Greenbelt Plan and are designated for Agricultural purposes in the City of St. Catharines' Official Plan. Lands to the north form part of a Secondary Planning area and are designated for Industrial uses. The Niagara Region Official Plan designates the site as a Unique Agricultural Area (Tender Fruit and Grape). The site is currently in agricultural use. The site currently contains a vineyard.

St. Catharines – Vansickle Road

This site is surrounded by industrial and commercial developments and is designated for industrial use. The site is primarily comprised of open lands with a small aggregate extraction and processing facility onsite.

St. Catharines – VIA Station

An existing VIA station is located on the site north of the rail ROW. Lands north of the station are primarily unoccupied and are characterized by open meadow, sparse woodlands and gravel fill. The portion of the site south of the rail ROW is paved and used for industrial/commercial storage. Lands are designated as Major Institutional and Industrial.

St. Catharines – Glendale

This site is located within an industrial zone. Niagara Region's environmental screening mapping identifies that soil contamination may be present as a result of existing industrial uses in the area. Lands to the south are located within the Niagara Escarpment Plan Urban Area and are designated for neighbourhood residential uses in the St. Catharines Official Plan and as an Environmental Conservation Area and Potential Natural Heritage Corridor, according to the Region.

Niagara VIA Station

The existing VIA station is located within an industrial area in Niagara Falls' downtown core. Major commercial uses are located to the south and a small area of Resort Commercial development is located to the east along the Niagara River.

4.2 Natural Environment**4.2.1 Climate and Air Quality**

Ortech Environmental (Ortech) were retained to complete an air quality assessment for the study area. A copy of the air quality assessment report (September 2010) is provided in **Appendix C1**. The following are the existing air quality conditions within the study area, summarized from Ortech's report.

Regional Ministry of the Environment (MOE) air quality data was examined to determine the existing ambient air quality in study area. If the air quality is good, the potential to cause unacceptably poor air quality is less than if the existing air quality is moderate to poor. Air pollutant data from January 1, 2005 to December 31, 2008 was obtained from the MOE website <http://www.airqualityontario.ca/index.php> for the nearest air quality stations in Hamilton Downtown (ID 29000) and St. Catharines (ID 27067).

Analysis of the air pollutant data for fine particulate (PM_{2.5}) at both air quality stations noted above indicates that the fine particulate air quality is "Very Good" at least 73% of the time; "Very Good to Good" 92% of the time; and "Very Good to Moderate" more than 99% of the time according to the MOE air quality indices. Hourly median PM_{2.5} concentrations were less than half of the "Very Good" criteria of 12 µg/m³. Analysis of the air pollutant data for nitrogen dioxide (NO₂) at the both air quality stations indicates that the

NO₂ air quality is also "Very Good" at least 90% for the time and "Very Good to Moderate" more than 99% of the time according to the MOE air quality indices. The median NO₂ concentrations were approximately 36% of the 50 ppb "Very Good" criteria.

4.2.2 Noise and Vibration

Aercoustics Engineering Limited (Aercoustics) were retained to complete a noise and vibration assessment for the study area (October 2010). The report documenting the methodology and findings of this assessment is provided in **Appendix C2**. Aercoustics used the MOE/GO Transit Draft Protocol for Noise and Vibration Assessments (1995) to determine the appropriate methodology for their study. In order to assess the noise and vibration impact of GO train service in the study corridor, Aercoustics determined the pre-project noise and vibration levels through the rail corridor and at the alternative station and train layover locations. Existing pre-project daytime and night time sound levels were modeled using STAMSON. The predicted sound levels from the model were calibrated by actual sound measurements recorded at various points of reception within the study corridor.

The results of the existing (pre-project) sound level modeling through the study corridor are summarized in Table 4.1. The rail corridor was divided into two main sections: Mile 39 to 43.7 on Grimsby S/D, a speed restricted area and Mile 0.6 to Mile 39 on Grimsby S/D.

Table 4.1 Existing Sound Levels Throughout Rail Study Corridor

Rail Corridor Section / Station / Layover Location	Description	Existing Sound Level (dBA)	
		Day	Night
Mile 39 to 43.7 Grimsby S/D	Speed of Trains Limited to 48km/h	62	62
Mile 0.6 to Mile 39 Grimsby S/D	Max Speed of 80/105 km/h	65.5	65

The results of the existing (pre-project) sound level modeling at the alternative station are summarized in Table 4.2 and the results of the train layover sites are summarized in Table 4.3. The protocol for evaluating noise impacts at layover stations does not discriminate between daytime and night time sound levels; therefore, only one existing sound level was modeled for each layover site.

Table 4.2 Existing Sound Levels at Alternative Station Locations

Location	Distance to Closest Receptor (m)	Existing Sound Level (dBA)	
		Day	Night
Hamilton / James Street North	63	57	57
Hamilton / Confederation	270	50	50.5
Hamilton / Centennial Parkway	50	62.5	62.5
Hamilton / Fruitland Road	500	47	46.5
Hamilton / Fifty Road	100	57	57
Grimsby / Casablanca Boulevard	125	55.5	56
Grimsby / VIA Station	40	63.5	63.5
Beamsville / Ontario Street	56	61	61
Vineland / Victoria Avenue	60	60.5	60.5
St. Catharines / VIA Station	60	60.5	60.5
Niagara Falls / VIA Station	45	62.5	62.5

Table 4.3 Existing Sound Levels at Alternative Train Layover Locations

Location	Distance to Closest Receptor (m)	Existing Sound Level (dBA)
Hamilton / James Street North	130	45 ¹
Hamilton / Centennial Parkway	220	45 ¹
St. Catharines / First Street	190	45 ¹
St. Catharines / Vansickle Road	415	45 ¹
St. Catharines / Glendale Avenue	225	45 ¹
Niagara Falls / VIA Station	120	45 ¹

Note: 1. The pre-project noise is taken as 45 dB when assessing the impact of a layover station according to the MOE/GO Transit Draft Protocol for Noise and Vibration Assessment.

Based on Aercooustic's experience, vibration levels from freight trains are typically 5 to 10 dB higher than passenger trains due to the additional locomotives and cars.

4.2.3 Physiography and Hydrogeology

A review of available maps was undertaken to characterize the general surficial and bedrock geology, as well as the hydrogeology of the area. The study area is approximately 48 miles (77 km) long and; therefore, spans several physiographic regions and has variable hydrogeology through the mainline rail corridor. The following paragraphs describe the physiography and the hydrogeology regions through the study area from east (Niagara Falls) to west (Hamilton).

Physiography

There are three physiographic regions within the study area including the Haldimand Clay Plain, the Niagara Escarpment, and the Iroquois Plain.

The Haldimand Clay Plain is approximately 1,350 sq miles in size and lies between the Niagara Escarpment and Lake Erie, thus comprises the most of the Niagara Peninsula with the exception of the tender fruit lands to the north side of the Escarpment. The region is characterized by a series of parallel belts, the highest which is adjacent to the Niagara Escarpment. The elevation within the region ranges from 600 ft (183 m) to 750 ft (229 m) above sea level except for gravelly hills at Fonthill which reach an altitude of 850 ft (259 m) above sea level.

The Niagara Escarpment extends from the Niagara River to the northern tip of the Bruce Peninsula and continues north to encompass the Manitoulin Islands. The Niagara Escarpment is very distinguishable from other landforms due to its vertical size and striking rock-hewn topography. The base of the escarpment is generally 350 ft (107 m) above sea level while the top of its cliffs are near 625 ft (191 m) above sea level. Vertical cliffs along the brow of the escarpment outline the edge of the dolostone of the Lockport and Amabel Formations while the slopes below are carved in red shale (Chapman and Putnam, 1984).

The Iroquois Plain is the lowland region bordering Lake Ontario. This region is characteristically flat and formed by lacustrine deposits laid down by the inundation of Lake Iroquois, a body of water that existed during the late Pleistocene Era. The Niagara fruit belt falls within this region. The region spans a distance of 300 km from the Niagara to the Trent River. The old shorelines of Lake Iroquois include cliffs, bars, beaches and boulder pavements (Chapman and Putnam, 1984).

Hydrogeology

A review of the Quaternary Geology of Ontario Southern Sheet Map (Map 2556) indicates that there are several hydrogeological conditions through the study corridor. From east to west through the rail corridor, the overburden is underlain predominantly by Pleistocene soils consisting of Halton Till (Ontario – Erie lobe) and Glaciolacustrine deposits. There are some sections of the rail corridor within Grimsby and East Hamilton which traverses over Paleozoic bedrock, which is predominantly undifferentiated carbonate and clastic sedimentary rock, exposed as surface or covered by a discontinuous, thin layer of drift. The soil conditions of these various hydrogeological conditions are shown on Table 4.4.

Table 4.4 Quaternary Geology of the Study Area

Quaternary Geology	Soil Conditions
Halton Till (Ontario – Erie lobe)	Predominantly a silt to silty clay matrix, high in carbonate content with a poor clast.
Glaciolacustrine deposits	Silt, gravelly sand and gravel; nearshore and beach deposits; silt and clay, minor sand; basin and quite water deposits.

A review of the Bedrock Geology of Ontario (Map 2544) indicates that there are two geologic periods represented within the study corridor. These periods are the Upper Ordovician Period and the Middle and Lower Silurian Period. The bedrock throughout the study corridor is comprised predominantly of shale,

limestone, dolostone and siltstone of the Queenston Formation. The eastern portion of the study corridor including the Niagara Falls VIA Station site and the Glendale Avenue site is composed of sandstone, shale, dolostone and siltstone of the Clinton and Cataract Groups, Guelph and Lockport Formations.

4.2.4 Agricultural Lands

The Niagara Peninsula is home to some of the highest quality agricultural lands in Ontario. Productive soils and a favourable climate have created conditions suitable for growing a wide variety of vegetables, fruit and grapes. The area, known as the Niagara Fruit Belt, provides valuable support to the local and broader Ontario economies. Agriculture employs a significant portion of the labour force in the area, as presented in Table 4.5. This table shows that agricultural and other resource-based industries support a greater proportion of the population in Grimsby, Lincoln, St. Catharines and the greater Niagara Region than the Ontario average. Agriculture and other resource-based industries are particularly important in Lincoln, supporting 11.7% of the labour force compared to 2.9% of the Ontario population on average.

Table 4.5 Employment in Agricultural Industries

Census Area	% of Labour Force in Agricultural/other Resource-based Industries
Hamilton	2.11
Grimsby	5.16
Lincoln	11.74
St. Catharines	3.51
Niagara Falls	1.96
Niagara Region	3.85
Ontario	2.93

The importance of agriculture to the area is recognized in local and provincial planning policies. Of the sixteen alternative station and layover sites under consideration, six are subject to agricultural planning policies designed to protect important agricultural lands. Table 4.6 summarizes provincial, regional and local municipal agricultural policies at the six sites. Each of the policies listed are intended to maintain agricultural lands for agricultural purposes. Public infrastructure uses are permitted on these lands subject to an Environmental Assessment process.

Table 4.6 Agricultural Policies at Select Station and Layover Alternatives

Station Name	Agricultural Designation		
	Greenbelt Plan	Regional Official Plan	Local Municipal Official Plan
Hamilton- Fifty Road	Tender Fruit and Grape (South of rail ROW only).	N/A	City of Hamilton: Specialty Crop (may become urban, subject to OMB hearing) (South of rail ROW only)
Grimsby- Casablanca Boulevard	Tender Fruit and Grape Area (South of rail ROW only)	Niagara Region: Unique Agricultural Area (Tender Fruit and Grape) (South of rail ROW only)	Town of Grimsby: Specialty Crop Area, Tender Fruit and Grape Lands (South of rail ROW only).
Grimsby- Bartlett Avenue	Tender Fruit and Grape Area	Niagara Region: Unique Agricultural Area (Tender Fruit and Grape)	Town of Grimsby (draft): Specialty Crop Area, Tender Fruit and Grape
Vineland- Victoria Avenue	Tender Fruit and Grape Area	Niagara Region: Unique Agricultural Area (Tender Fruit and Grape)	Town of Lincoln: Unique Agricultural Area
St. Catharines- First Street	Tender Fruit and Grape Area	Niagara Region: Unique Agricultural Area (Tender Fruit and Grape)	St. Catharines: Agricultural.

Table 4.7 summarizes current agricultural use and soil capability at the six alternative station or layover sites where agricultural activities are currently taking place. No agricultural activities are currently taking place at the other ten alternative station and layover sites under consideration. The Hamilton - Fifty Road site is designated as Tender Fruit and Grape lands, as noted in Table 4.6 above. An old orchard is present at this site but has been abandoned and the site is not considered to be in agricultural production at this time. The Beamsville – Ontario Street site is currently under orchard and cash crop production. These lands, however, are designated for future prestige industrial uses rather than agriculture.

Soil capability refers to soil classification under the Canada Land Inventory. Soil classes 1 to 3 are generally considered to represent “prime agricultural soils”.

Table 4.7 Current Agricultural Use and Soil Capability

Station Name	Type of Agricultural Use	Soil Capability
Hamilton- Fruitland Road	Cash crop/hay	Class 4
Hamilton- Lewis Road	Orchard, cash crop and other fruit.	Class 3 and 4
Grimsby- Casablanca Boulevard	Orchard	Class 3
Beamsville- Ontario Street	Orchard and cash crop.	Class 3
Vineland- Victoria Avenue	Orchard	Class 2
St. Catharines- First Street	Cash crop and orchard/vineyard	Class 3

4.2.5 Hydrology and Water Quality

4.2.5.1 Hydrology

The study area and rail corridor spans across two major watersheds including the Hamilton Region, regulated by Hamilton Conservation Authority (HCA), and the Niagara Region, regulated by Niagara Peninsula Conservation Authority (NPCA). These watersheds are shown on Figures E-1 through E-7.

Hydrologically within these watersheds, the major watercourses flow is in a south to north direction. Most of the watercourses originate from the Niagara escarpment and flow north into Lake Ontario. Numerous watercourses in the Niagara Region are named after mile markers, (example Forty Mile Creek, Twenty Mile Creek). The major watercourses crossing the rail corridor from the east to west side of the study area are summarized in Table 4.8. There are several smaller tributaries flowing north into Lake Ontario that are not associated with the medium to larger watercourses in each region.

Table 4.8 Major Watercourses in Study Area

Major Watercourse	Watershed
Redhill Creek	Hamilton Region
Stoney Creek	Hamilton Region
Forty Mile Creek	Niagara Region
Twenty Mile Creek	Niagara Region
Twelve Mile Creek	Niagara Region
Welland Canal	Niagara Region

4.2.5.2 Water Quality

Both the Hamilton and Niagara Region watersheds have numerous creeks that flow into Lake Ontario or the larger rivers including Twelve Mile Creek and the Niagara River. Water quality in each of the watercourses crossed along the rail ROW will change dependent on surrounding land uses. Typically, headwaters surrounded by agriculture with limited riparian setbacks will result in degraded water quality, but could improve downstream if efforts to maintain setbacks are applied. Headwaters that have been protected result in high quality water if they are not impacted by local groundwater pollution. Both watersheds have numerous tributaries that have been improved and some that have been degraded over time. A general synopsis of the water quality is presented below from east to west along the rail ROW. Information was collected from the Hamilton Harbour and Watershed Fisheries Management Plan (Bolby et al., 2009), Hamilton Conservation Authority (HCA, 2010), and the Niagara Peninsula Conservation Authority (NPCA, 2010).

Hamilton Region Watersheds

Redhill Creek

Upstream water quality has been impaired from agriculture and reduced riparian buffers. Many karsts in the escarpment allow for water to infiltrate into the groundwater system eventually discharging below the escarpment. Presence of good water quality indicator species such as salmon and pike downstream of the escarpment is encouraging although numerous anthropogenic inputs from storm water and industry have degraded water quality in the lower sections of this watercourse. Most of the watercourse has been altered and channelized although previous efforts and natural channel design have been used in an attempt to improve habitat and water quality. The water quality is degraded downstream from the escarpment to Lake Ontario from the numerous urban inputs.

Stoney Creek

Upstream and downstream water quality is generally poor based on the urban areas surrounding these watercourses. Many have been channelized from agriculture or development needs, therefore not allowing natural processes to occur. All watercourses in this area flow into Lake Ontario.

Niagara Region Watersheds

Forty Mile Creek

Water quality in Forty Mile Creek is suitable to support hardy warm water species upstream and downstream of the rail ROW. Most of the system exists in a rural area and development is not slated for the watershed. Poor water quality would be related to agriculture inputs and surrounding land use.

Twenty Mile Creek

This watershed is the second largest in the Niagara Peninsula's district. Most of the watershed is surrounded by vine land and agriculture land use in a rural setting. Water quality is considered good and the system supports migratory runs of salmonids and a resident warm water fish community. Above the escarpment coldwater species exist in the head waters along with sections downstream of Ball's Falls

where juvenile salmonids exist from natural reproduction. New development and intensification in developed areas have the potential to increase storm water runoff in the Twenty Mile Creek watershed, since formerly grassed areas may be paved over. Water quality decreases closer to Lake Ontario due to siltation and suspended sediments in a lacustrine environment prior to discharging into Lake Ontario.

Twelve Mile Creek

This diverse watershed includes lakes, large rivers, creeks, and streams. Sections of this watercourse are used for hydro power and other potential projects have been considered. Water quality is rated as poor based on inputs from agriculture, storm water, urban development and industry. Elevated levels of nutrients (phosphorus), significantly contributes to the poor water quality found in the main stem and impoundments. Although water quality is rated as poor, numerous fish species (59) use this system including the American eel listed under the *Endangered Species Act* as endangered. Headwaters in this watershed support naturally producing brook trout that require pristine water quality. Water quality degrades closer to urban areas and Lake Ontario.

Welland Canal

This manmade canal extends 42 km from Port Weller on Lake Ontario upstream to Port Colbourne, located on Lake Erie. The canal is used by commercial ships to access Lake Ontario and Lake Erie by avoiding the Niagara Falls by using lift locks. Samples obtained from Welland River stations received water quality ratings of marginal to poor with exceedances of nitrates, total phosphorus and E. coli that exceed the applicable federal and provincial guidelines and objectives for surface water quality. Algae was observed at these sites during summer months and is also invaded by non-native zebra mussels. The best water quality rating for the Welland River is observed at stations where water quality is improved by direct mixing of water from inflow from the Niagara River as it is redirected up the Welland River as part of the hydroelectric operations (NPCA 2010). The canal has allowed for the distribution of non-native species to enter Lake Erie and other great lakes upstream such as the sea lamprey, round goby and zebra mussels. Numerous watercourses drain into the Welland Canal throughout its length.

4.2.6 Aquatic Environment

4.2.6.1 Designated Species

Maps from the Department of Fisheries and Oceans (DFO) and Conservation Ontario were reviewed for Species at Risk (SAR) which receive protection under the *Species At Risk Act* and the *Ontario Endangered Species Act* for the alternative station and train layover sites. The following species were noted:

Fish

American eel (*Anguilla rostrata*)

The American eel and its habitat are protected by the Canadian *Fisheries Act*. In April 2006, the American eel was assessed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) as Special Concern, although it is not listed under the Canadian *Species at Risk Act* (COSEWIC, 2006). In

Ontario, the American eel is protected under the *Endangered Species Act, 2007* and is listed as Endangered provincially. This regulation protects the species from being killed or harmed.

Adults are catadromous meaning that they migrate from freshwater to saltwater to reproduce as far away as the Sargasso Sea in the North Atlantic near Bermuda. In Ontario, the American eel uses a variety of habitats and is known to climb over vertical structures such as dams (pers comm., Ian Barrett, NPCA). Typical habitats in fresh water include large rivers to first order streams with a variety of substrate types. Over-wintering occurs under muddy sediments in freshwater. American eel are known to forage on small fish (introduced round goby), crayfish, and invertebrates and historically was a major commercial species.

American Eel appear to be in decline throughout their global range, and in Ontario this decline has been precipitous (about 90%). Threats to American eel include: overfishing; mortality by hydroelectric turbines during downstream migration; hydro dams that inhibit upstream migration; and habitat loss/degradation. Changes to the ocean currents that aid the distribution of larval eel may also have had a negative influence on their abundance in the northern portion of their range (Tremblay et al., 2006).

Sections of Francis Creek a tributary of Twelve Mile Creek that flows into Martindale Pond are highlighted on the DFO Aquatic Species at Risk mapping for American eel. One of these highlighted sections is located at the southwest corner of the Vansickle Road alternative train layover site (LA4, Mile 13). The east and west branch of Francis Creek also flows south adjacent to the First Street alternative train layover site (LA5, Mile 13) although no watercourses exist on this site. According to Table 6.2, these two sites have not been identified as preferred alternatives.

Grass pickerel (*Esox americanus vermiculatus*)

In Canada, its range is disjunct and is represented by several populations in southwestern Quebec and southern Ontario, including southwestern Lake Ontario. Populations of this species have been identified as Special Concern by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC). It is currently listed as Schedule 1, Special Concern under the federal *Species at Risk Act* (SARA). Protection is also afforded through the federal *Fisheries Act*.

The grass pickerel requires habitat characterized by warm, slow-moving streams, ponds and shallow bays of larger lakes, with clear to tea-coloured water, and abundant aquatic vegetation. Bottom substrate is usually mud with exceptions of rock and gravel. Adults reach sexual maturity by two years of age. Spawning occurs primarily in the spring in water temperatures of 8° to 12°C; however, there is evidence of late summer to winter spawning as well. Eggs are demersal and adhere to vegetation. No nest is built and neither eggs nor young are provided parental care. The lifespan of the grass pickerel is seven years or less (Environment Canada, 2010).

Critical habitat noted for this species was not observed on any of the sites covered under this ESR.

Mussels

No mussel Species at Risk were noted for any of the alternative station or train layover sites.

4.2.6.2 Aquatic Habitat

No changes to the existing railway track are proposed therefore only the watercourses directly associated with alternative station and train layover sites will be discussed in detail. Eight of the sixteen alternative sites have watercourses on or directly adjacent to them.

The Hamilton and Niagara Regions encompass many watersheds that ultimately flow into Lake Ontario. All watercourses and associated watersheds that are traversed by the existing railway corridors are regulated by the Hamilton Conservation Authority (HCA) and the Niagara Peninsula Conservation Authority (NPCA).

Within the HCA watershed, watercourses along the rail ROW include: Redhill Creek, Battlefield Creek, Stoney Creek, Fifty Creek and tributaries. Within the NPCA watershed, major watercourses along the rail ROW include: Forty Mile Creek, Thirty Mile Creek, Twenty, Eighteen, Sixteen, and Twelve Mile Creeks, the Welland Canal, Eight, Six and Four Mile creeks. Based on the need for additional stations and train layover sites, land will be acquired to construct these facilities and may have an impact on adjacent watercourses. Most watercourses in these two regions that intersect the rail ROW originate from the Niagara escarpment and flow into Lake Ontario with limited catchment area with the exception of the Welland Canal which flows from Lake Erie.

The following sections provide a general description of the main watercourses along the rail ROW in the Hamilton and Niagara Regions.

Hamilton Region

Redhill Creek

At present, 60% of the watershed has urban type drainage (i.e. rain is collected or conveyed in storm sewers, catch basins, roadways or channelized watercourses). In approximately 45% of this area, storm water runoff is combined with "sanitary" sewage from residences and other buildings, which contributes to water quality problems in the creek system (RCWAP, 1998). Despite poor aquatic conditions and water quality issues, Redhill Creek provides direct fish habitat that supports runs of migratory salmonids from Lake Ontario, resident sportfish species (northern pike) and suitable forage base (minnows and cyprinids).

Battlefield Creek and Stoney Creek

Battlefield Creek and Stoney Creek originate south of the escarpment and converge to eventually drain into Lake Ontario. The watershed is made up of urban land uses below the escarpment, with rural land uses primarily above the escarpment. This area will see intensification of the existing urban areas and a further 10% of the watershed will be developed with urban land uses. Soil thickness is low in the Stoney Creek watershed above the escarpment, allowing precipitation to recharge the groundwater supply. The water running through Stoney Creek is of poor quality, and parts of the creek may be susceptible to flooding (City of Hamilton, 2010b).

Fifty Creek and Smaller Stoney Creek Watercourses

Fifty Creek and other smaller watercourses in the Stoney Creek area originate from the escarpment and drain into Lake Ontario. A significant portion of this watershed area is urban, with most of the development concentrated around the QEW corridor. This watershed will see intensification of existing urban areas and some additional urban development. Most of the streams in this watershed below the escarpment have been channelized, meaning that the natural meandering course of the stream has been changed to a straight linear alignment. This has reduced the capacity of these streams, thereby posing a risk of flooding. Some sandy soils in the Stoney Creek watercourses watershed allow water to soak into the ground to recharge the groundwater supply. The quality of water flowing through the Fifty and Stoney Creek Watercourses is characterized as impaired with high temperatures, which also impacts the fish communities (City of Hamilton, 2010b).

Niagara Region

Forty Mile Creek

Draining the eastern end of the City of Hamilton this watercourse supports a warm water fish community. Water quality in Forty Mile Creek is suitable to support hardy species upstream and downstream of the rail ROW. Most of the system exists in an urban area and development is not slated for the watershed area.

Thirty Mile Creek

Thirty Mile Creek is one of many creeks that cascades down the Niagara Escarpment. The creek flows through a 25 m deep valley over a series of rock ledges, into a short plain and discharges to Lake Ontario. Like other small streams in the NPCA jurisdiction, water quality and aquatic health is dependent on surrounding land use. Limited information was available for this watercourse.

Twenty Mile Creek

This watershed is the second largest in the Niagara Peninsula's district. Most of the watershed is surrounded by vine land and agriculture land use in a rural setting. Water quality is considered good and the system supports migratory runs of salmonids and a resident warm water fish community. Above the escarpment coldwater species exist in the head waters along with sections downstream of Ball's Falls where juvenile salmonids exist from natural reproduction. Water quality decreases closer to Lake Ontario due to siltation and suspended sediments in a lacustrine environment prior to discharging into Lake Ontario. Main sources of impairment would be associated with agricultural run-off and temperature.

Eighteen and Sixteen Mile Creeks

The Niagara Escarpment cuts through the watershed of Eighteen and Sixteen Mile Creeks. Steep slopes characterize the upper watershed with flat plains sloping gently to Lake Ontario in the lower reaches. The watershed is characterized by speciality crop areas, above and below the Niagara Escarpment, as defined in the *Greenbelt Plan*. Speciality crop areas include tender fruit (peaches, cherries, plums), grapes, other fruit crops. Aquatic habitat is considered good in the watershed with important and critical fish habitat found in most of the main branches of Sixteen and Eighteen Mile Creek. Many of their tributaries are

critical habitat. The embayments near the mouths of the creeks entering into Lake Ontario are also considered critical fish habitat.

Twelve Mile Creek

This diverse watershed includes lakes, large rivers and streams and is used for hydro power in certain sections. Water quality is rated as poor based on inputs from agriculture, storm water, urban development and industry. Elevated levels of nutrients (phosphorus) significantly contribute to the low water quality. Although water quality is rated as poor, numerous fish species (59) use this system including the American Eel listed under the Endangered Species Act as endangered.

Welland Canal

This manmade canal extends 42 km from Port Weller on Lake Ontario upstream to Port Colbourne, located on Lake Erie. The canal is used by commercial ships to access Lake Ontario and Lake Erie by avoiding the Niagara Falls by using lift locks. Water quality is suitable for aquatic life and supports a tolerant diverse warmwater fish community. Fish species from Lake Ontario also utilize lower sections of the canal depending seasonal conditions. Welland River water quality is improved by direct mixing of water from inflow from the Niagara River as it is redirected up the Welland River as part of the hydroelectric operations (NPCA 2010). The canal has allowed for the distribution of non-native species to enter Lake Erie and other upper great lakes such as the sea lamprey, round goby and zebra mussels. Numerous watercourses drain into the Welland Canal throughout its length.

Eight, Six and Four Mile Creeks

These three watercourses are covered under the Niagara on the Lake Watershed (NOTL) based on NPCA mapping which the CN tracks cross upper reaches of all three watercourses. Based on a review of the NOTL Watershed Plan all three watercourses support a tolerant/diverse warmwater fish community during warm months and a migratory coldwater fish community during spring and fall. Juvenile salmonids were captured in all three watercourses downstream of the CN tracks based on the capture records from annual 2006 sampling events (Aquafor Beach, 2008). Water quality was observed as nutrient rich and could be contributed to the surrounding land use for agriculture/vineland.

4.2.6.3 Station and Layover Alternatives

Aquatic resources observed in, and adjacent to, the station alternatives and train layover sites are described below. Watercourses at each station or train layover alternative are shown on Figures N-1 through N-16. Watercourses throughout the study corridor are shown on Figures E-1 through E-7.

Field visits were conducted at alternative stations and train layover sites in March and September 2010. Aquatic resources at the alternative sites were assessed visually in the field and a written description of fish habitat assessed is provided in the following sections.

Watercourses and aquatic habitats adjacent to the alternative station and train layover sites are described below and presented on Figures N-1 through N-16.

Hamilton – James Street North

No watercourses on or adjacent to the site.

Hamilton – Confederation

This site is located in a highly developed area with primarily commercial and industrial land use. There was a 31 cm corrugated plastic culvert located at the edge of the parking lot, near the existing restaurant. There was no standing, or flowing water in the culvert during the site investigation. There was a dry low channel that appears to carry stormwater towards the middle of the site, where the channel disperses. There was also standing water located along the toe of slope, near the motel, at what appeared to be a head wall. No clear defined channel was located on either side of the rail line. Based on conditions during the site investigation, potential for breeding amphibians may exist in the ponded area, although confirmation would need to be made. Based on the limited availability of habitat for aquatic life and surrounding land use (industrial/commercial) this ponded area may be a nuisance for mosquitoes and could be improved.

Hamilton – Centennial Parkway

No watercourses on or adjacent to the site.

Hamilton – Fruitland Road

A watercourse/drainage channel was observed along the western boundary of the site that collects water from the industrial lands up-gradient. The channel was trapezoidal in shape with a linear alignment then heading due west along the south side of the CNR tracks. Observations of a channel lined with phragmites (*Sp.*) and sparse cattails along with multiple drainage threads confirmed limited flow. Substrate consisted of fine-grained sediments although a defined bed was not observed through most of its length. The drainage would be classified as seasonal to convey flow during high water in this location. Based on Hamilton Conservation Authority GIS data, this watercourse is un-classified.

Hamilton – Fifty Road West

No watercourses on or adjacent to the site.

Hamilton – Fifty Road East

Fifty Creek runs adjacent to the eastern boundary of the site and eventually flows into Lake Ontario. The headwaters originate in agricultural areas flowing northward over a shale plain. Fifty Creek is included in the numbered watercourses associated with the Stoney Creeks watershed. This watercourse includes the Fifty Mile Wetland Complex, Fifty Creek Valley, and the Fifty Point Conservation ESAs. It is anticipated that this watercourse adjacent to the site would support a warm water fish community and the ponds located downstream of the QEW in the Fifty Point Conservation Area are stocked periodically with rainbow trout and have a resident population of largemouth bass. The drainage would be classified as permanent in this location.

Hamilton – Lewis Road

A drainage ditch flowing north under Barton Street towards the site was observed along an access road oriented north to the rail ROW. The ditch was dry at the time of investigation (April 23, 2010) and did not appear to have permanent flowing water. Mature trees were observed in the ditch along with organic soils. A dug pond was observed just south of the site with an outlet to the ditch and associated concrete channel that appeared to be used for irrigation purposes, possibly for former vine land. The ditch at this location would dissect the site and remained dry with no flowing water. The HCA did not have any information on this watercourse and it did not provide permanent fish habitat due to the conditions observed (dry) based on the time of the year (spring). Water quality in the pond was considered low based on the turbidity and algae present.

A separate ditch was observed along the west side of Lewis Road flowing to the north. The ditch had flowing water although no aquatic life was observed. Drainage was directed under the rail ROW to a larger ditch flowing northwest along the north side of the rail ROW.

Grimsby – Casablanca Boulevard

No watercourses on or adjacent to the site.

Grimsby – VIA Station

This site is located in a highly developed area with primarily residential land use and transportation corridors surrounding the proposed site. The watercourse on this site flows directly into Grimsby Harbour and along the west side of Maple Avenue. This unnamed watercourse was characterized by a moderate grade, linear alignment with permanent flow. Substrate consisted of sand and gravel with concrete slab along the banks and primarily run/flats morphology. Two storm water outlets were observed just upstream of the culvert under the CNR tracks and Clarke Street. A minor drop in the invert of the culvert was observed and may be a barrier to fish movement. Riparian area consisted mainly of mature deciduous trees with limited ground cover or low lying plants or shrubs. NPCA have not assessed this watercourse based on their GIS and mapping information.

Grimsby – Bartlett Avenue

A small watercourse/drainage feature exists on the west end of the property between the CNR tracks and the South Service Road. The watercourse is characterized by a limited depth of water flowing through a linear channel with rip rap substrate. Riparian vegetation was limited to grasses. Alteration to the bed and banks of the channel may have occurred recently and the depth of water noted in the concrete box culvert was shallow and may not provide access for fish. This watercourse has been flagged as Type 2 Habitat by NPCA although the majority of its length is covered from the site downstream to Lake Ontario.

Beamsville – Ontario Street

An area of ponded water was observed south of the CNR tracks, East of Ontario Street, along a narrow strip of shrubs and mature deciduous trees. This area was frozen at the time of the site visit and did not appear to flow into a natural watercourse. The above noted conditions may be a result of lot grading allowing water to pond in that location. Potential for breeding amphibians may exist in the ponded area,

although confirmation would need to be made through field survey. Based on the limited availability of habitat for aquatic life and surrounding land use (industrial/residential) this ponded area may be a nuisance for mosquitoes and could be improved.

West of Ontario Street there was a watercourse, Konkle Creek, and stormwater management pond located adjacent to the far western limits of the site. This site was comprised of orchard and agriculture land use. This watercourse had some sinuosity and semi-mature riparian habitat. Substrates were observed as gravel/cobble with some sandy areas characterized by a run and short riffle morphology and permanent flow. A weir structure was observed just north of the rail ROW and may be a barrier to fish movement. Riparian area consisted mainly of mature deciduous trees with limited ground cover or low lying plants or shrubs.

Vineland – Victoria Avenue

This site is comprised of a large orchard with overland drainage entering the watercourse. The watercourse appeared similar to a drain with a linear alignment and trapezoidal channel dimensions. Substrate was primarily fine grained with some concrete and brick visible. Erosion was evident due to limited root structure and fluctuating water levels associated with numerous closed tiles and overland drainage from agriculture operations. A channel south of the CNR tracks originates from storm water sources conveyed in closed concrete pipe. No riparian vegetation was observed along the length of the watercourse on this site. Limited cover provided by shrubs adjacent to the CNR tracks was observed along the storm water outlet. This watercourse has not been classified by NPCA based on a review of the GIS data.

St. Catharines – First Street

No natural vegetation communities are present on this site. The site is entirely in agricultural use with cash crops and a vineyard on the site and an orchard to the south. The east branch of Francis Creek is located north of the CNR tracks and south of the future St. Catharines hospital site (currently being constructed). A small watercourse was observed entering Francis Creek at the concrete box culvert under First Street and is classified as Type 2 habitat based on NPCA GIS mapping. Observations during the site visit confirmed a barrier to fish movement (of the smaller watercourse) at the confluence adjacent to the concrete box culvert. A western branch of Francis creek exists west of the site and Third Street Louth, which based on it location will not be impacted from site operations. This watercourse had some sinuosity and semi-mature riparian habitat. Substrates were observed as gravel/cobble with some sandy areas characterized by a run and short riffle morphology. This section of Francis Creek would be direct fish habitat and was classified as Type 2 habitat by the NPCA.

St. Catharines – Vansickle Road

Outside of the small aggregate extraction site and processing facility, the majority of this site is comprised of old field meadow with a variety of common grasses and forbs including goldenrod and aster species. A small cattail marsh is located in a depression where earth moving and extraction has taken place. Francis Creek, a tributary of Twelve Mile Creek flows into Martindale Pond downstream of the site. Francis Creek has been highlighted by DFO for American eel (pers comm. Ian Bartlett of NPCA) designated as Special

Concern based on COSEWIC and listed as endangered by MNR under the *Endangered Species Act*. Based on a review of background fisheries data gathered by HATCH for the proposed hydroelectric dam on Twelve Mile Creek, American eel were captured in two locations in the watershed (HATCH, 2008). Francis Creek in this location has limited riparian vegetation consisting of immature hardwood species and shrubs, cattails within the channel and is bound by fencing for protection from surrounding development. Based on GIS mapping available from NPCA, this watercourse has not been classified upstream of First Street and considered Type 2 Habitat (warm water) downstream of First Street. Access to the creek channel was limited due to fencing although a riprap lined channel was observed with an abundance of cattail growth.

St. Catharines – VIA Station

No watercourse or drainage features were noted on-site.

St. Catharines – Glendale

No watercourse or drainage features were noted on-site.

Niagara VIA Station

No watercourse or drainage features were noted on-site.

4.2.7 Terrestrial Environment

4.2.7.1 Designated Sites

There are no designated sites located on or directly adjacent to the alternative station and train layover site areas. There are, however, a few designated sites located within 120 m of some of the alternative station sites. These are summarized in Table 4.9.

Table 4.9 Designated Sites

Site Name	Significance	Designation	Location in Respect of Closest Station Site
Irish Grove	Local	Life Science ANSI	15 m west of Casablanca Boulevard site
Welland Canal Wood	Local	Marginal ESA	45 m south (across rail line) from Glendale Avenue site
Niagara Gorge	Provincial	Life Science ANSI	90 m east of Niagara Falls VIA site
Niagara River Bedrock Gorge	Provincial	Earth Science ANSI	90 m east of Niagara Falls VIA site

4.2.7.2 Designated Flora

The Natural Heritage Information Centre (NHIC) database was reviewed for records of rare flora in the vicinity of each layover and station alternative. Most records were historical dating back to 1889 and no longer relevant to the sites. No rare flora species were identified during field investigations.

A summary of rare flora species records is provided in Table 4.10.

4.2.7.3 Designated Fauna

The NHIC and Ontario Breeding Bird Atlas (OBBA) databases were reviewed for records of rare fauna at each layover and station alternative. A number of records were historical and no longer relevant. In addition, most records were noted from the general vicinity of the site and suitable habitat was not present to support the species. Only the following records are potentially relevant:

- Hamilton James Street North- Peregrine falcon;
- Hamilton Lewis Road- Red-headed woodpecker;
- St. Catharines VIA Station- Red-headed woodpecker; and,
- St. Catharines Glendale- Red-headed woodpecker.

The Peregrine falcon is listed under the both the Canadian *Species At Risk Act* and the Ontario *Endangered Species Act* as Threatened and is also listed on Schedule 1. The Red-headed woodpecker is listed under Canadian *Species At Risk Act* as Threatened and is also listed on Schedule 1. The Red-headed woodpecker is designated as Special Concern under the Ontario *Endangered Species Act*.

The St. Catharines sites are surrounded by densely developed areas. The Red-headed woodpecker prefers open woodlands, forest edges and urban parks. Although suitable habitat is potentially present, the species is unlikely to inhabit either site.

Peregrine falcons are known to nest on a ledge of the Sheraton Hotel in central Hamilton. The nesting site is several city blocks, approximately 1 km, from the proposed James Street North Station. Peregrine falcons are tolerant of urban conditions and are unlikely to be affected by additional train traffic, construction and layover uses in an existing urban core.

A summary of rare fauna species records is provided in Table 4.11.

Table 4.10 Designated Flora

Alternative Station/Train Layover Site	Common Name	Scientific Name	S-Rank	Provincial Status	Federal Status	SARA Schedule	Record Date	Relevance of Record/ Presence of Suitable Habitat
Hamilton James St. North	Puttyroot	<i>Aplectrum hyemale</i>	S2				1889	Historical record, no longer relevant.
	Yellow Stargrass	<i>Hypoxis hirsuta</i>	S3				1898	Historical record, no longer relevant.
Hamilton Centennial Pkwy. West	No rare species records							
Hamilton Centennial Pkwy.	No rare species records							
Hamilton Fruitland Road	No rare species records							
Hamilton Lewis Road	Pawpaw	<i>Asimina triloba</i>	S3				1994	Site previously in agricultural use. Species is unlikely to be present in regenerating/ cultural thicket and cultural woodland areas.
	Eastern Few-fruited Sedge	<i>Carex oligocarpa</i>	S3				1975	Historical record, no longer relevant.
	Cucumber Tree	<i>Magnolia acuminata</i>	S2	END	END	1	1980	Historical record, no longer relevant.
	Perfoliate Bellwort	<i>Uvularia perfoliata</i>	S1				1977	Historical record, no longer relevant.
Hamilton Fifty Road	No rare species records							
Grimsby Casablanca Boulevard	Eastern Flowering Dogwood	<i>Cornus florida</i>	S2?		END	1	1979	Historical record, no longer relevant.
	Red Mulberry	<i>Morus rubra</i>	S2	END	END	1	1943	Historical record, no longer relevant.
Grimsby VIA Station	White-tinged sedge	<i>Carex albicans var. albicans</i>	S3				1981	Historical record, no longer relevant.
	Pawpaw	<i>Asimina triloba</i>	S3				1994	Grows best in rich, moist bottomlands; habitat not present on site.
Grimsby Bartlett Ave.	American Chestnut	<i>Castanea dentata</i>	S2	END	END	1	1993	Significant recent development in area; not likely present.
Beamsville Ontario St.	No rare species records							
Vineland Victoria Ave.	Broad Beech Fern	<i>Phegopteris hexagonoptera</i>	S3	SC	SC	3	1940	Historical record, no longer relevant.
	Shellbark Hickory	<i>Carya lacinosa</i>	S3				1955	Historical record, no longer relevant.
	Kentucky Coffeetree	<i>Gymnocladus dioicus</i>	S2	THR	THR	1	1947	Historical record, no longer relevant.
St. Catharines First St.	No rare species records							
St. Catharines Vansickle Road	No rare species records							
St. Catharines VIA Station	No rare species records							
St. Catharines Glendale Ave.	Pawpaw	<i>Asimina triloba</i>	S3				1954	Historical record, no longer relevant.
Niagara Falls VIA Station	No rare species records							

S-Rank Definitions

- S1 **Critically Imperiled** – Critically imperiled in the nation or state/province because of extreme rarity (often five or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.
- S2 **Imperiled** – Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.
- S3 **Vulnerable** – Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
- S4 **Apparently Secure** – Uncommon but not rare; some cause for long-term concern due to declines or other factors.
- S5 **Secure** – Common, widespread, and abundant in the nation or state/province.
- ? **Rank Uncertain**
- SZ **Not of practical conservation concern** inasmuch as there are no clearly definable occurrences; applies to long distance migrants, winter vagrants, and eruptive species, which are too transitory and/or dispersed in their occurrence(s) to be reliably mapped; most such species are non-breeders, however, some may occasionally breed.

Status Definitions

END	Endangered
THR	Threatened
SC	Special Concern
NAR	Not at Risk

SARA Schedule

The Act establishes Schedule 1, as the official list of wildlife species at risk. It classifies those species as being either extirpated, endangered, threatened, or a special concern. Once listed, the measures to protect and recover a listed wildlife species are implemented. Species that were designated at risk by COSEWIC (Committee on the Status of Endangered Wildlife in Canada) prior to October 1999 must be reassessed using revised criteria before they can be considered for addition to Schedule 1 of SARA. After they have been assessed, the Governor in Council may on the recommendation of the Minister, decide on whether or not they should be added to the List of Wildlife Species at Risk. Species under consideration for Schedule 1 are placed on either Schedule 2 or Schedule 3. Only Schedule 1 species receive protection.

Table 4.11 Designated Fauna

Alternative Station/Train Layover Site	Common Name	Scientific Name	S-Rank	Provincial Status	Federal Status	SARA Schedule	Record Date	Relevance of Record/ Presence of Suitable Habitat
Hamilton James St. North	Least Bittern	<i>Ixobrychus exilis</i>	S4	THR	THR	1		Urban centre, no habitat present
	Bald Eagle	<i>Haliaeetus leucocephalus</i>	N/A	SC	NAR			Urban centre, no habitat present
	Peregrine Falcon	<i>Falco peregrinus</i>	S3	THR	THR	1		Building ledges may provide habitat
	Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	S4	SC	THR	1		Urban centre, no habitat present
	Louisiana Waterthrush	<i>Seiurus motacilla</i>	S3	SC	SC	1		Urban centre, no habitat present
Hamilton Confederation	Stinkpot	<i>Sternotherus odoratus</i>	S3	THR	THR	1		Requires open water; not present on site
	Blanding's Turtle	<i>Emydoidea blandingii</i>	S3	THR	THR	1	1930, 1987	Historical record, no longer relevant
	Prothonotary Warbler	<i>Protonotaria citrea</i>	S1	END	END	1		Nests in deciduous forested swamps; not present on site
	Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	S4	SC	THR	1		Prefers open woodlands, forest edges, urban parks; very small treed area present; not likely suitable
	Short-eared Owl	<i>Asio flammeus</i>	S2	SC	SC	3		Prefers deep grasslands, abandoned pastures; insufficient grassland present
Hamilton Centennial Pkwy.	Stinkpot	<i>Sternotherus odoratus</i>	S3	THR	THR	1		Requires open water; not present on site
	Blanding's Turtle	<i>Emydoidea blandingii</i>	S3	THR	THR	1	1930, 1987	Historical record, no longer relevant
	Prothonotary Warbler	<i>Protonotaria citrea</i>	S1	END	END	1		Nests in deciduous forested swamps; not present on site
	Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	S4	SC	THR	1		Prefers open woodlands, forest edges, urban parks; very small treed area present; not likely suitable
	Short-eared Owl	<i>Asio flammeus</i>	S2	SC	SC	3		Prefers deep grasslands, abandoned pastures; insufficient grassland present

Alternative Station/Train Layover Site	Common Name	Scientific Name	S-Rank	Provincial Status	Federal Status	SARA Schedule	Record Date	Relevance of Record/ Presence of Suitable Habitat
Hamilton Fruitland Road	Prothonotary Warbler	<i>Protonotaria citrea</i>	S1	END	END	1		Nests in deciduous forested swamps; not present on site
	Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	S4	SC	THR	1		Prefers open woodlands, forest edges, urban parks; no treed habitat present
	Short-eared Owl	<i>Asio flammeus</i>	S2	SC	SC	3		Prefers deep grasslands, abandoned pastures; habitat potentially present but surrounded by industrial development
Hamilton Lewis Road	Timber Rattlesnake	<i>Crotalus horridus</i>	SX	EXP	EXP	1	1950	Historical record, no longer relevant
	Jefferson Salamander	<i>Ambystoma jeffersonianum</i>	S2	THR	THR	1	1991	The irrigation pond is of poor water quality and is unlikely to provide suitable breeding habitat. No other vernal pools or ponded areas are present. Woodlands are immature and open and would not provide suitable habitat.
	Arrow Clubtail	<i>Stylurus spiniceps</i>	S2					Nymphs inhabit medium to large swift-flowing, sandy-bottomed rivers. Habitat is not present on site.
	Black-crowned Night-heron	<i>Nycticorax nycticorax</i>	S3				1936	Historical record, no longer relevant
	Prothonotary Warbler	<i>Protonotaria citrea</i>	S1	END	END	1		Nests in deciduous forested swamps; not present on site
	Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	S4	SC	THR	1		Prefers open woodlands, forest edges, urban parks; habitat potentially present
	Short-eared Owl	<i>Asio flammeus</i>	S2	SC	SC	3		Prefers deep grasslands, abandoned pastures; habitat potentially present but surrounded by industrial development
Hamilton Fifty Road	Hooded Warbler	<i>Wilsonia citrina</i>	S3	THR	THR	1		Requires interior forest habitat; not present on site
Grimsby Casablanca Boulevard	JeffersonXBlue-spotted (Jeff dominant)	<i>Ambystoma hybrid</i>	N/A	N/A	NAR		2002	Requires vernal pools in mature forest; habitat not present
	Hooded Warbler	<i>Wilsonia citrina</i>	S3	THR	THR	1		Requires interior forest habitat; not present on site
Grimsby VIA Station	Hooded Warbler	<i>Wilsonia citrina</i>	S3	THR	THR	1		Requires interior forest habitat; not present on site
Grimsby Bartlett Ave.	Grey Fox	<i>Urocyon cinereoargenteus</i>	N/A	THR	THR	1	1991	Prefers to inhabit dense forests and marshes; habitat not present
	Hooded Warbler	<i>Wilsonia citrina</i>	S3	THR	THR	1		Requires interior forest habitat; not present on site
Beamsville Ontario St.	Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	S4	SC	THR	1		Prefers open woodlands, forest edges, urban parks; very small treed area present; not likely suitable
Vineland Victoria Ave.	Barn Owl	<i>Tyto alba</i>	S1	END	END	1	1988	Open fields or agricultural lands, nest in hollow trees or abandoned structures; nesting habitat not present
	Yellow-breasted chat	<i>Icteria virens</i>	S2	SC	SC	1		Prefers thickets and dense shrubbery; habitat not present on site
St. Catharines First St.	Hooded Warbler	<i>Wilsonia citrina</i>	S3	THR	THR	1		Requires interior forest habitat; not present on site
	Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	S4	SC	THR	1		Prefers open woodlands, forest edges, urban parks; no treed habitat present

Alternative Station/Train Layover Site	Common Name	Scientific Name	S-Rank	Provincial Status	Federal Status	SARA Schedule	Record Date	Relevance of Record/ Presence of Suitable Habitat
St. Catharines Vansickle Road	Least Bittern	<i>Ixobrychus exilis</i>	S4	THR	THR	1		Nest in fresh water marshes and swamps; no habitat present on site
	Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	S4	SC	THR	1		Prefers open woodlands, forest edges, urban parks; no treed habitat present
	Acadian Flycatcher	<i>Empidonax vireescens</i>	S2S3	END	END	1		Requires interior forest habitat; not present on site
	Hooded Warbler	<i>Wilsonia citrina</i>	S3	THR	THR	1		Requires interior forest habitat; not present on site
	Peregrine Falcon	<i>Falco peregrinus</i>	S3	THR	THR	1		Requires cliffs or building ledges near water; no habitat present on site
St. Catharines VIA Station	Least Bittern	<i>Ixobrychus exilis</i>	S4	THR	THR	1		Nest in fresh water marshes and swamps; no habitat present on site
	Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	S4	SC	THR	1		Prefers open woodlands, forest edges, urban parks; habitat potentially present
	Acadian Flycatcher	<i>Empidonax vireescens</i>	S2S3	END	END	1		Requires interior forest habitat; not present on site
	Hooded Warbler	<i>Wilsonia citrina</i>	S3	THR	THR	1		Requires interior forest habitat; not present on site
	Peregrine Falcon	<i>Falco peregrinus</i>	S3	THR	THR	1		Requires cliffs or building ledges near water; no habitat present on site
	Five-lined Skink	<i>Plestiodon fasciatus</i>	S3	END	END	1	1938	Historical record, no longer relevant
St. Catharines Glendale Ave.	Barn Owl	<i>Tyto alba</i>	S1	END	END	1	1955, 1977	Historical record, no longer relevant
	Least Bittern	<i>Ixobrychus exilis</i>	S4	THR	THR	1		Nest in fresh water marshes and swamps; no habitat present on site
	Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	S4	SC	THR	1		Prefers open woodlands, forest edges, urban parks; habitat potentially present
	Acadian Flycatcher	<i>Empidonax vireescens</i>	S2S3	END	END	1		Requires interior forest habitat; not present on site
	Hooded Warbler	<i>Wilsonia citrina</i>	S3	THR	THR	1		Requires interior forest habitat; not present on site
	Peregrine Falcon	<i>Falco peregrinus</i>	S3	THR	THR	1		Requires cliffs or building ledges near water; no habitat present on site
Niagara Falls VIA Station	Northern Dusky Salamander	<i>Desmognathus fuscus</i>	S1	END	NAR		1989	Requires streams or seepage areas; habitat not present
	Hooded Warbler	<i>Wilsonia citrina</i>	S3	THR	THR	1		Requires interior forest habitat; not present on site
	Acadian Flycatcher	<i>Empidonax vireescens</i>	S2S3	END	END	1		Requires interior forest habitat; not present on site

S-Rank Definitions

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- S2 **Imperiled** – Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.
- S3 **Vulnerable** – Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
- S4 **Apparently Secure** – Uncommon but not rare; some cause for long-term concern due to declines or other factors.
- S5 **Secure** – Common, widespread, and abundant in the nation or state/province.
- ? **Rank Uncertain**
- SX **Presumed Extirpated** – Species or community is believed to be extirpated from the nation or state/province.
- SZ **Not of practical conservation concern** inasmuch as there are no clearly definable occurrences; applies to long distance migrants, winter vagrants, and eruptive species, which are too transitory and/or dispersed in their occurrence(s) to be reliably mapped; most such species are non-breeders, however, some may occasionally breed.

Status Definitions

END **Endangered**
EXP **Extirpated**
THR **Threatened**
SC **Special Concern**
NAR Not at Risk\

SARA Schedule

The Act establishes Schedule 1, as the official list of wildlife species at risk. It classifies those species as being either extirpated, endangered, threatened, or a special concern. Once listed, the measures to protect and recover a listed wildlife species are implemented. Species that were designated at risk by COSEWIC (Committee on the Status of Endangered Wildlife in Canada) prior to October 1999 must be reassessed using revised criteria before they can be considered for addition to Schedule 1 of SARA. After they have been assessed, the Governor in Council may on the recommendation of the Minister, decide on whether or not they should be added to the List of Wildlife Species at Risk. Species under consideration for Schedule 1 are placed on either Schedule 2 or Schedule 3. Only Schedule 1 species receive protection.

4.2.7.4 Vegetation Communities

Field visits were conducted at alternative station and train layover sites in October 2009 and September 2010. Vegetation communities at the alternative sites were assessed using the Ecological Land Classification (ELC) for Southern Ontario (Lee et al. 1998). Vegetation communities in and adjacent to, the alternative sites at the time of survey are described below, summarized in tabular form in Appendix C3 and presented on Figures N-1 through N-16.

Hamilton – James Street North

This site was located in a highly urbanized environment. The site consisted of a gravel parking area and a cultural meadow (CUM1) that slopes from the parking lot down to the tracks. Species include goldenrod and aster species, curly dock, evening primrose and thistles. Scattered shrubs and trees were present including staghorn sumac and Manitoba maple.

Hamilton – Confederation

This site was located in a highly developed area with primarily commercial and industrial land use. The eastern half of the site was used for commercial purposes, restaurant and motel. The western portion of the site was naturalized and was in various stages of succession, including a cultural thicket (CUT1), to the north and Dry-Fresh Deciduous Forest (FOD4) forested community to the south.

Hamilton – Centennial Parkway

No natural vegetation communities were present at this site. Some trees and shrubs were present along the perimeter of the site and a number of large sycamore trees lined an old drive or entrance way.

Hamilton – Fruitland Road

Heavily disturbed old field cultural meadows (CUM1) were located both north and south of the rail ROW at this site. Unmaintained European grasses dominated the meadow northwest of rail ROW while goldenrod, asters, teasel, white sweet clover, Queen Anne's lace and scattered Manitoba maple, staghorn sumac and black locust dominated lands northeast and south of rail ROW.

Hamilton – Lewis Road

The east half of the site was in agricultural use, a portion of which included an orchard. The western half appeared to have been used for agriculture in the past and was in various stages of naturalization. Cultural meadow (CUM1), cultural thicket (CUT1) and cultural woodland (CUW1) communities were present.

Hamilton – Fifty Road

On the western side of Fifty Road there was an abandoned rural residence north of the rail ROW. The lawn surrounding the house had been unmaintained in recent years but was still dominated by European grasses. Surrounding the lawn was a moderately more natural cultural meadow (CUM1) with aster and goldenrod species, grasses, white sweet clover, teasel and scattered shrubs. Shrub cover became denser along the rail ROW, forming a cultural thicket community (CUT1). This community was dominated by silky dogwood, raspberry, buckthorn, rose species, Manitoba maple, elm and trembling aspen. The thicket extended south of the rail ROW.

On the eastern side of Fifty Road there were abandoned agricultural fields that had begun to naturalize forming a more natural cultural meadow (CUM1) with goldenrod species, grasses, white sweet clover, teasel and fruit trees. Shrub cover became denser along the rail ROW, where there was an existing hydro corridor, forming a cultural thicket community (CUT1). This community was comprised of shrubs with sparse tree cover and was dominated by raspberry, buckthorn, rose species, Manitoba maple, elm and trembling aspen.

Grimsby – Casablanca Boulevard

Three main vegetation types were present on this site. Lands south of the rail ROW included a rural residence with manicured lawn. To the east was a Mineral Cultural Thicket with rose species, Manitoba maple, white ash and shrubs including nannyberry and dogwood species. The thicket community extended north of the rail ROW into the eastern half of the site. The western half of the site was heavily disturbed with some old field re-growth. The community was characterized as an old field cultural meadow (CUM1) with abundant white sweet clover, curly dock, aster and goldenrod species and Queen Anne's lace. Several small patches of cattail marsh were located in depressions where ground has been disturbed.

Grimsby – VIA Station

This site was located in a highly developed area. Between Ontario Street and Maple Avenue, land slopes steeply away from the rail ROW. A culturally influence woodland (CUW1), predominantly comprised of Manitoba maple, was found along the slope. Other species included staghorn sumac and a large catalpa at the top of the slope near Ontario Street.

Grimsby – Bartlett Avenue

Much of this site was an old field meadow (CUM1) dominated by red clover and lesser quantities of bedstraw and vetch species and European grasses. A narrow strip of trees and shrubs was located along the rail ROW beneath a hydro corridor. Species included white ash, staghorn sumac, silver maple, buckthorn, trembling aspen and a variety of shrubs. A residential property with manicured lawn and a small orchard was located on the eastern portion of the site.

Beamsville – Ontario Street

The portion of the site located east of Ontario Street was characterized by manicured grass with a narrow strip of trees along rail ROW that widens into a Dry-Fresh Deciduous Forest (FOD4) with white ash stand at far eastern end. The portion of the site west of Ontario Street included old field meadow (CUM1) in an industrial site, as well as surrounding the stormwater pond. The lands west of Ontario Street were also used for cash crops and orchard purposes.

Vineland – Victoria Avenue

This site was in agricultural use, comprising a large orchard. No natural vegetation communities were present.

St. Catharines – First Street

No natural vegetation communities were present on this site. The site was entirely in agricultural use with cash crops and a vineyard on the site and an orchard to the south.

St. Catharines – Vansickle Road

Outside of the small aggregate extraction site and processing facility, the majority of this site was comprised of old field meadow (CUM1) with a variety of common grasses and forbs including goldenrod and aster species, Queen Anne's lace and curly dock. A small cattail marsh (MAS2) was located in a depression where earth moving and extraction had taken place.

St. Catharines – VIA Station

The majority of this site was characterized by an old field cultural meadow (CUM1) community. Species present included vetch, European grasses, Queen Anne's lace, knapweed and common milkweed. Portions of the meadow, particularly near the northern boundary have scattered areas of gravel fill. A Cultural Woodland (CUW1) was located in the centre of the meadow with a relatively open canopy and species including trembling aspen, Manitoba maple, weeping willow, silver maple, buckthorn and tamarack.

St. Catharines – Glendale

Lands north of the site were industrial while land to the south formed a treed slope characterized as a Dry-Fresh Sugar Maple Deciduous Forest (FOD) and dominated by species such as sugar maple, Manitoba maple, white ash and black walnut. Lands between the two tracks and immediately north of the rail ROW were characterized by a Mineral Cultural Thicket (CUT1) that included staghorn sumac, Manitoba maple, poplars and various other shrub species.

Niagara VIA Station

This site included the existing station, small parking area and passenger platform. An old field meadow area was located north of rail ROW with goldenrod, aster and grass species. North of the meadow was a treed berm that follows tracks to the west. Trees present include sugar maple, poplars, tamarack and ash in a Dry-Fresh Sugar Maple Deciduous Forest (FOD5).

4.3 Social/Cultural Environment

This section profiles the socio-economic characteristics of the major market areas that would utilize the proposed rail expansion service, including the City of Niagara Falls, City of St. Catharines, Town of Lincoln, Town of Grimsby and City of Hamilton. The data was obtained from Statistics Canada Population Census of 2001 and 2006. Statistics Canada conducts the census once every five years.

4.3.1 Population and Employment Characteristics

The population data for the five major communities in the study area was compared to Ontario's population during the same time period. The results are summarized in Tables 4.12 and 4.13.

Table 4.12 Populations in Study Area (Cities)

Census Year	Niagara Falls		St. Catharines		Hamilton		Ontario	
	Total	Change	Total	Change	Total	Change	Total	Change
2001	78,815		377,009		490,268		11,410,046	
2006	82,184	4.3%	390,317	3.5%	504,559	2.8%	12,160,282	6.6%

Source: Statistics Canada, Population Profile of Canada (2006).

Table 4.13 Populations in Study Area (Towns)

Census Year	Lincoln		Grimsby		Ontario	
	Total	Change	Total	Change	Total	Change
2001	20,612		21,297		11,410,046	
2006	21,722	5.4%	23,937	12.4%	12,160,282	6.6%

Source: Statistics Canada, Population Profile of Canada (2006).

With the exception of Grimsby, all communities grew at a rate less than the Ontario average. Towns tended to grow more over census periods than cities. The Town of Grimsby's population grew substantially more than all other communities with a population change of 12.4%.

Labour force activity in the five major communities in the study area was compared to Ontario's activity during the same time period. The results are summarized in Tables 4.14 and 4.15.

Table 4.14 Labour Force Activity in Study Area (Cities)

	Niagara Falls	St. Catharines	Hamilton	Ontario
Employment Rate	61.8%	60%	60.4%	62.8%
Unemployment Rate	6.2%	6.2%	6.5%	6.4%

Source: Statistics Canada, Population Profile of Canada (2006).

Table 4.15 Labour Force Activity in Study Area (Towns)

	Lincoln	Grimsby	Ontario
Employment Rate	65%	66.8%	62.8%
Unemployment Rate	3.5%	4.8%	6.4%

Source: Statistics Canada, Population Profile of Canada (2006).

The rate of employment in each of the communities was generally similar to the Ontario average. The Town's tended to have moderately higher rates of employment and substantially lower rates of unemployment compared to the cities and the provincial average.

The location of work relative to place of residence for all five major communities is summarized in Tables 4.16 and 4.17 below along with a comparison to the provincial norm.

Table 4.16 Place of Work (Cities)

	Niagara Falls	St. Catharines	Hamilton	Ontario
Worked at home	3.8%	6.1%	5.5%	7.1%
Worked outside Canada	1.4%	1.1%	0.4%	0.6%
No fixed workplace address	7.8%	8.6%	9.9%	9.7%
Worked in census subdivision of residence	58%	45.4%	59.1%	49.6%
Worked outside census subdivision of residence	29%	38.8%	25.2%	33.1%

Source: Statistics Canada, Population Profile of Canada (2006).

Table 4.17 Place of Work (Towns)

	Lincoln	Grimsby	Ontario
Worked at home	11.4%	8.4%	7.1%
Worked outside Canada	0.4%	0.5%	0.6%
No fixed workplace address	8.6%	9.6%	9.7%
Worked in census subdivision of residence	26.4%	20.8%	49.6%
Worked outside census subdivision of residence	53.2%	60.7%	33.1%

Source: Statistics Canada, Population Profile of Canada (2006).

The cities tended to reflect the provincial norm with about a third of the population traveling outside their home municipality for work while approximately half of the population worked within their home municipality. Both towns varied from the provincial norm with substantially fewer residents working in their home town and a far greater proportion of the population traveling outside of their local municipality for work.

The typical mode of transportation used by residence to get to work was compared to modes used by the average population in Ontario. Results are summarized in Tables 4.18 and 4.19.

Table 4.18 Mode of Transportation to Work (Cities)

	Niagara Falls	St. Catharines	Hamilton	Ontario
Car, truck or van as a driver	77.7%	81.0%	74.4%	71.0%
Car, truck or van as a passenger	10.8%	8.8%	9.0%	8.3%
Public transit	2.8%	2.5%	9.3%	12.9%
Walked or bicycled	7.2%	6.4%	6.3%	6.8%
All other modes	1.5%	1.1%	0.9%	1.0%

Source: Statistics Canada, Population Profile of Canada (2006).

Table 4.19 Mode of Transportation to Work (Towns)

	Lincoln	Grimsby	Ontario
Car, truck or van as a driver	86.0%	84.9%	71.0%
Car, truck or van as a passenger	7.0%	6.8%	8.3%
Public transit	0.5%	1.9%	12.9%
Walked or bicycled	5.9%	5.8%	6.8%
All other modes	0.6%	0.6%	1.0%

Source: Statistics Canada, Population Profile of Canada (2006).

For all communities traveling by car, truck or van as a driver was the most common mode of transportation. Hamilton had the highest percentage of the population using public transit but the overall use of public transit was lower in all communities than the provincial average. Use of public transit was particularly low in Lincoln and Grimsby, likely to do the lack of public transit options in these communities.

4.3.2 Built and Cultural Heritage

Burnside retained Archaeological Services Inc. (ASI) to complete a cultural heritage assessment for the proposed rail expansion from Hamilton to Niagara Peninsula (March 2010, Revised May 2010, October 2010). The assessment addressed both built heritage and cultural heritage landscapes at the alternative stations and train layover sites. ASI's full report is provided in Appendix C4. Thirty-six cultural heritage resources were identified within or adjacent to the study areas based on a review of municipal heritage inventories and field surveys. Key findings have been summarized below.

The Niagara Falls – VIA Station Site, St. Catharines – VIA Station Site, Grimsby – VIA Station Site, and Hamilton – James Street North Site study areas retain a number of cultural heritage resources that date back to, and are associated with, each site's original prominence along the Great Western Railway (now the Canadian National Railway). Construction of railway station buildings at these sites likely served as a nucleus for surrounding nineteenth century development patterns. Retention of these poignant structures has likely served to help preserve adjacent and related nineteenth century and early twentieth century

structures. While located outside of historic station communities, the St. Catharines – Vansickle Site, Vineland – Victoria Avenue Site, and Hamilton – Centennial Site and the Hamilton – Centennial West Site study areas, also retain cultural heritage resources directly associated with the railway, and the St. Catharines – First Street Site, the Beamsville – Ontario Street Site and the Hamilton – Fifty Road Site study areas retain cultural heritage resources associated with the nineteenth century settlement pattern of the area. In contrast, the St. Catharines – Glendale Site, Grimsby – Bartlett Avenue Site, Grimsby – Casablanca Boulevard Site, and Hamilton – Lewis Road Site study areas do not retain any cultural heritage resources. ASI recommends that any proposed rail service improvements undertaken between the James Street North Site in Hamilton and the Niagara Falls VIA Station Site should be suitably planned in a manner that avoids any identified, above ground, cultural heritage resources. ASI also recommends that once detailed design plans are available, that a qualified cultural heritage specialist evaluate each proposed design to confirm impacts on identified cultural heritage resources and to identify if detailed heritage impact assessments are required. Additionally, ASI also recommends that should the VIA Station Sites in Grimsby, St. Catharines and Niagara Falls be preferred station locations, that confirmation be made that the proposed developments will not directly impact rail stations, and if directly impacted, detailed heritage impact assessments should be undertaken.

4.3.3 Archaeology

ASI also completed a Stage 1 Archaeological Assessment for the study area (March 2010, Revised May 2010, October 2010). They assessed the potential for archaeological resources at each of the alternative stations and train layover sites. ASI's full report is provided in Appendix C5. Key findings have been summarized below.

Archaeological potential is confirmed when one or more features of archaeological potential are present. Based on Section 1.3.1 of the Ministry of Tourism and Culture's draft Standards and Guidelines for Consultant Archaeologists (2009), the study corridor meets four of the criteria used for determining archaeological potential including:

- Previously identified archaeological sites;
- Water sources: primary water source, or secondary water source; or past water sources;
- Areas of early Euro-Canadian settlement (i.e., Clifton, Merriton, St. Catharines, Grimsby, Hamilton); and,
- Early historical transportation routes (i.e., Great Western Railway).

Based on there field review and the attributes above, the percentage of archaeological potential at each alternative site was estimated based on the proportion of lands with Aboriginal and Euro-Canadian archaeological potential. Table 4.20 provides the results of ASI's estimation.

Table 4.20 Approximate Percentage of Archaeological Potential for Each Alternative

Site	Percentage (%)
Hamilton – James Street North	0%
Hamilton – Confederation	0%
Hamilton – Centennial Parkway	0%
Hamilton – Fruitland Road	0%
Hamilton – Lewis Road	90%
Hamilton – Fifty Road	85%
Grimsby – Casablanca Boulevard	30%
Grimsby – VIA Station	0%
Grimsby – Bartlett Avenue	0%
Beamsville – Ontario Street	80%
Vineland – Victoria Avenue	90%
St. Catharines – First Street	100%
St. Catharines – Vansickle Road	0%
St. Catharines – VIA Station	0%
St. Catharines – Glendale Avenue	0%
Niagara Falls – VIA Station	0%

Based on the above table, the Hamilton – Lewis Road, Hamilton – Fifty Road, Grimsby – Casablanca Boulevard, Beamsville – Ontario Street, Vineland – Victoria Avenue and St. Catharines – First Street alternatives have the potential for the recovery of archaeological resources. The remaining ten locations do not retain any archaeological potential. ASI recommends that a Stage 2 Archaeological Assessment be conducted on lands determined to have archaeological potential in order to identify any archaeological remains that may be present.

5.0 Concept Alternatives

5.1 Description of Concept Alternatives

The following concept alternatives were reviewed:

- Do Nothing;
- Transportation Demand Management (TDM);
- New or Expanded Commuter Rail Service;
- New or Expanded Bus Service; and,
- Expanded Road Capacity.

The concepts have been described below and are evaluated in Section 5.2.

5.1.1 Do Nothing

The “Do Nothing” alternative is a mandatory alternative for consideration under the GO Transit Class EA, as it serves as a reference point for comparing other alternatives. The “Do Nothing” alternative would mean no improvements or changes would be undertaken to address the problem. The existing mainline track would continue to be used by freight and passenger (VIA and Amtrak) rail traffic.

5.1.2 Transportation Demand Management

This alternative would involve the implementation of strategies or policies to encourage commuters to use alternatives to traveling alone (i.e., education through marketing). Some of these strategies could include high occupancy (HOV) and reserved bus lanes (RBL), area traffic/transit signal priority, parking management, congestion pricing, ridesharing, land use density increases and telecommuting.

5.1.3 New or Expanded Commuter Rail Service

This alternative would involve the expansion of rail service from the Hamilton to the Niagara Peninsula. This alternative would include construction of new commuter rail stations, corridor rail line improvements, and layover site to provide required train service to the study corridor. Current GO commuter rail service along the Lakeshore West line would be expanded into the study area, providing opportunities for increased ridership to/from the Greater Toronto Area (GTA) and within the expanded corridor.

5.1.4 New or Expanded Bus Service

This alternative would involve the expansion of bus service on existing major arterial roadways and highways. The expanded service would be primarily an express service to enable the most efficient travel time for inter-regional commuter traffic. In order to improve the frequency and reliability of bus services, transit signal priority, rush-hour reserved bus lanes or dedicated bus-only roadways / transit-ways may be

considered. Additional infrastructure would be required to support the increased number of buses such as new bus terminals and maintenance and storage facilities.

5.1.5 Expanded Road Capacity

This alternative would involve one of two measures. As a first approach, the implementation of traffic management improvements could enable more efficient use of the existing roadway networks. Improvements could include enhanced traffic signalization controls and HOV lanes. However, the most effective means of increasing road capacity is by widening existing roadways and highways in order to serve increasing inter and intra-regional commuter traffic or building new roads.

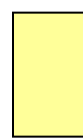
5.2 Evaluation of Concept Alternatives

The concept alternatives were evaluated based on four major criteria/factors including: natural environment, social/cultural environment, economic, and technical. Natural environment factors are those having regard for or effect to the protection of natural and physical components of the environment including air, land, water, wildlife, etc. and environmental sensitive areas. Social/Cultural environment factors are those regarding residents, neighbourhoods, businesses, community landscapes and features, social interactions, historical/archaeological remains, and heritage features. Economic factors are those related to the financial costs associated with the undertaking (e.g., capital costs, operating costs, end-user costs). Technical factors refer to issues such as feasibility and longevity of the undertaking, traffic implications and impacts on other modes of transportation.

For each of the four major factors above, the concept alternatives were assigned a rating based on a scale of least preferred to most preferred. In this method of rating, the alternatives are compared to each other in a relative manner rather than a precise manner as with a numerical-based rating system. The relative-based method was chosen because it was a more effective means of comparing the concept alternatives in order to arrive at the best possible solution to the identified problem/opportunity in a simple and timely way. The evaluation of the concept alternatives is presented in Table 5.1.

Table 5.1 Evaluation Summary of Concept Alternatives

FACTOR	CONCEPT ALTERNATIVES				
	Do Nothing	Transportation Demand Management (TDM)	New or Expanded Commuter Rail Service	New or Expanded Bus Service	Expanded Road Capacity
A Natural Environment Rating					
	Continued and/or additional road congestion would lead to continued air quality degradation. No impact on existing natural environment conditions along the rail corridor.	Implementing TDM measures would have little effect on the natural environment.	Potential physical impacts contained to existing rail corridor for most of the study area. Potential for physical impacts at proposed layover and new station sites. Impacts to air quality are low as compared to other alternatives. One GO Train provides equivalent capacity of 2,000 single-occupant cars, which represents a net benefit to air quality as compared to other alternatives dependent on automobile commuting.	Little impact on the natural environment unless additional ROWs were to be provided. Will have a significant impact on existing road congestion levels. An increase in bus service will produce a negative impact on air quality versus rail service.	Increasing road capacity (i.e. additional ROW required) will have impacts on natural environment. Expansion of existing roads and highways to accommodate growing Toronto/GTA-oriented commuter traffic would have the potential for the greatest impact to the natural environment of all alternatives. Expansion of roads and highways will result in more single-driver automobile traffic on major routes and will lead to continued air quality degradation and habitat loss/change/fragmentation.
B Social/Cultural Environment Rating					
	With no increase in transit capacity or road improvements, additional road congestion will negatively impact travelers on existing major routes between Niagara Region and the Toronto/GTA area. Not consistent with provincial growth management policies.	Effectiveness of transportation demand management strategies depends heavily on the willingness of commuters to change or modify their travel habits, and in turn, requires a comprehensive package of HOV lanes, priority programs, transit improvements and parking policies. There are significant potential social benefits to these strategies, but the benefits will not be realized by the greater public until there is a considerable volume of commuters using the new strategies. However, the ability to achieve this potential is limited in the short-medium term. This alternative is consistent with provincial growth management policies.	Provides for a convenient and efficient means of moving commuters between Niagara Region and Toronto/GTA which is a net social benefit. Supports initiatives to have a balance between roadways and transit. Potential for minor impacts to land owners adjacent to the rail corridor due to introduced commuter rail traffic along existing corridor. Potential for impact to heritage or archaeological resources if development occurs in previously undisturbed lands. Consistent with Places to Grow Act and related provincial growth management policies, including smart growth objectives.	If expanded service were to operate on existing roads, little social impact would result; for new bus priority facilities, the potential for significant negative effects is higher. The inadequacy of additional bus service to meet demand forecasts would become a factor in limiting urban expansion and development potential in the corridor. Consistent with provincial growth management policies.	Road widenings would involve significant property acquisition and infringement on adjacent residents in terms of noise, odour and visual impact. Widenings would maintain, to some degree, the car-oriented lifestyle which most corridor residents currently prefer. Realistically, the ability to widen roads beyond the already planned widenings will become increasingly difficult to accomplish due to the social impacts. Not consistent with provincial growth management policies. Potential impacts to heritage conditions in study area.



FACTOR	CONCEPT ALTERNATIVES				
	Do Nothing	Transportation Demand Management (TDM)	New or Expanded Commuter Rail Service	New or Expanded Bus Service	Expanded Road Capacity
C Economic Rating	●	●	●	●	●
	The societal costs of congestion, delays and accidents will continue to increase. These impacts may influence future development in the corridor which in turn could impact the municipal tax base.	Net cost to society in terms of accelerated need for other transportation facilities/services, congestion in other modes and operating/user costs would depend on available alternatives. Many TDM programs (such as higher parking costs, telecommuting, car parking, road pricing) could shift costs to the public.	Significant initial capital cost. Allows for incremental staged growth based on ridership. Fares and operating costs kept to efficient minimum – Revenue/Cost ratio better for train as compared to bus transit. Ability to lower the need or defer road expansion. Some residents may not need to acquire a car for commuting. Benefits the largest number of people for money invested. Supportive of new residential/employment development in corridor.	Potentially significant capital and operating costs, depending on the facilities and operational strategy required (it would take 40 buses and 40 drivers to move as many people as one train with three crew).	The cost to drivers and to society in general would be significant. Road construction cost in built-up areas is very high and 100% publicly funded. To the driver, the cost of acquiring, operating and parking a car is far more than a transit fare. Congestion, delay and accidents have significant impact on corridor commuters.
D Technical Factors Rating	●	●	●	●	●
	Demand for regional transit is continuing to grow. Without increased regional transit, travel demand would continue to shift to road based modes exacerbating road peak period congestion.	Measures to reduce transportation demand and encourage diversion of trips from single occupant vehicles would range from high occupancy and reserved bus lanes, area traffic control/transit signal priority, parking management, congestion pricing, ridesharing, land use density increases and telecommuting. TDM measures are flexible, adaptable and readily staged, as incremental improvements to (increased) capacity or (reduced) demand can be implemented. However, on their own, TDM measures are unlikely to satisfy the anticipated future travel demands.	One GO train has equivalent people-moving capacity (2,000 persons) to an additional highway lane (2,000 vehicles/hour). Development of stations in Hamilton and Niagara Region will make service more attractive and convenient as compared with the auto mode. Requires effective local transit and walk-in access to reduce parking demand at stations. Less flexible staging in meeting incremental changes in demand; however, enhanced capacity can meet long-term demand.	Bus service between Niagara Falls and Union Station would take the equivalent or more as current auto drive times. Bus service is therefore less attractive. Buses can operate more flexibly than trains in terms of schedule, routes, stops and destinations. Bus service can be readily staged, but buses operating within the general traffic stream cannot accommodate the projected long term demand for commuter travel. On-road priority measures (HOV lanes) or dedicated bus facilities (bus rapid transit, BRT) would be required in the long term, which makes this option similar in scope and impact to the TDM alternative.	Increased road capacity (where ROW availability permits) would address needs in short term, allowing more efficient and flexible transit and vehicle travel in corridor. However, more road capacity would generate more auto-oriented demand in the absence of improved public transit. The negative results would be severe roadway congestion, air quality degradation, greater parking needs in constrained urban areas, and lower transit ridership. Widening local roads will not address demand for the Niagara Region/Hamilton/Toronto commuter market.
SUMMARY	Inadequate and unacceptable approach to dealing with planned growth in the corridor. Does not accommodate forecast population and employment growth and increasing travel demands. "Do Nothing" alternative is not compatible with provincial policy objectives to improve transportation and the environment.	Overall, transportation demand strategies (such as high occupancy and reserved bus lanes, ridesharing, telecommuting, parking management, etc.) are considered to be part of the "tool box" of alternatives but not a stand alone strategy which would be capable of meeting the anticipated corridor traffic demands.	Expanded rail service is a significant element in area-wide transportation/land use strategy; expansion of service is capable of accommodating demand with relatively little environmental impact. Although initial costs are high in comparison to the other alternatives, this option provides the best option for monies invested and would improve air quality. Consistent with provincial policy including smart growth objectives.	Increased bus service has a key role to play, but is less efficient and attractive than train service for specific downtown Toronto-oriented commuter market. Without exclusive travel lanes (HOV) this option will be severely impacted by congestion and travel delays on the road system.	Further road expansion poses significant social and environmental impacts. Transportation demands cannot be met solely with a "road-based" solution due to ROW limitations. Costs and impacts of further road expansion would be significant.
RECOMMENDED ALTERNATIVE	Not recommended.	Not recommended.	Recommended.	Not recommended.	Not recommended.



5.2.1 Do Nothing

This alternative does not support the forecast population and employment growth and increasing travel demands within the corridor.

Passenger rail travel between Niagara Region and Toronto would continue to be provided by VIA Rail and by Greyhound/GO Bus Service, which are currently at a limited capacity. The existing major highways and regional arterial roads experience significant congestion levels at peak travel times. Doing nothing to solve the problem would result in the following impacts:

- Continued and/or additional road congestion will lead to air quality degradation;
- Travelers will experience more frustration and added costs with major delays on routes between Niagara Region and the Toronto/GTA area; and,
- A "Do Nothing" alternative is inconsistent with provincial growth management policies.

Ultimately, this alternative does not address the problem/opportunity statement.

5.2.2 Transportation Demand Management

TDM measures are flexible, adaptable and readily staged. These strategies would not have a negative impact on the natural environment and would be consistent with provincial growth management policies.

However, the effectiveness of TDM strategies is somewhat limiting in nature and highly dependent on the willingness of commuters to change their travel habits. This strategy requires a comprehensive commitment to HOV lanes, priority programs, transit improvements, parking policies and road pricing. This success of TDM strategies will only be realized when there is significant public acceptance and usage of the TDM options. Overall, this strategy is viewed as short-term or stop-gap measure.

TDM strategies can form part of the overall solution but cannot be considered as a stand alone solution.

5.2.3 New or Expanded Commuter Rail Service (Preferred Concept Alternative)

The expansion of rail service represents a significant component in an area-wide transportation / land use strategy. Expansion of rail service is capable of accommodating demand with relatively little environmental impact and the ability to improve air quality. Although initial costs are high in comparison to the other alternatives, this option provides the best overall choice for monies invested. This alternative is consistent with provincial policy, including smart growth objectives and fully addresses the problem statement.

Based on the above rationale, the preferred concept alternative is a New or Expanded Commuter Rail Service. With the implementation of appropriate mitigation measures, this alternative will have limited impacts on the natural, socio-economic and built environment.

5.2.4 New or Expanded Bus Service

Expanded Bus Service is a valuable component to solving the issue of increased travel demand. Increased bus service would help provide more service. However, it is less efficient and attractive than train service or the automobile, especially for the majority of commuters who are trying to minimize their travel time from home to work/business or school. Without dedicated lanes for travel, buses will be impacted to the same degree as regular vehicular traffic due to the increased congestion on major routes. A further disincentive to bus travel is the loss of time by users related to the bus headways, schedule stops and transfer time.

New or expanded bus service can form part of the overall solution, but cannot be considered as stand alone solution.

5.2.5 Expand Road Capacity

Expanding the existing capacity of major roads will address increased travel demand by providing commuters with increased road capacity for conventional vehicular travel. However, in the absence of convenient and efficient public transit options, this alternative will continue to generate auto-oriented only travel demand. Expanding only road capacity to solve the "problem" would result in the following impacts:

- Potential for significant impact to natural features associated with widening existing road ROWs;
- More single-driver automobile traffic on major routes will lead to continued air quality degradation;
- Potential for significant property acquisition;
- Infringement on livelihoods of adjacent landowners (noise, traffic, odour, visual impacts);
- Tax payers will experience the greatest cost burden for road widenings;
- Lower GO ridership may result in higher fares and need for subsidies;
- Further degradation of the attractiveness of public transit use; and,
- Inconsistency with provincial growth management policies.

While improvements to the existing road system are required and are inevitable, the anticipated corridor transportation demands cannot be met solely with a 'road-based' solution due to ROW limitations. This alternative may form part of the overall solution; however, as a stand alone solution, this alternative is not consistent with growth management policies.

6.0 Preliminary Design Alternatives

In order to implement the preferred concept alternative of a New or Expanded Commuter Rail Service, various design alternatives were investigated. Several alternatives were considered for potential GO train stations and GO train layover facilities. Because rail expansion projects are generally implemented in phases, enabling smart growth into a new service area based on ridership demand, the study team identified and evaluated a significant number of sites to ensure that many potential future stations and train layover sites were considered, even if some of the sites may not be implemented until a later phase of the rail expansion. Descriptions of these alternatives and their evaluations are provided in Sections 6.1 to 6.4 below.

The majority of the CNR corridor is double tracked through the study area. However, there is an approximately 10-mile long section of the corridor from Mile 26.81 Grimsby S/D (just west of Nelles Road) to Mile 16.6 Grimsby S/D (just east of 15th Street) which will require improvements to minimize conflicts as well increase running speed along the corridor.

Preliminary design details for the preferred station sites, train layover sites and proposed rail line / corridor improvements are provided in Section 8.0.

6.1 Station Alternatives

As part of the service expansion additional station locations would be required. Potential station locations were based on potential ridership estimates as well as discussing possible alternatives with local municipalities, railway and members of the general public. Conceptually, GO Transit/Metrolinx' goal is to put forth an Opening Day scenario that can be expanded as ridership and demand increase over the planning horizon 2016 to 2031. GO Transit/Metrolinx identified that the following design elements be considered during preliminary station site determination:

- Full accessibility;
- Mini-platforms;
- Platforms (315 m minimum length);
- Parking;
- Bus loop/bays;
- Kiss and Ride;
- Station building; and,
- Bike racks.

The following potential station site alternatives were identified:

Hamilton - James Street North – Mile 39.5 Oakville S/D – Figure LA15
Hamilton – Confederation – Mile 38.04 Grimsby S/D – Figure LA14
Hamilton – Centennial Parkway – Mile 38.04 Grimsby S/D – Figure LA13

Hamilton – Fruitland Road – Mile 34.84 Grimsby S/D – Figure LA12
Hamilton – Fifty Road – Mile 31.67 Grimsby S/D – Figure LA11
Grimsby – Casablanca Boulevard – Mile 29.37 Grimsby S/D – Figure LA10
Grimsby – VIA Station – Mile 27.4 Grimsby S/D – Figure LA9
Grimsby – Bartlett Avenue – Mile 25.67 Grimsby S/D – Figure LA8
Beamsville – Ontario Street – Mile 23.5 Grimsby S/D – Figure LA7
Vineland – Victoria Avenue – Mile 18.93 Grimsby S/D – Figure LA6
St. Catharines – VIA Station – Mile 11.8 Grimsby S/D – Figure LA3
Niagara Falls – VIA Station – Mile 0.54 Grimsby S/D – Figure LA1

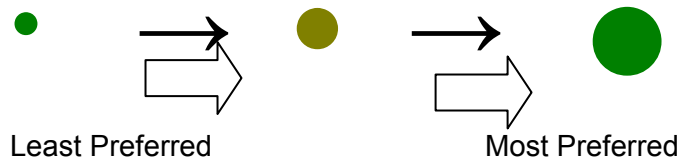
6.2 Station Alternatives Evaluation

The station alternatives were comparatively evaluated according to the same qualitative or relative-based method that was used to compare the concept alternatives. Evaluation criteria were developed using the four major criteria/factors namely: natural environment; social/cultural environment; financial; and, technical.

The results of the station alternative evaluation are presented in Table 6.1, which is divided into two parts for ease of presentation. The first part of the Table includes the evaluation of potential station site alternatives located on the western half of the study area (i.e., Hamilton – James Street North to Grimsby – Casablanca Boulevard). The second part of the Table includes the evaluation of the remaining potential station site alternatives (i.e., Grimsby – VIA Station to Niagara Falls VIA). A discussion of the results for each of these alternatives follows.

Table 6.1 Evaluation of Alternative Station Locations (Part 1 of 2)

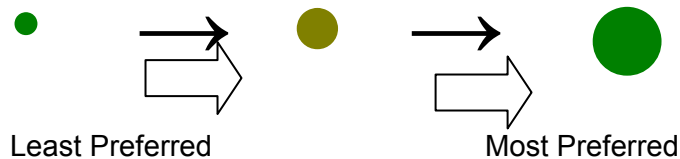
CRITERIA FOR EVALUATING ALTERNATIVES	Hamilton James Street North	Hamilton Confederation	Hamilton Centennial Parkway	Hamilton Fruitland Road	Hamilton Fifty Road	Grimsby Casablanca Boulevard
A Natural Environment <i>Rating:</i>	●	●	●	●	●	●
1 Number of Designated Sites/Species	Record of a SARA Schedule 1 species, Peregrine falcon in proximity to site. Peregrine falcons are known to nest on building ledges in central Hamilton. Peregrine falcons are tolerant of urban conditions and are unlikely to be affected by additional train traffic, construction activities and operation of new stations in an existing urban core.	None.	None.	None.	None.	None on-site. Locally Significant Life Science ANSI (Irish Grove) located approximately 90 m west of the proposed property limit.
2 Potential for impact on terrestrial habitat (flora and fauna)	Nearest nesting site for Peregrine falcon is located approximately 1 km from station site. Habitat not impacted by proposed station.	No impact over existing conditions.	No impact over existing conditions.	No impact over existing conditions.	No impact over existing conditions.	No impact over existing conditions.
3 Potential for impact on existing watercourses/crossings, aquatic habitat and fisheries resources	No impact over existing conditions.	Unclassified dry low channel observed running in a southwest direction across wooded area of site. Some standing water observed at the toe of slope of rail ROW. Potential for breeding amphibians may exist in the ponded area, although confirmation would need to be made. Limited availability for aquatic habitat.	No impact over existing conditions.	Unclassified seasonal drainage running along west side of southern property. No impact over existing conditions.	No impact over existing conditions.	No impact over existing conditions.
4 Potential for impact to floodplain lands	No impact over existing conditions.	No impact over existing conditions.	No impact over existing conditions.	No impact over existing conditions.	No impact over existing conditions.	No impact over existing conditions.



CRITERIA FOR EVALUATING ALTERNATIVES	Hamilton James Street North	Hamilton Confederation	Hamilton Centennial Parkway	Hamilton Fruitland Road	Hamilton Fifty Road	Grimsby Casablanca Boulevard
B Socio-economic/ Cultural Environment <i>Rating:</i>						
1 Compatibility with Surrounding Land Uses	Compatible. Surrounding lands predominantly industrial.	Compatible. Surrounding properties are being used for industrial, utilities and commercial uses.	Compatible. Site is an abandoned industrial area surrounded by arterial commercial lands to the west, north and south and business park uses to the east.	Compatible. Surrounding properties are being used for industrial and commercial business park uses.	Compatible. Surrounding lands are unoccupied and are characterized by rural, agricultural or old field conditions.	Compatible. Land to west of southern parcel are cash crop agricultural. Residential areas on south side of southern parcel. Existing GO bus terminal and commuter parking lot located directly north of the site.
2 Conformity to Planning Provisions	Conforms. Site is designated for Utility purposes, Medium density Residential and Open Space according to City of Hamilton OP. No residential units are present. LIUNA Station, east of proposed property, is identified on Appendix B of the draft City of Hamilton's Official Plan as a proposed new GO Transit centre. The West Harbour Planning area, within which this site is located, is subject to a future Ontario Municipal Board hearing.	Conforms. Site is designated as Industrial and Arterial Commercial according to the City of Hamilton OP.	Does not conform. Site is designated as District Commercial according to City of Hamilton OP. However, City of Hamilton has indicated that they are processing a development application for these lands for future businesses and thus, this land is not available for use.	Conforms. Site designated as Business Park according to City of Hamilton OP.	Conforms. Northern parcel is designated as Business Park according to City of Hamilton OP. Southern parcel falls within Greenbelt Area and is designated as Tender Fruit and Grape according to the Greenbelt Plan and Specialty Crop according to the City of Hamilton OP.	Conforms. Southern parcel falls within Greenbelt Area and is designated as Tender Fruit and Grape according to the Greenbelt Plan and Niagara Region OP. According to the Town of Grimsby OP the northern parcel is designated as Service Commercial and the southern parcel is designated as Specialty Crop Area.
3 Potential for impact to Heritage Resources (archaeological features, built heritage, and cultural heritage landscapes)	Site is completely disturbed and does not have archaeological potential. Potential for direct impacts ¹ to structural components of existing early 20 th century-built Bay Street North bridge.	Site is completely disturbed and does not have archaeological potential.	Site is completely disturbed and does not have archaeological potential.	Site is completely disturbed and does not have archaeological potential.	Portions of site remain relatively undisturbed and contain archaeological potential. Stage 2 archaeological assessment required.	Portions of site remain relatively undisturbed and contain archaeological potential. Stage 2 archaeological assessment required.
4 Potential for noise impacts	Maximum incremental adjusted noise level for Ultimate Service is 3 dBA. Increase is tolerable.	Maximum incremental adjusted noise level for Ultimate Service is 2.5 dBA. Increase is insignificant.	Maximum incremental adjusted noise level for Ultimate Service is 1.5 dBA. Increase is insignificant.	Maximum incremental adjusted noise level for Ultimate Service is 2 dBA. Increase is insignificant.	Maximum incremental adjusted noise level for Ultimate Service is 2.5 dBA. Increase is insignificant.	Maximum incremental adjusted noise level for Ultimate Service is 1.5 dBA. Increase is insignificant.
5 Potential for air quality impacts	Predicted air contaminant concentrations at proposed station (including parking facilities) are below the MOE air quality standards.	Predicted air contaminant concentrations at proposed station (including parking facilities) are below the MOE air quality standards.	Predicted air contaminant concentrations at proposed station (including parking facilities) are below the MOE air quality standards.	Predicted air contaminant concentrations at proposed station (including parking facilities) are below the MOE air quality standards.	Predicted air contaminant concentrations at proposed station (including parking facilities) are below the MOE air quality standards.	Predicted air contaminant concentrations at proposed station (including parking facilities) are below the MOE air quality standards.
6 Potential for vibration impacts	Vibration impact is classified as insignificant.	Vibration impact is classified as insignificant.	Vibration impact is classified as insignificant.	Vibration impact is classified as insignificant.	Vibration impact is classified as insignificant.	Vibration impact is classified as insignificant.



CRITERIA FOR EVALUATING ALTERNATIVES		Hamilton James Street North	Hamilton Confederation	Hamilton Centennial Parkway	Hamilton Fruitland Road	Hamilton Fifty Road	Grimsby Casablanca Boulevard
7	Potential to require land	1.5 ha	3.9 ha	9.0 ha	3.1 ha	10.9 ha	5.4 ha
C	Financial Factors <i>Rating:</i>						
	Full Service Capital Costs	\$30 M	\$20 M	\$30 M	\$20 M	\$30 M	\$20 M
D	Technical Factors <i>Rating:</i>						
1	Transit Integration	Compatible. Situated along James Street, good connectivity to other transportation modes and local transit systems exists. City planning to extend LRT along James Street.	Compatible. Potential exists to integrate well with future transit plans with the City of Hamilton.	Compatible. Should land become available, potential exists to integrate well with future transit plans with the City of Hamilton.	Compatible. Potential exists to integrate with local bus service.	Currently not well serviced by local transit systems. City of Hamilton has identified long term plans to extend LRT system to Fifty Road area which could better serve this site.	Compatible. GO Transit currently has a "Park & Ride" facility at this location.
2	Site Accessibility	Good access to site from James Street North and Bay Street.	Good access to site location from nearby QEW. Good access to site from Centennial Pkwy.	Should land become available, good access to site location from nearby QEW. Good access to site from Centennial Pkwy.	Good access to site location from nearby QEW. Good access to site from Fruitland Road.	Good access to site location from nearby QEW. Good access to site from Fifty Road.	Good access to site location from nearby QEW. Good access to site from South Service Road and Casablanca Boulevard.
3	Parking / Passenger Drop-off Availability	Good potential for parking on-site. Can accommodate 300 parking spaces, bus bays and passenger drop-off.	Good potential for parking on-site. Can accommodate approximately 695 parking spaces, bus bays and passenger drop-off.	Should land become available, good potential for parking on-site. Can accommodate approximately 2,000 parking spaces, bus bays and passenger drop-off.	Good potential for parking on-site. Can accommodate approximately 770 parking spaces, bus bays and passenger drop-off.	Good potential for parking on-site. Can accommodate approximately 3035 parking spaces, bus bays and passenger drop-off.	Good potential for parking on-site. Can accommodate 1,440 parking spaces, bus bays and passenger drop-off.
4	Compatibility with Existing and Future Rail Infrastructure/ Operations	Compatible. Opening Day would include south platform for access to rail corridor.	Compatible for Opening Day service.	Should land become available, compatible for Opening Day service.	Compatible. Opening Day service would include north side platform and parking with Future works to include south side platform and parking.	Compatible. Opening Day service would include north side platform and parking with Future works to include south side platform and parking.	Compatible. Opening Day service would include north side platform and parking with Future works to include south side platform and parking.
5	Station Location Relative to Potential Ridership Market Area	Within City of Hamilton ridership market area. Good service through local transit connectivity.	Site is within City of Hamilton ridership market area. Good service through local transit connectivity.	Should land become available, site is within City of Hamilton ridership market area. Good service through local transit connectivity.	Within Stoney Creek ridership market area. Possible integration with local transit services.	Within Stoney Creek ridership market area, however no local transit connectivity. Future planned connection to City of Hamilton LRT.	Within Grimsby ridership market area. Good connectivity to GO Bus services.



CRITERIA FOR EVALUATING ALTERNATIVES	Hamilton James Street North	Hamilton Confederation	Hamilton Centennial Parkway	Hamilton Fruitland Road	Hamilton Fifty Road	Grimsby Casablanca Boulevard
6 Effect on Existing Utilities / Municipal Services / Infrastructure	No impact on existing utilities anticipated. Site can be serviced by municipality. Potential road/traffic improvements required along James Street and Stuart Street to minimize congestion related to possible interaction between local traffic and GO patrons.	No impact on existing utilities anticipated. Site can be serviced by municipality.	Should land become available, no impact on existing utilities anticipated. Site can be serviced by municipality. Potential road/traffic improvements required along South Service Road to minimize congestion related to possible interaction between local traffic and GO patrons.	No impact on existing utilities anticipated. Site can be serviced by municipality. Potential road/traffic improvements required along Arvin Road to minimize congestion related to possible interaction between local traffic and GO patrons.	Minimal impact on existing utilities anticipated. Site can be serviced by municipality. Potential road/traffic improvements required along South Service Road and Fifty Road to minimize congestion related to possible interaction between local traffic and GO patrons.	Minimal impact on existing utilities anticipated. Site can be serviced by municipality. Potential road/traffic improvements required along South Service Road and Casablanca Boulevard to minimize congestion related to possible interaction between local traffic and GO patrons.
SUMMARY	Negligible impacts to natural environment. Compatible with surrounding land use and planning policy. Good connectivity to existing and future transit systems. Geographically favorable; near waterfront and future stadium site. Good potential for parking on-site. Within Hamilton ridership market area.	Negligible impacts to natural environment. Compatible with surrounding land use and planning policy. Good potential for local transit integration. Good potential for parking on-site. Within Hamilton ridership market area.	Negligible impacts to natural environment. Compatible with surrounding land use and planning policy. Good potential for local transit integration. Good potential for parking on-site. Within Hamilton ridership market area. Site is not currently feasible due to future planned land development.	Negligible impacts to natural environment. Compatible with surrounding land use and planning policy. Good potential for local transit integration. Good potential for parking on-site. Within Stoney Creek ridership market area.	Negligible impacts to natural environment. Compatible with surrounding land use and planning policy. Some archaeological site potential. Site compatible with future mixed use, multi-modal Hamilton transit hub. Within Stoney Creek ridership market area.	Negligible impacts to natural environment. Compatible with surrounding land use and planning policy. Can integrate with adjacent GO Bus 'Park & Ride' facility. Good potential for parking on-site. Within Grimsby ridership market area.
RECOMMENDATION	Recommended as a potential station site.	Recommended as a potential station site.	Not recommended.	Not recommended.	Recommended as a potential future station site.	Recommended as a potential station site.

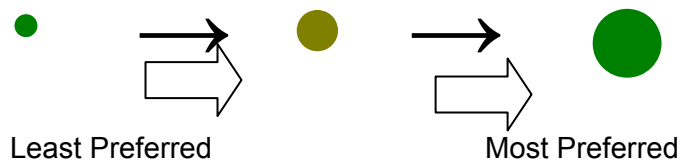


Table 6.1 Evaluation of Alternative Station Locations (Part 2 of 2)

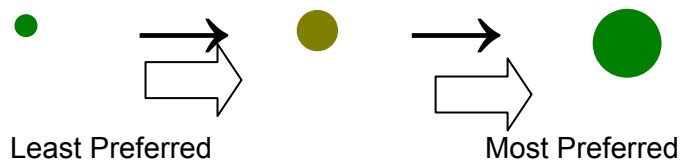
CRITERIA FOR EVALUATING ALTERNATIVES	Grimsby VIA Station	Grimsby Bartlett Avenue	Beamsville Ontario Street	Vineland Victoria Avenue	St. Catharines VIA Station	Niagara Falls VIA Station
A Natural Environment <i>Rating:</i>	●	●	●	●	●	●
1 Number of Designated Sites/Species	None.	None.	None.	None.	Record of a <i>Species at Risk</i> (SARA) Schedule 1 species, Red-headed woodpecker in proximity to site. VIA Station property is surrounded by densely developed areas. Although suitable habitat is potentially present nearby this property (i.e., urban park), the species is unlikely to inhabit this site.	None on-site. Provincially Significant Life Science and Earth Science ANSIs (Niagara Gorge and Niagara River Bedrock Gorge) located approximately 140 m east of proposed property limit.
2 Potential for impact on terrestrial habitat (flora and fauna)	No impact over existing conditions.	No impact over existing conditions.	No impact over existing conditions.	No impact over existing conditions.	Habitat for Red-Headed woodpecker is not impacted by proposed station.	No impact over existing conditions.
3 Potential for impact on existing watercourses/crossings, aquatic habitat and fisheries resources	Unnamed and unclassified drain-like watercourse bi-secting site. Potential impacts to water quality resulting from enclosure of watercourse.	Small unnamed watercourse running along west side of site. Watercourse is classified as Type 2 by NPCA. Potential impacts to water quality resulting from enclosure of watercourse.	No watercourse identified by NPCA mapping, however ponded water noted along the north side of eastern property. Potential for indirect impact to aquatic habitat.	Unnamed drain-like watercourse bi-secting site. Drain classified as a Type 2 watercourse by the Niagara Peninsula Conservation Authority (NPCA). Potential for direct impacts to aquatic habitat would result from enclosure of watercourse from existing open channel condition.	No impact over existing conditions.	No impact over existing conditions.
4 Potential for impact to floodplain lands	Construction that may occur in the floodplain of drain will be subject to NPCA regulations and permitting requirements. Flood storage and conveyance in project-affected fill-regulated areas not anticipated to be negatively affected.	Construction that may occur in the floodplain of watercourse will be subject to NPCA regulations and permitting requirements. Flood storage and conveyance in project-affected fill-regulated areas not anticipated to be negatively affected.	Construction that may occur in the floodplain of the ditch will be subject to NPCA regulations and permitting requirements. Flood storage and conveyance in project-affected fill-regulated areas not anticipated to be negatively affected.	Construction that may occur in the floodplain of the drain will be subject to NPCA regulations and permitting requirements. Flood storage and conveyance in project-affected fill-regulated areas not anticipated to be negatively affected.	No impact over existing conditions.	No impact over existing conditions.



CRITERIA FOR EVALUATING ALTERNATIVES	Grimsby VIA Station	Grimsby Bartlett Avenue	Beamsville Ontario Street	Vineland Victoria Avenue	St. Catharines VIA Station	Niagara Falls VIA Station
B Socio-economic/ Cultural Environment <i>Rating:</i>						
1 Compatibility with Surrounding Land Uses	Compatible. Uses existing VIA station property. Surrounding lands are predominantly commercial or employment uses.	Compatible. Site located outside of Grimsby's urban boundary. Residential areas south and north of site. House with small orchard east of site.	Compatible. Surrounding lands predominantly industrial uses. Residential area on south side of eastern property parcel.	Not fully compatible. Site located entirely within an orchard.	Compatible. Uses existing VIA station property. Lands north of station area are primarily unoccupied, open areas. Industrial uses south of site. Residential area east of site.	Compatible. Site located within an industrial area in Niagara Falls' downtown core. Major commercial uses to south and east of site.
2 Conformity to Planning Provisions	Conforms. Site falls within Greenbelt Area and is designated as Towns and Villages. Site is designated as Urban Area according to the Niagara Region OP. Lands south of rail ROW are designated as Commercial Core-Transition according to Town of Grimsby (Draft) OP. Lands north of rail ROW are designated as Employment Lands.	Conforms. Site falls within the Greenbelt Area and is designated Tender Fruit and Grape according to the Greenbelt Plan and Niagara Region OP. Site is designated as Specialty Crop Area, Tender Fruit and Grape according to the Town of Grimsby (Draft) OP. Although designated, this site is not currently used for tender fruit.	Conforms. Site falls within Greenbelt Area and is designated as Towns and Villages. Site is designated as Urban Area according to the Niagara Region OP. Western parcel is designated Prestige Industrial according to Town of Lincoln OP. Eastern parcel is designated General Commercial.	Does not conform. Site falls within the Greenbelt Area and is designated Tender Fruit and Grape according to the Greenbelt Plan and Niagara Region OP. Site is designated as Unique Agricultural area Town of Lincoln OP. Creek bisecting site is protected as a Natural Environment area according to NPCA.	Conforms. Site is designated Urban Area according to Niagara Region OP and Major Institutional and Industrial according to City of St. Catharines OP.	Conforms. Site is designated as Urban Area according to Niagara Region OP and Industrial according to the City of Niagara Falls OP.
3 Potential for impact to Heritage Resources (archaeological features, built heritage, and cultural heritage landscapes)	Site is completely disturbed and does not have archaeological potential. The existing VIA Rail Station building is designated under the <i>Ontario Heritage Act</i> and <i>Heritage Railway Stations Protection Act</i> . No impacts anticipated. Potential for indirect impacts to some nearby late 19 th century - early 20 th century buildings. Potential for direct impacts to adjacent (south) early 20 th century industrial complex.	Site is completely disturbed and does not have archaeological potential.	Portions of site remain relatively undisturbed and contain archaeological potential. Stage 2 archaeological assessment required.	Portions of site remain relatively undisturbed and contain archaeological potential. Stage 2 archaeological assessment required.	Site is completely disturbed and does not have archaeological potential. The existing VIA Rail Station building is designated under the <i>Heritage Railway Stations Protection Act</i> . No impacts anticipated. Triangular parkette (part of Cameron Park) identified as a cultural heritage landscape. Potential for indirect impacts to parkette. 1951-built one storey block building located adjacent to site identified as a built heritage resource. Potential for indirect impacts to building.	Site is completely disturbed and does not have archaeological potential. The existing VIA Rail Station building is designated under the <i>Ontario Heritage Act</i> and <i>Heritage Railway Stations Protection Act</i> . No impacts anticipated.
4 Potential for noise impacts	Maximum incremental adjusted noise level for both Day 1 and Ultimate Service is 1.5 dBA. Increase is insignificant.	Maximum incremental adjusted noise level for Ultimate Service is 2 dBA. Increase is insignificant.	Maximum incremental adjusted noise level for Ultimate Service is 2.5 dBA. Increase is insignificant.	Maximum incremental adjusted noise level for Ultimate Service is 2.5 dBA. Increase is insignificant.	Maximum incremental adjusted noise level for Ultimate Service is 2.5 dBA. Increase is insignificant.	Maximum incremental adjusted noise level for Ultimate Service is 2.5 dBA. Increase is insignificant.



CRITERIA FOR EVALUATING ALTERNATIVES	Grimsby VIA Station	Grimsby Bartlett Avenue	Beamsville Ontario Street	Vineland Victoria Avenue	St. Catharines VIA Station	Niagara Falls VIA Station
5 Potential for air quality impacts	Predicted air contaminant concentrations at proposed station (including parking facilities) are below the MOE air quality standards.	Predicted air contaminant concentrations at proposed station (including parking facilities) are below the MOE air quality standards.	Predicted air contaminant concentrations at proposed station (including parking facilities) are below the MOE air quality standards.	Predicted air contaminant concentrations at proposed station (including parking facilities) are below the MOE air quality standards.	Predicted air contaminant concentrations at proposed station (including parking facilities) are below the MOE air quality standards.	Predicted air contaminant concentrations at proposed station (including parking facilities) are below the MOE air quality standards.
6 Potential for vibration impacts	Vibration impact is classified as insignificant.	Vibration impact is classified as insignificant.	Vibration impact is classified as insignificant.	Vibration impact is classified as insignificant.	Vibration impact is classified as insignificant.	Vibration impact is classified as insignificant.
7 Potential to require land	1.0 ha	1.0 ha	2.5 ha	2.0 ha	2.2 ha	7.3 ha
C Financial Factors <i>Rating:</i>						
Full Service Capital Costs	\$10 M	\$10 M	\$15 M	\$15 M	\$17 M	\$30 M
D Technical Factors <i>Rating:</i>						
1 Transit Integration	Currently not serviced by local transit systems.	Currently not serviced by local transit systems.	Currently not well serviced by local transit systems.	Currently not well serviced by local transit systems.	Compatible. Potential exists to integrate with local bus services.	Compatible. Potential exists to integrate with local bus services.
2 Site Accessibility	Good access to site location from nearby QEW and Ontario Street.	Access from both the South Service Road and from Central Avenue. Potential site at this location would effect traffic conditions i.e., congestion in the adjacent residential subdivision.	Good access to site location from Ontario Street and nearby QEW. Good access to site from two street locations. Geographically located between other recommended station sites.	Good access to site location from Regional Highway 24 (Victoria Avenue) and nearby QEW. Access to property limited to east site off Victoria Avenue.	Good access to site from multiple street locations.	Good access to site location from Buttrey Street.
3 Parking / Passenger Drop-off Availability	Potential for parking on-site. Can accommodate 200 parking spaces, bus bays and passenger drop-off.	Potential for parking on-site. Can accommodate 200 parking spaces, bus bays and passenger drop-off.	Potential for parking on-site. Can accommodate 2,200 parking spaces, bus bays and passenger drop-off.	Good potential for parking on-site. Can accommodate approximately 600 parking spaces, bus bays and passenger drop-off.	Good potential for parking on-site. Can accommodate 660 parking spaces, bus bays and passenger drop-off.	Good potential for parking on-site. Can accommodate approximately 1,160 parking spaces, bus bays and passenger drop-off.
4 Compatibility with Existing and Future Rail Infrastructure/ Operations	Compatible. Opening Day service would include extension of existing south side platform and parking with Future works to include north side platform.	Compatible.	Compatible. Opening Day service would include north side platform and parking with Future works to include south side platform and parking.	Compatible. Opening Day service would include extension of existing south side platform and parking with Future works to include north side platform.	Compatible. Opening Day would include north and south platforms for access to rail corridor.	Compatible but limited due to constraints at the Welland Canal. Existing lift bridge would dictate on time arrival. Significant improvements (i.e., tunnel construction) would be required to ensure consistent service to this site.
5 Station Location Relative to Potential Ridership Market Area	Within Grimsby ridership market area. Good connectivity to regional transit services (bus, VIA Rail).	Within Grimsby ridership market area, however no local transit connectivity.	Good potential to draw ridership from outlying southern peninsula market areas. No local transit connectivity.	West of St. Catharines ridership market area and east of Grimsby ridership market area. No local transit connectivity.	Within St. Catharines ridership market area. Good service through local transit connectivity.	Within Niagara Falls ridership market area. Good service through local transit connectivity.



CRITERIA FOR EVALUATING ALTERNATIVES	Grimsby VIA Station	Grimsby Bartlett Avenue	Beamsville Ontario Street	Vineland Victoria Avenue	St. Catharines VIA Station	Niagara Falls VIA Station
6 Effect on Existing Utilities / Municipal Services / Infrastructure	Minimal impact on existing utilities. Site already serviced by municipality. Potential road/traffic improvements required along Ontario Street to minimize congestion related to possible interaction between local traffic and GO patrons.	Minimal impact on existing utilities anticipated. Site can be serviced by municipality. Potential road/traffic improvements required along South Service Road and Central Avenue to minimize congestion related to possible interaction between local traffic and GO patrons.	Minimal impact on existing utilities anticipated. Site can be serviced by municipality. Potential road/traffic improvements required along Ontario Street and Green Lane Road to minimize congestion related to possible interaction between local traffic and GO patrons.	No impact on existing utilities anticipated. Site to be locally serviced.	Minimal impact on existing utilities. Site already serviced by municipality. Potential road/traffic improvements may be required to St. Paul Street to minimize effects of GO patrons entering/exiting site. Region has advised that potential exists to grade separate the Louth Street crossing.	No impact on existing utilities. Site already serviced by municipality.
SUMMARY	Potential for indirect aquatic habitat. Compatible with surrounding land use and planning policy. Currently not serviced by local transit systems. Minimal potential for parking on-site. Site is within Grimsby ridership market area and has good connectivity to regional transportation (bus and VIA rail).	Potential for indirect aquatic habitat. Compatible with surrounding land use and planning policy. Currently not serviced by local transit systems. Minimal potential for parking on-site. Within Grimsby ridership market area.	Potential for indirect aquatic habitat. Compatible with surrounding land use and planning policy. Some archaeological site potential. Currently not well serviced by local transit systems. Geographically located between other recommended station sites. Good potential to draw ridership from outlying southern peninsula market areas.	Potential for direct aquatic habitat. Not compatible with surrounding land use and planning policies due to location within orchard. Some archaeological site potential. Currently not well serviced by local transit systems. Good potential for parking on-site, however, site is outside larger ridership market areas.	Negligible impacts to natural environment. Compatible with surrounding land use and planning policy. Good potential for local transit integration. Good potential for parking on-site. Site located within St. Catharines ridership market area.	Negligible impacts to natural environment. Compatible with surrounding land use and planning policy. Good potential for local transit integration. Good potential for parking on-site. Service to site is limited by constraints of Welland Canal. Site is located within Niagara Falls ridership market area.
RECOMMENDATION	Not recommended.	Not recommended.	Recommended as a potential future station site.	Not recommended.	Recommended as a potential station site.	Recommended as a potential station site.



6.2.1 Hamilton - James Street North

The James Street North site is recommended as a potential GO train station site for the following reasons:

- Site is situated in a developed urban setting where there are no natural heritage features or watercourses to be impacted;
- Site is compatible with surrounding lands, which are primarily open space and commercial (LIUNA Station);
- Site is well connected to existing local transit system and City of Hamilton future LRT system which is to operate on James Street North;
- Site is geographically favourable as it is near the waterfront; and,
- Site has potential for parking.

6.2.2 Hamilton – Confederation

Initially this potential station site area was not considered by the study team. However, concerns were raised at PIC #2 that residents in East Hamilton are being left out of expansion opportunities. Subsequent to PIC #2, the study team reviewed and/or reconsidered a few additional potential station sites in the East Hamilton area. As a result, the study team further investigated the possibility of developing a station site on a parcel of vacant land currently owned by the City of Hamilton just west of Centennial Parkway on Goderich Road. Following confirmation from the City that this site was potentially available and determined feasible for a station by the team, the potential impacts of this site were evaluated.

The Confederation Station site is recommended as a potential GO train station site for the following reasons:

- This site is located in a highly developed area with compatible surrounding land uses (commercial and industrial);
- Site is well connected to existing local transit system;
- Site will service a larger ridership market as compared to some of the other East Hamilton sites; and,
- Site has good potential for parking, and connectivity to the QEW and Red Hill Parkway.

6.2.3 Hamilton – Centennial Parkway

Although the Centennial Parkway site is viewed as a good location for a GO train station due to its proximity to Red Hill Parkway, increasing commercial areas and more densely populated residential areas with good commuter ridership potential; this site was not recommended for a GO station due to the presence of a future Smart Centres development on the site. Meetings were held with Smart Centres on June 7, 2010 to ascertain if they could work with GO Transit/Metrolinx to share the lands for both commercial and GO services. However, Smart Centres were too far along in the planning of their development to accommodate a GO Train station on their site.

6.2.4 Hamilton – Fruitland Road

The Fruitland Road site was initially recommended (and communicated as such at PIC #2) as a potential GO train station site prior to the consideration of the Confederation Station site. In view of the interest in having a station site to service East Hamilton residents, the Confederation Station site is seen as a more central location to ridership base and is preferred over the Fruitland Road site.

6.2.5 Hamilton – Fifty Road

The Fifty Road site is comprised of two sections. The area to the west of Fifty Road illustrated on Figure LA-11 was initially reviewed and recommended at PIC #2 as a potential GO Train station site for the following reasons:

- The site was identified by the City of Hamilton for the location of a connection to the future LRT.
- Site is situated in a relatively developed area (industrial lands) with no natural heritage features of watercourses to be impacted.
- Site is compatible with surrounding lands, which are primarily commercial and business park uses to the north if the rail ROW (south side is under OMB review for re-designation); and,
- Site has good potential for parking.

Following PIC#2, discussions were had with a developer who is planning a commercial development on the north side of the rail ROW, west of Fifty Road. The developer is working with the City of Hamilton to provide an interface for a future LRT service to the area. Discussions were pursued with the developer and the City of Hamilton to determine if the proposed parcel could accommodate a GO Station. Both the developer and the City of Hamilton requested that the team consider shifting the station site to the east side of Fifty Road.

The area to the east of Fifty Road is also illustrated on Figure LA-11 and was further evaluated by the study team following discussions with the City of Hamilton and developers. As a result of the Information Bulletin, it was identified that the area to the east of Fifty Road is also considered to be prime location for another commercial development. This information has resulted in the Fifty Road station being considered as a future potential station subject to the City of Hamilton extending LRT service to Fifty Road and suitable lands for the combined LRT/GO rail station becoming available in the vicinity of Fifty Road and the rail ROW.

6.2.6 Grimsby – Casablanca Boulevard

The Casablanca Boulevard site is recommended as a potential GO train station site for the following reasons:

- Provides Grimsby with a potential station, as GO trains could not physically fit into the existing VIA Station;
- Site is a relatively developed area (commercial and residential lands) with no natural heritage features or watercourses to be impacted;
- Site is compatible with surrounding lands, which are primarily commercial with residential to the south;
- Site has good potential for parking; and,
- A GO Bus Park and Ride facility exists at this location and services could be integrated.

6.2.7 Grimsby – VIA Station

The alternative station site evaluation results for the Grimsby VIA Station are comparable to some of the recommended station sites due to the fact that this site is already functioning for rail services (VIA Rail) and would require less capital funds to implement GO train service than some of the other alternatives. However, the Grimsby VIA Station is not recommended primarily due to the fact that the site does not provide adequate parking for opening day and longer term GO train servicing needs and site available to construct a station.

6.2.8 Grimsby – Bartlett Avenue

Although the site would require less capital funds to implement a GO station than some of the other alternatives, the Bartlett Avenue is not recommended primarily due to the fact it is a small site that does not offer enough area for parking. There is also a watercourse running along the west side of the site which would require alterations prior to development, which makes this site less preferable.

6.2.9 Beamsville – Ontario Street

The Beamsville Ontario Street site is recommended as a future potential GO train station site for the following reasons:

- Site is situated in a relatively developed area (industrial lands) with no natural heritage features or watercourses to be impacted;
- Site is compatible with surrounding lands, which are primarily industrial uses;
- Site is outside Tender Fruit and Grape designated lands of the Greenbelt area; and,
- Site has good potential for parking.

6.2.10 Vineland – Victoria Avenue

The Vineland Victoria Avenue site is not recommended for the following reasons:

- Site is bisected by a watercourse, which would need to be enclosed prior to development and would impact fish habitat;
- Site falls within Greenbelt Area under the Tender Fruit and Grape designation; and,
- Site is outside the large ridership market areas.

6.2.11 St. Catharines – VIA Station

The St. Catharines VIA Station site is recommended as a potential GO train station site for the following reasons:

- Site is situated in a developed urban setting where there are no natural heritage features or watercourses to be impacted;
- Site is compatible with surrounding lands, which are industrial to south and residential to east;
- Site has good potential for integration with local transit and is located near Highway 406 for integration with GO Bus and other carriers; and,
- Site has good potential for parking.

6.2.12 Niagara Falls – VIA Station

The Niagara Falls VIA Station site is recommended as a potential GO train station site for the following reasons:

- Site is situated in a developed urban setting where there are no natural heritage features or watercourses to be impacted;
- Site is compatible with surrounding lands, which are primarily industrial;
- Site is well connected to existing local transit system (City bus stop across street from site; and,
- Site has good potential for parking.

6.3 Train Layover Facility Alternatives

As part of the service expansion, a train layover facility is required to allow for overnight storage and refuelling of trains. Potential layover locations were assessed upon adjacent land use, accessibility and proximity to potential stations. GO identified that the following design elements be considered during preliminary station site determination:

- Minimum eight storage tracks (four Opening Day, four Future);
- Electrical Sub-station;
- Wayside Power;
- Fuelling Facility;
- Crew Centre;
- Type B⁶ Progressive Maintenance Facility (PM bays); and,
- Site Servicing.

The following train layover alternatives were identified for potential sites:

Hamilton - James Street North – Mile 39.5 Oakville S/D – Figure LA15
Hamilton – Centennial Parkway – Mile 38.04 Grimsby S/D – Figure LA13
Hamilton – Lewis Road – Mile 32.69 Grimsby S/D – Figure LA16
St. Catharines – First Street – Mile 12.85 Grimsby S/D – Figure LA5
St. Catharines – Vansickle Road – Mile 12.55 Grimsby S/D – Figure LA4
St. Catharines – Glendale Avenue – Mile 9.2 Grimsby S/D – Figure LA2
Niagara Falls – VIA Station – Mile 0.54 Grimsby S/D – Figure LA1

The results of the layover alternative evaluation are presented in Table 6.2. A discussion of the results for each of these alternatives follows.

⁶ Type B progress maintenance facilities are to include PM bays, light repairs, toilet servicing, wheel machine, light cleaning, trip inspections, material storage, fixed refueling, consist parking, material storage, consist washing, and laser wheel measuring.

Table 6.2 Evaluation of Alternative Layover Locations (Part 1 of 2)

CRITERIA FOR EVALUATING ALTERNATIVES	Hamilton James Street North	Hamilton Centennial Parkway	Hamilton Lewis Road
A Natural Environment <i>Rating:</i>	●	●	●
1 Number of Designated Sites/Species	Record of a SARA Schedule 1 species, Peregrine falcon in proximity to site. Peregrine falcons are known to nest on building ledges in central Hamilton. Peregrine falcons are tolerant of urban conditions and are unlikely to be affected by additional train traffic, construction activities and operation of new layover facilities in an existing urban core.	None.	None.
2 Potential for impact on terrestrial habitat (flora and fauna)	Nearest nesting site for Peregrine falcon is located approximately 1 km from station site. Habitat not impacted by proposed station.	No impact over existing conditions.	No impact over existing conditions.
3 Potential for impact on existing watercourses/crossings, aquatic habitat and fisheries resources	No impact over existing conditions.	No impact over existing conditions.	Ditch (named Stoney Creek Watercourse No. 7 by HRCA) running north/south across site with intermittent flow dependant on precipitation and overland run-off, not fish habitat. No flow observed, dry during site visit (April 23, 2010).
4 Potential for impact to floodplain lands	No impact over existing conditions.	No impact over existing conditions.	Construction that may occur in the floodplain of the seasonal watercourse will be subject to HRCA regulations and permitting requirements. Flood storage and conveyance in project-affected fill-regulated areas not anticipated to be negatively affected.
B Socio-economic/ Cultural Environment <i>Rating:</i>	●	●	●
1 Compatibility with Surrounding Land Uses	Compatible. Surrounding lands predominantly industrial.	Compatible. Site is an abandoned industrial area surrounded by arterial commercial lands to the west, north and south and business park uses to the east.	Compatible. Site located within greenfield area however, surrounded predominately by industrial businesses.
2 Conformity to Planning Provisions	Conforms. Site is designated for Utility purposes, Medium density Residential and Open Space according to City of Hamilton OP. No residential units are present. LIUNA Station, east of proposed property, is identified on Appendix B of the draft City of Hamilton's Official Plan as a proposed new GO Transit centre. The West Harbour Planning area, within which this site is located, is subject to a future Ontario Municipal Board hearing.	Does not conform. Site is designated as District Commercial according to City of Hamilton OP. However, City of Hamilton has indicated that they are processing a development application for these lands for future businesses and thus, this land is not available for use.	Conforms. Site is designated as Business Park according to the City of Hamilton OP.
3 Potential for impact to Heritage Resources (archaeological features, built heritage, and cultural heritage landscapes)	Site is completely disturbed and does not have archaeological potential. Potential for direct impacts ¹ to structural components of existing early 20 th century-built Bay Street North bridge.	Site is completely disturbed and does not have archaeological potential.	Site remains relatively undisturbed and likely contains archaeological potential. Stage 2 archaeological assessment required.
4 Potential for noise impacts	Maximum incremental adjusted noise level is 20 dBA. Increase is very significant. Acoustic barrier will be considered.	Maximum incremental adjusted noise level is 16 dBA. Increase is very significant. Acoustic barrier will be considered.	Maximum incremental adjusted noise level is 14 dBA. Increase is very significant. Acoustic barrier will be considered.
5 Potential for air quality impacts	Predicted air contaminant concentrations at proposed train layover are below the MOE air quality standards.	Predicted air contaminant concentrations at proposed train layover are below the MOE air quality standards.	Predicted air contaminant concentrations at proposed train layover are below the MOE air quality standards.
6 Potential for vibration impacts	Vibration impact is classified as insignificant.	Vibration impact is classified as insignificant.	Vibration impact is classified as insignificant.
7 Potential to require land	1.5 ha	9.0 ha	7.4 ha



CRITERIA FOR EVALUATING ALTERNATIVES	Hamilton James Street North	Hamilton Centennial Parkway	Hamilton Lewis Road
C Financial Factors <i>Rating:</i>			
Opening Day Capital Costs	\$10 M	\$50 M	\$20 M
D Technical Factors <i>Rating:</i>			
1 Compatibility with Existing and Future Rail Operations	Can accommodate two storage tracks for inaugural service only.	Based on current development application for future businesses, this site cannot accommodate train layover tracks and associated facilities.	Can accommodate four storage tracks for Opening Day service. Existing double track mainline allows for flexibility in accommodating existing CN/VIA operations with minimal disruption. Relatively close proximity to proposed stations.
2 Potential Compatibility with GO Operations	Parallel storage tracks allow for flexibility in accessing train layover and selection of trains. Minimal storage capacity, two tracks.	Should land become available, parallel storage tracks allow for flexibility in accessing train layover and selection of trains. Relative proximity to existing service corridors would allow for an increase in maintenance capacity.	Parallel storage tracks allow for flexibility in accessing train layover and selection of trains. Relative proximity to existing service corridors would allow for an increase in maintenance capacity.
3 Potential Effect of Existing At-Grade Road Crossings	No impacts directly associated with train layover facility. Adjacent crossings are all grade separated.	Should land become available, no impacts directly associated with train layover facility. Existing Centennial Parkway crossing is grade separated.	No impacts directly associated with train layover facility. Train volumes would increase as services are expanded.
4 Potential Effect on Existing Utilities	No impacts.	Should land become available, no impacts.	No impacts.
5 Compliance with Federal / Provincial Requirements for Fueling Stations	Fueling facilities will be constructed to adhere to all federal and provincial regulations.	Should land become available, fueling facilities will be constructed to adhere to all federal and provincial regulations.	Fueling facilities will be constructed to adhere to all federal and provincial regulations.
SUMMARY	Negligible impacts to natural environment. Compatible with surrounding land use and planning policy, however not well suited for City of Hamilton long-term plans for waterfront area. Can accommodate only two storage tracks.	Negligible impacts to natural environment. Compatible with surrounding land use and planning policy. Could accommodate short-term and long-term train servicing needs; however, site is not currently feasible due to future planned land development.	Minimal impacts to natural environment. Compatible with surrounding land use and planning policy. Can accommodate four storage tracks.
RECOMMENDATION	Not recommended.	Not recommended.	Recommended as a potential layover site.

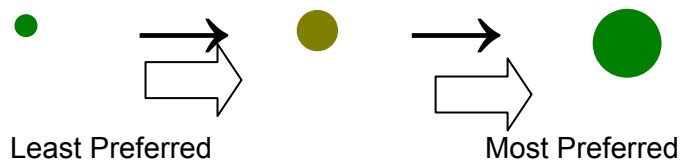


Table 6.2 Evaluation of Alternative Layover Locations (Part 2 of 2)

CRITERIA FOR EVALUATING ALTERNATIVES	St. Catharines First Street	St. Catharines Vansickle Road	St. Catharines Glendale Avenue	Niagara Falls VIA Station
A Natural Environment Rating:	●	●	●	●
1 Number of Designated Sites/Species	American Eel has been observed downstream of site within Twelve Mile Creek which is located approximately 4 km downstream of site. Species is identified on DFO Species at Risk Mapping, however, identified as "potential to be designated a SARA Schedule 1". COSEWIC designation is Special Concern. Species listed as Endangered under <i>Ontario Endangered Species Act</i> .	American Eel has been observed downstream of site within Twelve Mile Creek which is located approximately 4.8 km downstream of site. Species is identified on DFO Species at Risk Mapping, however, identified as "potential to be designated a SARA Schedule 1". COSEWIC designation is Special Concern. Species listed as Endangered under <i>Ontario Endangered Species Act</i> .	Marginal Environmentally Sensitive Area (ESA) (Welland Canal Wood) located on south side of rail ROW. Record of a <i>Species at Risk Act (SARA)</i> Schedule 1 species, Red-headed woodpecker in proximity to site. This property is surrounded by densely developed areas. Although suitable habitat is potentially present nearby this property (i.e., Welland Canal Wood Life Science ESA), the species is unlikely to inhabit this site.	None on-site. Provincially Significant Life Science and Earth Science Areas of Natural and Scientific Interest (ANSIs) (Niagara Gorge and Niagara River Bedrock Gorge) located approximately 140 m east of proposed property limit.
2 Potential for impact on terrestrial habitat (flora and fauna)	No impact over existing conditions.	No impact over existing conditions.	Habitat for Red-Headed woodpecker is not impacted by proposed train layover.	No impact over existing conditions.
3 Potential for impact on existing watercourses/crossings, aquatic habitat and fisheries resources	Seasonal watercourse running into Francis Creek (tributary of Twelve Mile Creek) located along east side and Francis Creek proper running along north side of the rail corridor. This section of Francis Creek is classified as a Type 2 watercourse with warmwater habitat by the NPCA. Potential for habitat exists for American Eel within Francis Creek; however, site does not encroach on this habitat.	Francis Creek (tributary of Twelve Mile Creek) is located at the southwest corner of site. This section of the creek is unclassified by the NPCA. Potential for habitat exists for American Eel however; protected riparian area is currently in place at site.	No impact over existing conditions.	No impact over existing conditions.
4 Potential for impact to floodplain lands	Construction that may occur in the floodplain (Francis Creek) will be subject to NPCA regulations and permitting requirements. Flood storage and conveyance in project-affected fill-regulated areas not anticipated to be negatively affected.	Construction that may occur in the floodplain (Francis Creek) will be subject to NPCA regulations and permitting requirements. Flood storage and conveyance in project-affected fill-regulated areas not anticipated to be negatively affected.	No impact over existing conditions.	No impact over existing conditions.



CRITERIA FOR EVALUATING ALTERNATIVES	St. Catharines First Street	St. Catharines Vansickle Road	St. Catharines Glendale Avenue	Niagara Falls VIA Station
B Socio-economic/ Cultural Environment <i>Rating:</i>	●	●	●	●
1 Compatibility with Surrounding Land Uses	Compatible. Site located within an agricultural area. Future hospital site located on north side of rail corridor from site.	Compatible. Site located within industrial area.	Compatible. Site located within industrial area.	Compatible. Site located within an industrial area in Niagara Falls' downtown core. Major commercial uses to south and east of site.
2 Conformity to Planning Provisions	Conforms. Site falls within the Greenbelt Area and is designated Tender Fruit and Grape according to the Greenbelt Plan and Niagara Region OP. Site is designated as Agricultural according to the City of St. Catharines OP.	Does not conform. Site is designated as Industrial according to City of St. Catharines OP. However, City of St. Catharines has indicated that they are processing a development application for these lands for future industrial businesses and thus, this land is not available for use.	Conforms. Site is designated as Urban Area according to Niagara Region OP and Industrial according to City of St. Catharines OP.	Conforms. Site is designated as Urban Area according to Niagara Region OP and Industrial according to the City of Niagara Falls OP.
3 Potential for impact to Heritage Resources (archaeological features, built heritage, and cultural heritage landscapes)	Site remains relatively undisturbed and contains archaeological potential. Stage 2 archaeological assessment required. Adjacent farms identified as cultural heritage landscapes. Potential for indirect impacts to farmscape.	Site is completely disturbed and does not have archaeological potential. Potential for direct impacts to adjacent (east) industrial property identified as former correctional facility.	Site is completely disturbed and does not have archaeological potential.	Site is completely disturbed and does not have archaeological potential. The existing VIA Rail Station building is designated under the <i>Ontario Heritage Act</i> and <i>Heritage Railway Stations Protection Act</i> . No impact anticipated.
4 Potential for noise impacts	Maximum incremental adjusted noise level is 17 dBA. Increase is very significant. Acoustic barrier will be considered.	Maximum incremental adjusted noise level is 2 dBA. Increase is insignificant.	Maximum incremental adjusted noise level is 16 dBA. Increase is very significant. Acoustic barrier will be considered.	Maximum incremental adjusted noise level is 15 dBA. Increase is very significant. Acoustic barrier will be considered.
5 Potential for air quality impacts	Predicted air contaminant concentrations at proposed train layover are below the MOE air quality standards.	Predicted air contaminant concentrations at proposed train layover are below the MOE air quality standards.	Predicted air contaminant concentrations at proposed train layover are below the MOE air quality standards.	Predicted air contaminant concentrations at proposed train layover are below the MOE air quality standards.
6 Potential for vibration impacts	Vibration impact is classified as insignificant.	Vibration impact is classified as insignificant.	Vibration impact is classified as insignificant.	Vibration impact is classified as insignificant.
7 Potential to require land	11 ha	11 ha	10.3 ha	11 ha
C Financial Factors <i>Rating:</i>	●	●	●	●
Opening Day Capital Costs	\$50 M	\$50 M	\$50 M	\$50 M
D Technical Factors <i>Rating:</i>	●	●	●	●



CRITERIA FOR EVALUATING ALTERNATIVES	St. Catharines First Street	St. Catharines Vansickle Road	St. Catharines Glendale Avenue	Niagara Falls VIA Station
1 Compatibility with Existing and Future Rail Operations	Can accommodate four storage tracks for Opening Day service and eight storage tracks for Future service. Existing double track mainline allows for flexibility in accommodating existing CN/VIA operations with minimal disruption.	Based on current development application for future industrial businesses, this site cannot accommodate train layover tracks and associated facilities.	Provides for four train layover tracks and one yard lead-in track for Opening Day and four additional storage tracks equipment track can be added in Future. Provides capacity for potential PM bays and associated tracks. Existing double track mainline allows for flexibility in accommodating existing CN/VIA operations with minimal disruption.	Provides for four train layover tracks and one yard lead-in track for Opening Day and four additional storage tracks equipment track can be added in Future. Provides capacity for potential PM bays and associated tracks. Existing double track mainline allows for flexibility in accommodating existing CN/VIA operations with minimal disruption.
2 Potential Compatibility with GO Operations	Parallel storage tracks allow for flexibility in accessing train layover and selection of trains. Minimal loss in efficiency as the site is located east of St. Catharines/Niagara VIA stations. Proximity to St. Catharines VIA station would allow for efficient train operations until Niagara Falls VIA station becomes feasible upon improvements to existing lift bridge structure at the Welland canal. Distance from Niagara Falls Via station to this site is approximately 12.3 miles.	Should land become available, parallel storage tracks allow for flexibility in accessing train layover and selection of trains. Minimal loss in efficiency as the site is located east of St. Catharines/Niagara VIA stations. Proximity to St. Catharines VIA station would allow for efficient train operations until Niagara Falls VIA station becomes feasible upon improvements to existing lift bridge structure at the Welland canal. Distance from Niagara Falls Via station to this site is approximately 12 miles.	Parallel storage tracks allow for flexibility in accessing train layover and selection of trains. Proximity to St. Catharines VIA station would allow for efficient train operations until Niagara Falls VIA station becomes feasible upon improvements to existing lift bridge structure at the Welland canal. Distance from Niagara Falls VIA station to this site is approximately 8.5 miles. Former industrial land use may require site remediation.	Parallel storage tracks allow for flexibility in accessing train layover and selection of trains. Compatible but limited due to constraints at the Welland Canal. Existing lift bridge would dictate on time arrival. Significant improvements i.e., tunnel construction would be required to ensure consistent service to this site. Upon completion of improvements, a train layover site at the terminus of proposed expansion would maximize efficiency in train operations.
3 Potential Effect of Existing At-Grade Road Crossings	Minimal impacts to existing Third Street crossing east of the proposed site as the existing is currently a double track crossing. Train volumes would increase as services are expanded.	Should land become available, minimal impacts to existing Vansickle Road crossing east of the proposed site as the existing is currently a double track crossing. Minimal impacts to the Louth Street crossing west of the site as trains are exiting the site towards the St. Catharines VIA station. Train volumes would increase as services are expanded.	Minimal impacts to existing Glendale Avenue crossing east of the proposed site as the existing is currently a double track crossing. Train volumes would increase as services are expanded.	No impacts directly associated with train layover facility. Existing River crossing is west of the site and trains will be heading in an easterly direction.
4 Potential Effect on Existing Utilities	No impacts.	Should land become available, no impacts.	No impacts.	No impacts.
5 Compliance with Federal / Provincial Requirements for Fueling Stations	Fueling facilities will be constructed to adhere to all federal and provincial regulations.	Should land become available, fueling facilities will be constructed to adhere to all federal and provincial regulations.	Fueling facilities will be constructed to adhere to all federal and provincial regulations.	Fueling facilities will be constructed to adhere to all federal and provincial regulations.
SUMMARY	Minimal impacts to natural environment. Compatible with surrounding land use and planning policy, however future hospital located north of site. Some archaeological site potential. Can accommodate short-term and long-term train servicing needs. Less efficient than Niagara Falls location in terms of train operations, however within relatively close distance to expansion area terminus.	Minimal impacts to natural environment. Compatible with surrounding land use and planning policy. Some archaeological site potential. Could accommodate short-term and long-term train servicing needs; however, site is not currently feasible due to future planned land development.	Minimal impacts to natural environment. Compatible with surrounding land use and planning policy. Can accommodate short-term and long-term train servicing needs. Within close distance to expansion area terminus.	Negligible impacts to natural environment. Compatible with surrounding land use and planning policy. Can accommodate short-term and long-term train servicing needs. Located at terminus of proposed rail expansion area providing GO Train service is extended to Niagara Falls; would provide maximum efficiency for train operations.
RECOMMENDATION	Not recommended.	Not recommended.	Recommended as a potential layover site.	Recommended as a potential layover site.



6.4 Layover Facility Alternatives Evaluation

The train layover facility alternatives were comparatively evaluated according to the same qualitative or relative-based method that was used to compare the concept alternatives. Evaluation criteria were developed using the four major criteria/factors namely: natural environment; social/cultural environment; financial; and, technical.

6.4.1 Hamilton – James Street North

The Hamilton James Street North site is not recommended for the following reasons:

- Site is not well suited for City of Hamilton long-term plans for waterfront area; and,
- Site can only accommodate storage for two trains (typically layover sites must accommodate a minimum of four trains).

6.4.2 Hamilton – Centennial Parkway

The Hamilton Centennial Parkway site is not recommended for a layover. As noted earlier, this site is not feasible due to the presence of a future Smart Centres development.

6.4.3 Hamilton – Lewis Road

The Hamilton Lewis Road site is recommended as a potential layover site for the following reasons:

- There are no natural heritage features to be impacted; there is a small ditch running north along the west side of the site, however this ditch does not support fish habitat;
- Site is situated in a developing area, lands are designated as business park; and,
- Site can accommodate eight storage tracks. At this time, Lewis Road is seen as interim layover to service initial expansion. Further expansion into Niagara Region will warrant a layover further to the east which also has the ability to accommodate eight tracks.

6.4.4 St. Catharines – First Street

The St. Catharines First Street site is not recommended primarily due to its proximity to the future St. Catharines hospital.

6.4.5 St. Catharines – Vansickle Road

The St. Catharines Vansickle Road site was initially identified by the study team as a potential layover site as it was seen as very suitable from a land use perspective due to its location within an industrial area. However, the study team was informed that the site is undergoing active development and is thus not available for use by GO Transit. This site is therefore not recommended.

6.4.6 St. Catharines – Glendale Avenue

The St. Catharines Glendale Avenue site is recommended as a potential layover site for the following reasons:

- There are no natural heritage features to be impacted;
- Site is situated in a predominantly industrial area;
- Site can accommodate short-term and long-term train servicing needs; and,
- Site can accommodate eight storage tracks.

6.4.7 Niagara Falls - VIA Station

The Niagara Falls VIA Station site is recommended as a potential layover site for the following reasons:

- There are no natural heritage features to be impacted;
- Site is situated in a predominantly industrial area;
- Site can accommodate short-term and long-term train servicing needs;
- Site located at the terminus of the proposed rail expansion area which would provide maximum efficiency for train operations; and,
- Site can accommodate eight storage tracks.

7.0 Public and Agency Consultation

7.1 Consultation Activities

The process of consulting and engaging with review agencies and members of the public has been ongoing since the commencement of this EA study. Written notifications have been provided to review agencies and members of the public who have expressed an interest in being informed about the project. These notifications have been provided in paper form and advertised in local and regional newspapers at the commencement of the study as well as prior to PICs. The following section documents the consultation activities that took place during the EA study and the responses or feedback received from the parties who engaged in the consultation process.

7.1.1 Initial Contact

The Notice of Commencement for the rail expansion was published in local newspapers as follows:

- Niagara This Week – Wednesday, November 18, 2009; and,
- Hamilton Community News (includes Ancaster News, Dundas Star, Hamilton Mountain News, and Stoney Creek News); St. Catharines Standard; Welland Port Colborne Tribune; Niagara Free Press - Friday, November 20, 2009.

A copy of the Notice of Commencement as it appeared in the newspapers is provided in Appendix D1.

The Notice of Commencement was mailed out to all relevant review agencies and elected officials on November 11, 2009 with an accompanying letter. Copies of the letters and a list of the review agencies and elected officials who received the Notice of Commencement by mail are included in Appendix D1.

7.1.2 Public Information Centres

Two sets of PICs were held during the course of the EA study. The following sections summarize each PIC.

7.1.2.1 Public Information Centre #1

The first set of PICs were held in late January / early February 2010. A Notice of PIC #1 was published in local newspapers as follows:

- Hamilton Community News (includes Ancaster News, Dundas Star, Hamilton Mountain News, and Stoney Creek News); St. Catharines Standard; Welland Port Colborne Tribune; Niagara Falls Review - Friday, January 15, 2010; and,
- Niagara This Week – Wednesday, January 20, 2010.

A copy of the Notice of PIC #1 as it appeared in the newspapers is provided in Appendix D2.

The Notice of PIC #1 was also mailed out to all relevant review agencies and elected officials on January 8, 2010 with an accompanying letter. Copies of the letters and a list of the review agencies and elected officials who received the Notice of PIC #1 by mail are included in Appendix D2. A copy of the Notice of PIC #1 was also delivered to members of the general public who requested to be added to the project mailing list.

GO Transit/Metrolinx also posted the Notice of PIC #1 on their website.

PIC #1 was held at the following locations:

- Hamilton - Sheraton Hotel – January 26, 2010;
- St. Catharines - Market Square – January 27, 2010;
- Niagara Falls - Club Italia – February 3, 2010; and,
- Grimsby - Casablanca Winery Inn – February 4, 2010.

The purpose of PIC #1 was to describe the proposed project, present the results of the preliminary constraints analysis, as well as encourage, gather, and respond to public input and feedback, present additional studies to be undertaken, and to identify the next steps in the process. The PICs were organized as a “drop-in” format with presentation boards. Approximately 31 people attended PIC #1 in Hamilton, 92 people attended PIC #1 in St. Catharines, 74 people attended PIC #1 in Niagara Falls and 105 people attended PIC #1 in Grimsby.

Following PIC #1, a report was prepared, which summarized the materials presented at the PIC and the comments received from the public. A copy of the PIC #1 Summary Report is included in Appendix D3. The key issues that were raised at PIC #1 and the responses to these issues by the study team are summarized in Table 7.1.

Table 7.1 PIC #1 Feedback

Comments Raised	Study Team Response
Station Locations: Adequacy of parking. Pedestrian safety. Preferred stations: James Street North (Hamilton), Pan-Am Stadium (Hamilton), re-instate Liuna Station (Hamilton), Fruitland Road (Hamilton), Fifty Road (Hamilton), Casablanca (Grimsby), Grimsby VIA, Beamsville, St. Catharines VIA, and near local colleges and universities.	Comments noted. Potential preferred station and train layover facility sites will be presented at PIC #2.

Comments Raised	Study Team Response
Train Layover Locations: Consider old CNR Merritton yard and St.Catharines VIA Station. Train layover site impacts on fruit lands.	
Service and Schedules: Express train service from Aldershot GO Station to Union Station. Improved bus service when trains not running. Reduced travel times. Train schedule times. Evening and weekend train service. St. Lawrence Seaway crossing delays. Elimination of level crossings in Hamilton.	Comments noted. Schedule information to be presented in next project phase. Study Team is in discussions with the St. Lawrence Seaway Authority to address potential canal crossing delays. Start of train service dependant on funding approval and ridership demand. The potential for grade separations at existing level crossings to be reviewed by the study team.
Technical Issues: Design and integration with local and regional transit systems. Parking. Bicycle and skateboard storage on-board trains. Noise and vibration concerns. Trains blocking level crossings.	Technical issues have been broadly assessed. Additional information will be available during the detailed design stage.

7.1.2.2 Public Information Centre #2

The second set of PICs were held in May 2010. A Notice of PIC #2 was published in local newspapers as follows:

- Hamilton Community News (includes Ancaster News, Dundas Star, Hamilton Mountain News, and Stoney Creek News); St. Catharines Standard; Welland Port Colborne Tribune; Niagara Falls Review – Friday, May 7, 2010; and,
- Niagara This Week – Wednesday, May 12, 2010.

A copy of the Notice of PIC #2 as it appeared in the newspapers is provided in Appendix D4.

The Notice of PIC #2 was also mailed out to all relevant review agencies and elected officials on April 30, 2010 with an accompanying letter. Copies of the letters and a list of the review agencies and elected officials who received the Notice of PIC #2 by mail are included in Appendix D4. A copy of the Notice of PIC #2 was also delivered to members of the general public who requested to be added to the project mailing list.

GO Transit/Metrolinx also posted the Notice of PIC #2 on their website.

PIC #2 was held at the following locations:

- Hamilton - Sheraton Hotel – May 11, 2010;
- St. Catharines - Market Square – May 13, 2010;
- Niagara Falls – MacBain Community Centre – May 17, 2010; and,
- Grimsby - Casablanca Winery Inn – May 19, 2010.

The purpose of PIC # 2 was to present a preliminary preferred station locations and layover locations. The PICs were organized as a “drop-in” format with presentation boards. Approximately 32 people attended PIC #2 in Hamilton, 68 people attended PIC #2 in St. Catharines, 53 people attended PIC #2 in Niagara Falls and 71 people attended PIC #2 in Grimsby.

Following PIC #2 a report was prepared, which summarized the materials presented at the PIC and the comments received from the public. A copy of the PIC #2 Summary Report is included in Appendix D5. The major issues that were raised at PIC #2 and the responses to these issues by the study team are summarized in Table 7.2.

Table 7.2 PIC #2 Feedback

Comments Raised	Study Team Response
Station Locations:	
Suggest that GO initiate a phased approach to expand into Hamilton and St. Catharines, with other stations in future.	Comment noted. GO Transit/Metrolinx will consider several service implementation options for this rail expansion. Four implementation options were presented at PIC #2. Each of which, will likely follow a phased approach. Station development will depend on funding and ridership demand.
Preferences noted for following station sites: James Street North (Hamilton), Fruitland Road (Hamilton), Fifty Road (Hamilton), Casablanca (Grimsby), Beamsville, St. Catharines VIA and Niagara Falls.	Comment noted. All of these sites have been recommended as potential station sites by the study team. Station development will depend on funding and ridership demand.

Comments Raised	Study Team Response
<p>Many people feel that the Niagara Falls station is needed and are opposed to idea of a terminal station in St. Catharines with bus service to Niagara Falls.</p>	<p>Comment noted. GO Transit/Metrolinx staff met with the Seaway on May 25, 2010 to exchange information on Seaway operations and potential implications related to an extended GO train service into Niagara Falls. Ultimately, Welland Canal issues with the Seaway Authority must be resolved prior to consideration of Niagara Falls as a terminal station. Follow-up discussions will be made between GO Transit/Metrolinx and the Seaway Authority as needed.</p>
<p>Concerned that East Hamilton is being left out of expansion opportunities.</p>	<p>Comment noted. Following PIC #2, the study team revisited the Centennial Parkway site previously identified at PIC #1 which is located north of the CN rail line, east of Centennial Parkway due to its advantageous geographic location in East Hamilton. Efforts were made to determine whether a GO station could be integrated within the already proposed development in the same area. However, this site was deemed as unfeasible due to the developer being too far along in their planning of the site to accommodate a GO station.</p> <p>The study team further investigated the possibility of developing a station site on a parcel of vacant land currently owned by the City of Hamilton just west of Centennial Parkway between Goderich Road (named Confederation). The newly proposed site would include parcels along the north and south side of the railway right-of-way. Following consultation with the City, this site was deemed as feasible and was added by the study team to the list of recommended station sites.</p>

Comments Raised	Study Team Response
	<p>The proposed concept design for this new site is illustrated on Figure ST2.</p> <p>At PIC #2, the Fruitland Road site was identified as a recommended station location. However, since there are now two other recommended station sites within relatively close proximity to the Fruitland Road site, namely, the Confederation site to the west and the Fifty Road site to the east, the Fruitland Road site has been removed from the list of recommended station sites.</p> <p>An information bulletin was advertised in local newspapers and posted on the GO Transit/Metrolinx website to communicate the above study team response in regard to this comment and offer a means for members of the public to provide further feedback on the proposed amendments to station concept plans. See Section 7.1.2.3 for further discussion regarding this information bulletin.</p>
<p>Concerned that Casablanca Boulevard station site is too close to residential areas. Concerned about traffic congestion, noise impacts, light pollution, surface drainage and walkways at this site and impact to quality of life of neighborhood.</p>	<p>Comment noted. The Casablanca site was recommended in order to build on the existing park and ride facility. A traffic study including warrants for traffic signals would be undertaken in conjunction with the detailed design phase of any station site development, including the Casablanca site. Mitigation measures to address local resident concerns will be included in the detailed design plans to minimize noise impacts and installation of light deflectors on light poles to reduce light pollution. Surface water drainage will be addressed further during the detailed design phase of the project.</p>

Comments Raised	Study Team Response
	<p>Following PIC #2, the study team modified the concept design plan for this site to accommodate the public's request. A buffer area is now proposed behind the existing church property and the parking lot has been expanded further to the west to accommodate future parking needs as warranted.</p> <p>The proposed modified concept design for the Casablanca Boulevard station site is illustrated on Figure ST5.</p> <p>An information bulletin was advertised in local newspapers and posted on the GO Transit/Metrolinx website to communicate the above study team response in regard to this comment and offer a means for members of the public to provide further feedback on the proposed amendments to station concept plans. See Section 7.1.2.3 for further discussion regarding this information bulletin.</p>
Service/Schedules:	
Ensure rail service is run during peak and non-peak times and on weekends.	Comment noted. The proposed opening day service would provide for four in bound (to Toronto) trains in the AM peak period and four outbound (from Toronto) trains in the PM peak period. As ridership increases, GO Transit/Metrolinx will evaluate the feasibility of adding off-peak service as well as weekend and holiday service.
Connections with local and GO bus service are a must.	Comment noted. Rail and bus services will be coordinated to ensure that they compliment each other within the service area.

Comments Raised	Study Team Response
Technical:	
Parking capacity at proposed station sites must be adequate.	Comment noted. Adequate parking will be provided at all stations to meet the anticipated parking demands.

7.1.3 Information Bulletin

Constructive feedback was received from stakeholders following PIC #2. As highlighted in Table 7.2 above, there were specific concerns raised that East Hamilton was being left out of expansion opportunities and that the original site concept for Casablanca Boulevard (as presented at PIC #2) was proposing a parking lot too close to nearby residents. The study team reviewed this feedback and proposed some changes to the station concept for the recommended station near Casablanca Boulevard. In addition, a new recommended station site concept (named Confederation) was developed west of Centennial Parkway. Modifications were also made subsequent to PIC #2 on the site concept for proposed Fifty Road station based on feedback from the City of Hamilton.

The purpose of information bulletin was to present the proposed changes and obtain further feedback from interested stakeholders.

A Notice of Information Bulletin (Appendix D6) was published in local newspapers as follows:

- Hamilton Community News (includes Ancaster News, Dundas Star, Hamilton Mountain News, and Stoney Creek News) – Thursday December 9, 2010;
- Niagara This Week – Wednesday, December 8, 2010; and,
- St. Catharines Standard; Welland Port Colborne Tribune; Niagara Falls Review - Friday, December 10, 2010.

Prior to the issuance of the Information Bulletin, property owners of the land proposed for Confederation, Fifty Road and Casablanca Boulevard station sites were contacted to inform them of the proposed future station developments. In addition, property owners of the land proposed for the layover facilities near Lewis Road were contacted. The Notice of Information Bulletin was also mailed out to all property owners contacted by phone with an accompanying letter. A copy of the letter sent to these property owners is included in Appendix D6.

GO Transit/Metrolinx also posted the Notice of Information Bulletin on their website. The Notice of Information Bulletin was also mailed out to all relevant review agencies and elected officials as well as members of the general public who requested to be added to the project mailing list. As a result of public input to the Information Bulletin:

- A Confederation GO rail station has been recommended;
- The proposed Fruitland Road GO rail station was dropped from consideration; and,

- A Fifty Road GO rail station has been deferred pending a resolution on the City of Hamilton's LRT extension to Fifty Road and lands being made available for a combined LRT / GO rail station.

Table 7.3 summarizes the comments received from review agencies, elected officials and members of the general public. These comments can be found in Appendix D6.

Table 7.3 Information Bulletin Summary of Comments

ID	Company	Name	Comment Received	Response Given
1		Private Owner	Email dated December 10, 2010. Is of the opinion that Casablanca Station should be developed first or concurrently with the other two preferred stations. Would like to be retained on the mailing list.	Email response from Leonard Rach (Burnside) dated December 10, 2010. Acknowledged input and assured that name will be retained on contact list for any further study.
2		Private Owner	Email dated December 10, 2010. Supports the GO Transit rail expansion to Hamilton/Niagara. Would like to see the first phase of expansion go to all potential preferred stations up to and including the Fifty Road GO Station, at a minimum.	Email response from Leonard Rach (Burnside) dated December 10, 2010. Acknowledged comment.
3		Private Owner	Email dated December 11, 2010. Would like to know the current anticipated completion date for the various stages of the project.	Email response from Leonard Rach (Burnside) dated December 16, 2010. The anticipated completion dates for the various stages of the project: <ul style="list-style-type: none"> • ESR to be filed in February, 2011. • If no request for bump-ups, Metrolinx will commence detailed design. • The phasing of the rail extension is dependant on provincial budget priorities and ridership potential. • It is expected that the rail expansion will be undertaken in phases over the next 20 years.
4		Private Owner	Email dated December 13, 2010. Expressed support for the Confederation Station. Would like to suggest an additional station at Ottawa Street North since it is a commercial area and is 5 km from the Centennial Station.	Email response from Andreas Grammenz (GO Transit / Metrolinx) dated January 6, 2011. Acknowledged comments.
5		Private Owner	Email dated December 13, 2010. Supports the Centennial Parkway and Confederation stations in Hamilton.	Email response from Andreas Grammenz (GO Transit / Metrolinx) dated January 6, 2011. Acknowledged comments.
6		Private Owner	Email dated December 13, 2010. Is unclear whether Confederation, Fifty Road and Casablanca potential stations will be built if they pass the EA approval process or would one of the three stations be chosen as a stop on the way to St. Catharines / Niagara Falls.	Email response from Andreas Grammenz (GO Transit / Metrolinx) dated December 20, 2010. Included a link to the project web site: http://www.gotransit.com/public/en/improve/projects.aspx Also stated that the Confederation station on Centennial Parkway will replace the Fruitland Station which was eliminated.

ID	Company	Name	Comment Received	Response Given
7		Private Owner	Email dated December 14, 2010. Expressed interest in the development of a new station at Fifty Road as it would be a social and economical benefit to the City of Hamilton.	Email response from Leonard Rach (Burnside) dated December 20, 2010. Mr. Rach indicated that Fifty Road is included as a potential preferred station and actual implementation is directly related to ridership potential and availability of funds.
8		Private Owner	Email dated December 15, 2010. Would like to know if consideration was given to GO services (road / rail) from Niagara Falls/ St. Catharines to Toronto which shall include a stop in downtown Hamilton.	Email response from Andreas Grammenz (GO Transit / Metrolinx) dated December 20, 2010. Included links to the Niagara Bus schedule and the Environmental Assessment for the GO Transit Niagara Rail Service Expansion project: http://www.gotransit.com/publicroot/en/schedules/lstserdt.aspx?table=12&station=&new=Y http://www.gotransit.com/public/en/improve/projects.aspx
9		Private Owner	Email dated December 23, 2010. Would like to know if the potential stations in Hamilton can be constructed sooner or a temporary station be provided.	Email response from Andreas Grammenz (GO Transit / Metrolinx) dated January 3, 2011. Mr. Grammenz stated that the estimated time frame for ESR, detailed design and construction is 5 years. Introduction of a temporary service would not be undertaken as it can make the project cost prohibitive.
10		Private Owner	Email dated December 23, 2010. Would like to know if Niagara Falls Train station is a potential GO Train stop.	Email response from Leonard Rach (Burnside) dated December 24, 2010. Confirmed that Niagara Falls Train station is one of the future GO station sites for expansion service into Niagara.
11	Mady Development Corporation	Harold R. Kersey Vice-President, Planning & Development	Email dated December 23, 2010. Supports the Fifty Road station as it would be beneficial to the Winona Crossing commercial development which is expected to commence in 2011.	Email response from Leonard Rach (Burnside) dated December 24, 2010. Acknowledged comments and confirmed name on the mailing list.
12		Private Owner	Email dated December 24, 2010. Would like to know if the James Street station is still being considered.	Email response from Andreas Grammenz (GO Transit / Metrolinx) dated January 3, 2011. Included a link to the GO Expansion website for the Niagara project: http://www.gotransit.com/public/en/improve/projects.aspx
13	Town of Lincoln	Rob Foster Councillor	Email dated December 28, 2010. Suggest that an additional station be located in Lincoln as it would be beneficial to the community and there is available CN land for a potential layover station.	Email response from Andreas Grammenz (GO Transit / Metrolinx) dated January 3, 2011. Included a link to the GO Transit expansion along the CN corridor: http://www.gotransit.com/public/en/docs/ea/niagara/FINAL_GO20Transit_NiagaraRailExpansionPIC2Boards_May112010.pdf

ID	Company	Name	Comment Received	Response Given
				The ESR has identified train layover stations that meet GO Transit criteria in the different phases of the expansion.
14		Private Owner	Email dated December 29, 2010. Supportive of a station at Confederation.	Email response from Andreas Grammenz (GO Transit / Metrolinx) dated January 3, 2011. Acknowledged comment.
15		Private Owner	Email dated December 30, 2010. Suggest that garages should be constructed and connected to a walkway instead of utilizing a large acreage for parking.	
16		Private Owner	Email dated December 30, 2010. Supports the Confederation, Fifty Road and Casablanca stations sites and proposes a marshalling yard at either location. Suggested that the eastern terminus of the LRT should be the proposed Confederation station via the Red Hill Creek to the Rail line. Additional concerns noted.	Email response from Leonard Rach (Burnside) dated January 5, 2011. Added to contact list. Addressed comments.
17		Private Owner	Email dated January 1, 2011. Would like the government to provide affordable public service.	
18		Private Owner	Email dated January 2, 2011. Supports the potential station near Highway 20 as it will provide alternative modes of transportation.	
19		Private Owner	Email dated January 2, 2011. Supports the Confederation station location. Would like to know if the present Casablanca Car Pool/ Bus Rapid Transit will be changed.	Email response from Andreas Grammenz (GO Transit / Metrolinx) dated January 3, 2011. Mr. Grammenz indicated that once the GO Transit Rail Expansion reaches the Casablanca Station a detailed design will be conducted to accommodate all the requirements that are needed at a GO Station.
20		Private Owner	Letter dated December 30, 2010. Supports the Confederation train station and would like to see a layover station at Lewis Road in Stoney Creek.	Email response from Leonard Rach (Burnside) dated January 4, 2011. Indicated that the EA Study report will be placed on the public record in February 2011 for a 45 day public review period.
21		Private Owner	Email dated January 4, 2011. Supports the Confederation station and relocation of the Fifty Road station from the west to the east side of the road.	Email response from Andreas Grammenz (GO Transit / Metrolinx) dated January 5, 2011. Included a link to the project website: http://www.go transit.com/public/en/improve/projects.aspx

ID	Company	Name	Comment Received	Response Given
22	City of Hamilton	Keith Anderson Appraiser Co-ordinator Planning & Economic Development Dept.	Email dated January 4, 2011. Would like to know if GO Transit/ Metrolinx are at the stage to commence land acquisition for potential stations in Hamilton.	Email response from Andreas Grammenz (GO Transit / Metrolinx) dated January 14, 2011. The parcel of land identified as a station location off of Goderich Road in east Hamilton was discussed with the City's Public Works Department and is being used as a buffer area between the transfer station and other business on Centennial Parkway. Included a link to the proposal: http://www.gotransit.com/public/en/docs/ea/niagara/ST-2%20(Confederation).pdf
23		Private Owner	Email dated January 4, 2011. Contented that GO Transit/ Metrolinx acknowledged concerns at the PIC #2.	Email response from Andreas Grammenz (GO Transit / Metrolinx) dated January 5, 2011. Acknowledged comment.
24	Hamilton Conservation Authority	Darren Kenny Watershed Officer	Email dated January 5, 2011. HCA Staff reviewed the proposed Confederation and Fifty Road stations sites with regard to Natural Hazard and Natural Heritage lands. Recommended a preliminary screening for Species at Risk on the Fifty Road station site.	Email response from Andreas Grammenz (GO Transit / Metrolinx) dated January 6, 2011. Notified consultant of HCA comments so as to ensure they are addressed prior to detailed design stage.
25		Private Owner	Email dated January 5, 2011. Concern regarding future expansion into St. Catharines and the need to potentially expropriate land owned by the College.	Email response from Andreas Grammenz (GO Transit / Metrolinx) dated January 5, 2011. Addressed concern.
26	Rogers Communications Inc.	Edgar Henriquez Mark-up Coordinator GTAW	Letter dated January 5, 2011. Rogers Communications Inc. has buried fiber TV plant along the CN corridor at the Fifty Road, Casablanca Boulevard and Confederation stations sites. Would like to be retained on the mailing list.	
27		Private Owner	Email dated January 5, 2011. Would like a copy of the Traffic Impact Study related to the proposed Casablanca Station. Asked to be added to the mailing list.	Email response from Leonard Rach (Burnside) dated January 5, 2011. Added name to contact list. Traffic data will be included in the ESR and can be viewed when placed on the public record. Detailed traffic studies at the various station locations will be included in the detailed design phase.
28		Private Owner	Email dated January 6, 2011. Supports the Casablanca and Confederation stations sites.	Email response from Andreas Grammenz (GO Transit / Metrolinx) dated January 7, 2011. Acknowledged comments. Included a link to the project website: http://www.gotransit.com/public/en/improve/projects.aspx

ID	Company	Name	Comment Received	Response Given
29		Private Owner	Email dated January 7, 2011. Would like to know of any proposals for regular GO Trains service to St. Catharines and Niagara Falls.	Email response from Andreas Grammenz (GO Transit / Metrolinx) dated January 10, 2011. Included a link to the Public Open House slide : http://www.go transit.com/public/en/docs/ea/niagara/FINAL_GO%20Transit_NiagaraRailExpansionPIC2Boards_May112010.pdf When the rail expansion occurs, GO Transit buses will continue to meet trains at the terminus station regardless of any option that is implemented.
30		Private Owner	Email dated January 7, 2011. Would like to know if the existing St. Catharines VIA Station presented at the PIC #2 will remain as the station in St. Catharines.	Email response from Andreas Grammenz (GO Transit / Metrolinx) dated January 10, 2011. Acknowledged comments and noted that St. Catharines station is unchanged from PIC #2.
31	Ministry of Transportation	Adrian Firmani Technician Corridor Management Section	Letter dated January 10, 2011. Building/land-use permits will be required prior to any grading and construction of lands near the QEW. A Traffic Impact Study is also required.	Email response from Andreas Grammenz (GO Transit / Metrolinx) dated January 10, 2011. Acknowledged comments.
32	Mady Development Corporation	Harold Kersey VP, Planning & Development	Email dated December 23, 2010. Supports the Fifty Road station on the east side of the road. Would like to be kept on the mailing list.	Email response from Leonard Rach (Burnside) dated December 24, 2010. Confirmed name on mailing list.
33	Indian and Northern Affairs Canada (INAC)	Don Boswell Senior Claims Analyst Ontario Research Team Specific Claims Branch	Email dated January 11, 2011. Included various links to determine First Nations in the study area who have submitted claims: http://www.aboriginalaffairs.gov.on.ca/english/services/firstnations.asp http://pse5-esd5.ainc-inac.gc.ca/fnp/Main/Search/SearchRV.aspx?lang=eng http://pse4-esd4.ainc-inac.gc.ca/SCBRI/Main/ReportingCentre/External/ExternalReporting.aspx?lang=eng http://www.ainc-inac.gc.ca/ai/mr/is/acp/acp-eng.asp	
34		Private Owner	Letter dated January 11, 2011. Would like to be added to the mailing list.	
35		Private Owner	Email dated January 10, 2011. Supports the Fifty Road station site.	Email response from Andreas Grammenz (GO Transit / Metrolinx) dated January 11, 2011. Acknowledged comment.

ID	Company	Name	Comment Received	Response Given
36	Town of Grimsby	Michael Seaman Director of Planning Planning Department	Email dated January 11, 2011. Supports the Casablanca Boulevard station site.	
37		Private Owner	Letter dated January 12, 2011. Concerned that the preferred Fifty Road GO station will have a significant detrimental impact on commercial development proposed for this area. Would like to be added to the mailing list.	
38	Horizon Utilities	Dean Anderson, M.A.A.T.O.	Letter dated January 12, 2011. Casablanca station is not in their service area. However the Confederation and Fifty Road sites are in their service area and will be serviced by Horizon Utilities. Provided information/ drawings that will be required from GO Transit once locations are finalized as well as mitigation measures to be followed during excavation.	
39		Private Owner	Email dated January 12, 2011. Supports the Confederation station site.	
40		Private Owner	Letter dated January 10, 2011. Supports the Confederation, Casablanca Boulevard and Fifty Road stations sites. Would like to be added to the mailing list.	
41		Private Owner	Email dated January 13, 2011. Supports the Casablanca station site. Would like to know if GO Transit will be adding a dedicated track for commuter trains, leaving the existing lines for freight and VIA Rail traffic.	
42	City of Hamilton	Alan Kirkpatrick Manager of Transportation Planning	Email dated January 14, 2011. Would like to know about EA requirements related to the GO bridge over Centennial Parkway.	Email response from Leonard Rach (Burnside) dated January 14, 2011. Believes that an EA approval and or senior staff approval is required in order to commit any funds to the City works.
43		Private Owner	Email dated January 14, 2011. Concern regarding ridership numbers for Fifty Road and Casablanca stations given their close proximity.	Email response from Andreas Grammenz (GO Transit / Metrolinx) dated January 17, 2011. The Fifty Road station will only be constructed as ridership warrants when the Hamilton LRT is developed.
44		Private Owner	Email dated January 14, 2011. Supports the potentially preferred GO stations at Confederation, Fifty Road and Casablanca Boulevard.	

ID	Company	Name	Comment Received	Response Given
45		Private Owner	Email dated January 14, 2011. Not supportive of the Fifty Road station on the east side of the road as the land is considered part of the Greenbelt land. Prefers the west side of the road site as development has been approved and land is available.	
46	Niagara Region	Don Campbell Manager, Development Initiatives Development Services Division Public Works Department	Email dated January 14, 2011. Supports the Casablanca Boulevard as a potential GO station and is in agreement with the buffer separating the parking area from the woodland and watercourse to the west since they are significant natural features in the Regional Policy Plan.	
47		Private Owner	Email dated January 15, 2011. Proposed multiple options /design concepts to maximize land available.	
48	City of Hamilton	Carolyn Biggs Co-ordinator Committee Services/Council/Budg ets	Letter dated January 18, 2011. City of Hamilton staff to communicate with GO Transit to advise that the Transportation Hub be located inside the Commercial Development on the southwest corner of Fifty Road and the South Service Road in Winona.	
49	City of Hamilton	Gerry Davis, CMA General Manager Public Works Department	Letter dated January 13, 2011. Supports the Confederation and Fifty Road stations however included a number of technical, policy, financial and administrative considerations that must be addressed at the planning and design stage. Would like to be retained on the mailing list.	
50		Private Owner	Letter dated January 13, 2011. Concern that the preferred Casablanca station proposal includes utilization of lands zoned for retail car sales establishment.	

7.1.4 Record of Meetings

Throughout the project, additional meetings were held with key agencies and stakeholders to present and receive feedback on the project. Meetings have been summarized in Table 7.4. Copies of meeting minutes are included in Appendix D7.

Table 7.4 Record of Meetings

Meeting Participant	Date	Issues Discussed
Municipalities		
City of St. Catharines	October 14, 2009	Project overview; discussed results of feasibility study; preliminary list of alternative station and layover sites; discuss on options for PIC #1 venues
City of Hamilton	October 21, 2009	Project overview; discussed results of feasibility study; preliminary list of alternative station and layover sites; discuss on options for PIC #1 venues
Niagara Region	October 30, 2009	Project overview; discussed results of feasibility study; preliminary list of alternative station and layover sites; discuss on options for PIC #1 venues
City of Niagara Falls	November 5, 2009	Project overview; discussed results of feasibility study; preliminary list of alternative station and layover sites; discuss on options for PIC #1 venues
City of Hamilton	January 6, 2010	Review of extension options; discussion of local issues relating to alternative station/layover sites in Greater Hamilton Area.
Niagara Region	April 22, 2010	Staff briefing prior to PIC #2.
City of Niagara Falls	April 26, 2010	Staff briefing prior to PIC #2
Town of Lincoln	April 27, 2010	Staff briefing prior to PIC #2.
City of Hamilton	April 27, 2010	Staff briefing prior to PIC #2.
City of St. Catharines	April 28, 2010	Staff briefing prior to PIC #2.
Town of Grimsby	April 29, 2010	Staff briefing prior to PIC #2.
City of Hamilton	July 14, 2010	Discussion of Confederation, Fruitland Road, and Fifty Road site concepts.
City of Hamilton	November 15, 2010	Discussion of Confederation and Fifty Road site concepts.

Meeting Participant	Date	Issues Discussed
Agencies / Interested Groups		
St. Lawrence Seaway Authority	May 25, 2010	GO Transit/Metrolinx staff met with authority to exchange information on Seaway operations and discuss potential GO train service needs for Niagara Falls. Seaway noted that meetings were scheduled with the City of Niagara Falls to discuss future GO train service.
Smart Centres	June 7, 2010	Discussion of possible ways to accommodate GO station within proposed development area east of Centennial Parkway.
Hydro One / Ontario Realty Corporation	July 12, 2010	Implications of potential GO stations sites and potential impacts on hydro lands. Discussed ORC/MEI Class EA requirements.

7.2 Aboriginal Correspondence

The Notices of Commencement, PIC #1 and PIC #2 were delivered to the following aboriginal groups and First Nations:

- Union of Ontario Indians;
- Association of Iroquois and Allied Indians;
- Mississauga of the New Credit First Nation;
- Six Nations of the Grand River Territory;
- Niagara Region Metis Council; and,
- Hamilton/Wentworth Metis Council.

The Notice of Commencement was also delivered to the following aboriginal agencies in order to obtain information about any aboriginal communities or groups that may have claims within the study area or may be affected by the proposed project and should be consulted:

- Ministry of Aboriginal Affairs – Policy and Relations;
- Indian and Northern Affairs Canada – Environmental Unit
- Indian and Northern Affairs Canada (INAC) – Specific Claims Branch;
- INAC– Comprehensive Claims Branch; and,
- INAC – Litigation Management and Resolution Branch.

Correspondence was received from INAC Specific Claims noting that there were no claims within the vicinity of the study. Similarly, INAC Litigation Management and Resolution Branch noting there is no active litigation within the vicinity of the study area. INAC Comprehensive Claims Branch asked to remain notified throughout the study. The study team was contacted by the Métis Nation of Ontario (MNO) in May 2010 asking for information on the project to be relayed to the Lands, Resources and Consultation Branch. The study team responded to the MNO providing a link to the study webpage on the GO Transit/Metrolinx website. Copies of correspondence with aboriginal agencies and groups are included in Appendix D8.

7.3 Agency Correspondence

Comments have been received from review agencies throughout the duration of the EA study. All correspondence with agencies is summarized in Table 7.5. Copies of the response communication received from these agencies and any study team responses given is included in Appendix D8.

Table 7.5 Summary of Agency Correspondence

Company	Name	Comment Received	Response Given
A. Provincial Agencies			
Ministry of Environment West Central Region	Barbara Slattery Environmental Assessment and Planning Coordinator	Letter dated November 17, 2009. Noted MOE standard practice to advise proponents to contact MMA, INAC and Ministry of Attorney General to inquire about land claims. Asked to be provided copies of all PICs for file. Asked for a copy of the ESR.	Email response sent from Jennifer Vandermeer (Burnside) on February 26, 2010. Provided Barbara with a copy of the PIC #1 display boards. Email response sent from Jennifer Vandermeer (Burnside) on May 19, 2010. Provided Barbara with a copy of the PIC #2 display boards. Note: Burnside to provide a copy of the Final ESR to Barbara when available.
Ministry of Natural Resources	April Nix Planning Intern, Guelph District	Letter dated February 8, 2010. Noted that study area falls within the Greenbelt plan and the Niagara Escarpment Plan area. Wish to be kept informed on progress of study. Email dated August 6, 2010. Provided a list of Species at Risk within the various municipalities through Niagara Region and a recommended approach to identify species-appropriate habitats and determining the presence of SAR within the EA study area	Jennifer Vandermeer (Burnside) contacted April Nix by phone on July 13, 2010 to inquire about receiving additional information from MNR regarding Species at Risk for the study corridor. Letter dated September 24, 2010 Provided MNR with Species at Risk information already collected and documented for each of the alternative station and layover sites considered by the study team. Provided copies of site figures illustrating ELC communities observed during field visits. Provided discussion of potential effects and related mitigation measures provided in the ESR with regard to natural environment. Requested MNR review information and advise if level of assessment completed to date is satisfactory.
Ministry of Transportation – Central Region	Greg Roszler Project Manager, Corridor Management Section	Project Response Form dated December 11, 2009. Asked to be kept informed on progress of study.	Comment noted.
Ministry of Transportation – Corridor Management Section	Adrian Firmani Permit Officer / Technician	Email received May 19, 2010. Asked to be kept informed on progress of study.	Email response sent from Andreas Grammenz (GO Transit/Metrolinx) dated May 19, 2010. Acknowledged comments.

Company	Name	Comment Received	Response Given
Ontario Realty Corporation (ORC)	Lisa Myslicki Environmental Coordinator	<p>Letter dated November 30, 2009 from Lisa Myslicki (emailed December 1, 2009 by Julius Lindsay). Noted that there is ORC managed property in study area.</p> <p>Letter dated February 1, 2010 from Lisa Myslicki (emailed February 1, 2010 by Julius Lindsay). Asked for a copy of the ESR.</p> <p>Email dated July 12, 2010 from Lisa Myslicki. Clarified that there are lands managed by Hydro One on behalf of ORC.</p> <p>Email dated December 9, 2010 from Lisa Myslicki. Provided comments on ESR.</p>	<p>Email response from Leonard Rach (Burnside) dated December 1, 2009. Comment noted.</p> <p>Email response from Jennifer Vandermeer (Burnside) dated February 26, 2010. Comment noted.</p> <p>Response email from Jennifer Vandermeer (Burnside) dated July 17, 2010. Acknowledged comments.</p> <p>Note: Burnside to provide a copy of the Final ESR to ORC.</p> <p>Email sent from Jennifer Vandermeer (Burnside) dated November 25, 2010. Requested comments on ESR.</p> <p>Email sent from Jennifer Vandermeer (Burnside) dated December 15, 2010. Acknowledged comments.</p>
Niagara Escarpment Commission (NEC)	Nancy Mott-Allen, MCIP, RPP Senior Planner	<p>Project Response Form dated November 26, 2009. Asked to be kept informed on progress of study. Stressed conformity with Niagara Escarpment Plan.</p> <p>Email dated May 4, 2010. Requested more detailed information on potential impacts to the Niagara Escarpment Plan area.</p> <p>Fax dated May 13, 2010. Confirmed that the proposed works will not impact the Niagara Escarpment. NEC supports the rail expansion.</p>	<p>Comment noted.</p> <p>Response email from Jennifer Vandermeer (Burnside) dated May 4, 2010. Acknowledged comments.</p> <p>Comment noted.</p>
Conservation Halton	Jennifer Lawrence	<p>Project Response Form faxed November 17, 2009. Would like to ensure that Provincial Policy Statement Natural Heritage and Natural Hazards policies are followed.</p> <p>Letter dated December 17, 2009. Included floodplain mapping for the study area and a list of items that should be considered during the EA.</p> <p>Email dated May 5, 2010. Requested PIC #1 and #2 materials.</p>	<p>Dominique Evans (Burnside) contacted Jennifer Lawrence on November 20, 2010 to confirm if the CA would be supplying further background information. Jennifer stated that a formal response would be sent at a later date.</p> <p>Comment noted.</p> <p>Jennifer Vandermeer (Burnside) contacted Jennifer on May 7, 2010 to confirm that the CA was outside of the active study area.</p>

Company	Name	Comment Received	Response Given
Hamilton Conservation Authority	Darren Kenny	Project Response Form dated November 20, 2009. Made note of potential floodplain concerns along the CNR line. Email dated July 29, 2010. Confirmed receipt of the Notice of Commencement. Made note of additional potential floodplain and hazard lands.	Comment noted. Email response from Jennifer Vandermeer (Burnside) dated August 5, 2010. Acknowledged comments.
Niagara Peninsula Conservation Authority	Steve Miller	Email dated July 29, 2010. Confirmed that the CA would be providing comment the week of August 9. Email dated August 26, 2010. Made note of potential floodplain and natural heritage feature concerns at specific stations and along the line.	Email response from Jennifer Vandermeer (Burnside) dated August 19, 2010. Requested comments. Email response from Jennifer Vandermeer (Burnside) dated August 26, 2010. Acknowledged comments.
MP Niagara Falls Ridging	Karyn Stockton	Email dated January 21, 2010. Confirmed receipt of PIC information, and confirmed that the Hon. Rob Nicholson was unable to attend.	Comment noted.
B. Federal Agencies			
Transport Canada - Ontario Region (PHE) Environment and Engineering	Ingrid Epp Environmental Officer	Email dated November 13, 2009. Noted approval requirements for any navigable water crossings (if applicable). Noted notification requirements prior to construction of railways. Also noted there may be CEAA triggers for this project.	Email response from Leonard Rach (Burnside) dated November 13, 2009. Acknowledged comments. Note: ESR to document that CEAA triggers are to be confirmed during detailed design.
Indian and Northern Affairs Canada - Comprehensive Claims Branch Assessment and Historical Research Directorate	Nicole Cheechoo Claims Assessment Officer	Project Response Form received dated December 1, 2009. Asked to be kept informed on progress of study.	Comment noted.
Canadian Transportation Agency	John Woodward Senior Environmental Officer	Project Response Form received dated November 24, 2009. Asked to be kept informed on progress of study.	Comment noted.
C. Municipal Agencies			
Town of Grimsby	Keith Vogl	Project Response Form emailed November 16, 2009. Feels that stations need to be established in convenient locations (i.e., downtown), and in accordance with provincial and regional policies.	Email response from Leonard Rach (Burnside) dated November 17, 2009. Added to contact list on November 17, 2008.
	Gary Shay Town Manager / Deputy Clerk	Letter dated February 17, 2010. Contained the resolution for the Town to support the project.	Comment noted.

Company	Name	Comment Received	Response Given
Town of Fort Erie	Tomas Villella Planner	Email dated November 18, 2009. Wanted to know why Fort Erie had been left out of the study area, and what if anything could be done to change the study area.	Email response from Leonard Rach (Burnside) dated November 19, 2009. Expressed the findings of the Feasibility study.
	Carolyn Kett Clerk	Letter dated November 24, 2009. Contained the resolution for the Town to support the project, and petition the Regional Municipality of Niagara to support the project.	Comment noted.
City of Hamilton Public Works	Christine Lee-Morrison Manager, Environmental Planning	Project Response Form emailed December 16, 2009. Asked to be kept informed on progress of study. Prefers Fifty Road station. Would like expansion in place for the Pan Am Games.	Email response from Leonard Rach (Burnside) dated December 16, 2009. Acknowledged comments.
		Letter dated March 24, 2010 (sent from Jill Stevens and Paul Mallard). Expanded on previous resolution. Included James Street North and Fifty Road as the preferred sites.	Comment noted.
		Letter dated May 18, 2010 (sent from Carolyn Biggs). Included Councils recommended sites: James Street North, Fruitland Road and Fifty Road, and Lewis Road as the layover site.	Comment noted.
City of Hamilton Rapid Transit Initiative	Jill Stephen Director of Rapid Transit	Letter dated August 20, 2010 (sent from Jill Stephen and Steve Robichaud). Asked to be kept informed of the progress of the study. Included comments regarding each of the proposed sites. Also expressed support for the project.	Letter response from Greg Ashbee (GO Transit/Metrolinx) dated September 14, 2010. Acknowledged comments.
City of Niagara Falls Mayors Office	Ted Salci Mayor	Project Response Form dated December 23, 2009. Asked to be kept informed on progress of study. Stressed that discussions with the Seaway Authority are imperative.	Comment noted.
City of Niagara Falls	Dean Iorfida Clerk	Letter dated March 5, 2010. Contained the resolution for the Region to support the project, and continue to engage the Federal Government and the St. Lawrence Seaway Authority.	Comment noted.
City of Welland	Christine Mintoff Clerk	Project Response Form dated December 4, 2009. Asked to be kept informed on progress of study.	Comment noted.
City of Welland Bylaws, Traffic and Parking Operations	David Ferguson Manager	Project Response Form emailed November 23, 2009. Feels it is critical to provide a provincial public transit system connecting the GTA to Niagara.	Email response from Leonard Rach (Burnside) dated November 24, 2009. Acknowledged comments.
		Email dated May 31, 2010. Suggested that the layover facility be located with the limits of the City of Welland.	Email response sent from Andreas Grammenz (GO Transit/Metrolinx) dated June 1, 2010. Acknowledged comments.
City of Welland Mayors Office	Theresa Ettorre	Email dated January 19, 2010. Confirmed receipt of PIC information, and confirmed that Mayor Goulbourne was unable to attend.	Comment noted.
City of Burlington	Scott Hamilton Senior Engineer	Project Response Form faxed on November 30, 2009. Would like to see accommodations made for future high speed train service.	Comment noted.

Company	Name	Comment Received	Response Given
City of St. Catharines Transportation and Environmental Services	Christine Adams Manager	Email dated January 22, 2010. Asked to be added to contact list.	Email response from Leonard Rach (Burnside) dated January 22, 2010. Added to contact list January 22, 2010.
Town of Pelham Mayors Office	Dave Augustyn Mayor	Email dated December 3, 2009. Asked to be kept informed on progress of study.	Email response from Greg Ashbee (GO Transit/Metrolinx) dated December 23, 2009. Acknowledged comments.
Township of West Lincoln	Brian Treble	Project Response Form faxed on December 1, 2009. Asked to be kept informed on progress of study.	Comment noted.
Niagara Region	Kevin Bain Clerk	Letter dated December 10, 2009. Contained the resolution for the Region to support the project, and that the Town of Fort Erie and Welland be included in the study. Letter dated July 16, 2010. Contained the recommendations of the Integrated Community Planning Committee.	Comment noted. Comment noted.
Niagara Region Public Works	Eric Flora Associate Director Kumar Ranjan Transportation Engineer	Email dated December 14, 2010. Asked to be added to contact list. Email dated March 1, 2010. Included comments from the Integrated Community Planning, Development Services and Transportation Services. Email dated July 19, 2010. Included comments from the Integrated Community Planning, Development Services and Transportation Services.	Email response from Leonard Rach (Burnside) dated January 19, 2010. Added to contact list January 19, 2010. Comment noted. Comment noted.
Halton District School Board	Domenico Renzella Manager of Planning	Project Response Form emailed November 17, 2009. Asked to be kept informed on progress of study.	Email response from Leonard Rach (Burnside) dated November 17, 2009. Acknowledged comments.
Hamilton Wentworth District School Board	Don McKerrall	Project Response Form dated December 11, 2009. Asked to be kept informed on progress of study.	Comment noted.
City of St. Catharines Fire Department	Mark Mehlenbacher Fire Chief	Project Response Form received dated November 24, 2009. Asked to be kept informed on progress of study.	Comment noted.
Halton Region Land Ambulance Services	Greg Sage Director	Project Response Form faxed November 20, 2009. Asked to be kept informed on progress of study.	Comment noted.
D. Rail and Utilities			
Hydro One Networks Inc.	Vyke Krishnapillai	Project Response Form emailed January 18, 2010. Asked to be kept informed on progress of study. Identified that there are facilities within the study area. Request for detailed drawings during design.	Email response from Leonard Rach (Burnside) dated January 19, 2010. Acknowledged information.
Enbridge Pipelines Ltd.	Ann Newman Crossing Co-ordinator	Email dated November 20, 2009. Noted that Enbridge Pipelines Inc. has two pipelines within the right-of-way. Asked to be kept informed. Letter dated January 15, 2010. Included a map of the pipelines within the right-of-way. Asked to be kept informed.	Email response from Leonard Rach (Burnside) dated November 24, 2009. Acknowledged comments. Comment noted.

Company	Name	Comment Received	Response Given
Enbridge Gas Distribution Ltd.	Diana Beaulne Markup Administrator	Email dated November 18, 2009. Noted that Enbridge has buried plant in numerous locations throughout the study area. Request for detailed drawings during design.	Email response from Leonard Rach (Burnside) dated November 18, 2009. Acknowledged comments.
Trans-Northern Pipelines Inc.	Satish Kumar Korpai Coordinator – Crossings & Facilities	Email dated May 11, 2010. Requested a larger version of the draft route map.	Email response from Jennifer Vandermeer (Burnside) dated May 18, 2010. Included route map. Acknowledged comments.
Bell Canada	John La Chapelle Manager – Municipal Relations	Letter dated May 18, 2010. Asked for a copy of the ESR and a meeting to discuss detailed design.	Comment noted.
CN Rail	Martita Mullen	Project Response Form emailed November 19, 2009. Expressed concern about maintaining levels of service for freight and passenger traffic.	Email response from Leonard Rach (Burnside) dated November 19, 2009. Included the following link: http://www.go transit.com/public/en/improve/projects.aspx
E. Aboriginal Agencies			
Métis Nation of Ontario	James Wagner Consultation Assessment Coordinator	Email dated May 12, 2010. Requested all material related to the project and asked to be added to the mailing list.	Email response from Andreas Grammenz (GO Transit/Metrolinx) dated May 13, 2010. Acknowledged comments. Included the following link: http://www.go transit.com/public/en/improve/projects.aspx

7.4 Elected Official Correspondence

Comments have been received from several municipalities (mayors or clerks) throughout the duration of the EA study. Generally, communication has been very supportive of the proposed rail expansion with several resolutions being passed by municipalities in support of the expansion. Correspondence from municipalities and any study team response is summarized with agency correspondence in Table 7.4. Copies of correspondence with municipalities are included in Appendix D8.

7.5 General Stakeholder Correspondence

Comments have been received from stakeholders throughout the duration of the EA study. Most of the comments were received at the time of the PICs and are summarized in the PIC Summary Reports (see Section 7.1.2). All other general stakeholder correspondence is summarized in Table 7.6. Copies of the response communication received from stakeholders and any study team responses given is included in Appendix D9.

7.6 Media Releases

The study team has been made aware of many newspaper articles that have been published during the course of this EA relating to the proposed rail expansion project.

Copies of the articles, which have been collected by the study team, are provided in Appendix D10.

Table 7.6 Summary of General Stakeholder Correspondence

ID	Comments Received	Response Given
1	Email dated November 17, 2009. Asked to be added to contact list. Would like to see service expanded to Beamsville.	Email response from Leonard Rach (Burnside) dated December 16, 2009. Acknowledged comments. Added to contact list December 16, 2009.
2	Email dated November 17, 2009. Asked to be added to the contact list. Would like to know if a station will be added at Fifty Road.	Email response from Leonard Rach (Burnside) dated November 19, 2009. Acknowledged comments. Added to contact list on November 19, 2009.
3	Email dated November 18, 2009. Asked to be added to contact list. Noted interest in service especially from Grimsby to Toronto.	Email response from Leonard Rach (Burnside) dated November 19, 2009. Acknowledged comments. Added to contact list on November 19, 2009.
4	Email dated November 18, 2009. Asked to be added to contact list. Inquired about public consultation.	Email response from Leonard Rach (Burnside) dated November 18, 2009. Added to contact list on November 18, 2009. Acknowledged comments, noted that public information centres will be held in Hamilton, St. Catharines, Niagara Falls, and possibly the Grimsby area.
5	Email dated November 18, 2009. Asked to be added to contact list. Inquired about the details required for a Class B Class EA.	Email response from Leonard Rach (Burnside) dated November 19, 2009. Acknowledged comments. Added to contact list on November 19, 2009.
6	Email dated November 18, 2009. Asked to be added to the contact list. Would like to know if a station will be added at Grimsby.	Email response from Leonard Rach (Burnside) dated November 19, 2009. Acknowledged comments. Added to contact list on November 19, 2009.
7	Email dated November 19, 2009. Asked to be added to the contact list. Have views as a former railroader that may be important to those not familiar with the CPR line east of Hamilton.	Email response from Leonard Rach (Burnside) dated November 20, 2009. Acknowledged comments. Added to contact list on November 20, 2009.
8	Email dated November 20, 2009. Asked to be added to the contact list. Would like to ensure that GO is looking at doubling the rail line to ensure consistent service.	Email response from Leonard Rach (Burnside) dated November 20, 2009. Acknowledged comments. Added to contact list on November 20, 2009.
9	Email dated November 20, 2009. Asked to be added to the contact list. Would like to know if Niagara-on-the-lake is considered, or could be considered for future expansion.	Email response from Leonard Rach (Burnside) dated November 23, 2009. Added to contact list on November 23, 2009.
10	Email dated November 23, 2009. Asked to be added to contact list. Provided options for possible station locations as well as ticketing options in Niagara Falls.	Email response from Leonard Rach (Burnside) dated November 24, 2009. Added to contact list on November 24, 2009. Acknowledged comments.
11	Email dated November 26, 2009. Asked to be added to contact list. Would like to see local Colleges and Universities consulted.	Email response from Leonard Rach (Burnside) dated November 27, 2009. Acknowledged comments. Added to contact list November 27, 2009.
12	Email dated November 26, 2009. Asked to be added to contact list. In favour of expansion, but concerned with increased noise.	Email response from Leonard Rach (Burnside) dated November 27, 2009. Acknowledged comments. Added to contact list November 27, 2009.
13	Letter dated December 2, 2009. Asked to be added to contact list. Would prefer a site on West street in St. Catharines, as well as a central site.	Comment noted.
14	Email dated December 3, 2009. Asked to be added to contact list.	Email response from Leonard Rach (Burnside) dated December 3, 2009. Added to contact list December 3, 2009.
15	Email dated December 6, 2009. Asked to be added to contact list. Included information on Lyon's Creek East.	Email response from Leonard Rach (Burnside) dated December 7, 2009. Acknowledged information. Added to contact list December 7, 2009.
16	Letter dated December 9, 2009. Provided information on Red Creek Parkway as a future rail transit corridor.	Letter response from Andreas Grammenz (GO Transit/Metrolinx) dated December 14, 2009. Acknowledged information. Added to contact list December 14, 2009.
17	Email dated December 31, 2009. Inquired if the service will provide a direct route from Niagara Falls to Union Station.	Email response from Andreas Grammenz (GO Transit/Metrolinx) dated January 4, 2010. Addressed comments. Added to contact list on January 4, 2010.
18	Email dated January 6, 2010. Inquired on Public Information Centre details for this project.	Email response from Andreas Grammenz dated January 6, 2010. Addressed comments. Added to contact list on January 6, 2010.

ID	Comments Received	Response Given
19	Email dated January 19, 2010. Asked to be added to contact list. Would like to understand why Port Colborne is not part of the study area.	Email response from Andreas Grammenz dated January 19, 2010. Acknowledged comments. Included the following link: http://www.gotransit.com/PUBLIC/en.news/projectsandstudies.htm#niagarapeninsula
20	Email dated January 20, 2010. Asked to be added to contact list. Concerned about noise and impacts to residents along the CN rail line.	Email response from Leonard Rach (Burnside) dated January 22, 2010. Acknowledged comments. Added to contact list January 22, 2010.
21	Email dated January 21, 2010. Asked to be added to contact list. Would like to see the expansion right into Niagara Falls.	Email response from Leonard Rach (Burnside) dated January 22, 2010. Acknowledged comments. Added to contact list January 22, 2010.
22	Email dated January 26, 2010. Asked to be added to contact list. Inquired about timing of PICs.	Email response from Andreas Grammenz (GO Transit/Metrolinx) dated January 26, 2010. Added to contact list on January 26, 2010. Addressed comments.
23	Email dated January 26, 2010. Asked to be added to contact list.	Email response from Andreas Grammenz (GO Transit/Metrolinx). Added to contact list on January 27, 2010. Addressed comments.
24	Email dated January 26, 2010. Would like to know if GO Transit/Metrolinx will provide a bus to the locations of the PIC for commuters on the Lakeshore West Line.	Email response from Andreas Grammenz (GO Transit/Metrolinx). Addressed comments. Included the following links: http://www.gotransit.com/PUBLIC/en.news/projectsandstudies.htm#niagarapeninsula . http://www.gotransit.com/publicroot/en/schedule/1stserdt.aspx?table=12&station=&new=
25	Email dated January 27, 2010. Asked to be added to contact list. Inquired about summer service to Niagara Falls.	Email response from Andreas Grammenz (GO Transit/Metrolinx) dated January 27, 2010. Added to contact list on January 27, 2010. Acknowledged comments.
26	Email dated March 3, 2010. Attached is a letter regarding the Niagara Region rail service.	Email response from Leonard Rach (Burnside) dated March 12, 2010. Added to contact list on March 12, 2010. Addressed comments.
27	Email dated March 21, 2010. Inquired about the Niagara Expansion Feasibility Study and date of the second PIC.	Email response from Andreas Grammenz (GO Transit/Metrolinx) dated March 22, 2010. Added to contact list on March 22, 2010. Addressed comments.
28	Email dated April 5, 2010. Inquired about the timing process for this project.	Email response from Leonard Rach (Burnside) dated April 5, 2010. Addressed comments.
29	Email dated May 3, 2010. Asked for PIC #2 materials prior to PIC.	Email response from Emilia Marceta (GO Transit/Metrolinx) dated May 3, 2010. Acknowledged comments. Included the following link: http://www.gotransit.com/public/en/improve/projects.aspx
30	Email dated May 5, 2010. Asked to be added to the contact list.	Email response from Greg Ashbee (GO Transit/Metrolinx) dated May 6, 2010. Added to contact list on May 6, 2010.
31	Email dated May 7, 2010. Asked to be added to contact list. Supports the expansion project into Niagara Region.	Email response from Leonard Rach (Burnside) dated May 7, 2010. Added to contact list May 7, 2010.
32	Email dated May 11, 2010. Asked to be added to contact list. Expressed concern about potential delays along Lakeshore Line.	Email response from Andreas Grammenz (GO Transit/Metrolinx) dated May 11, 2010. Added to contact list on May 11, 2010. Acknowledged comments. Included the following link: http://www.gotransit.com/public/en/improve/projects.aspx
33	Email dated May 27, 2010. Does not support the rail expansion into the Niagara Region.	Email response from Andreas Grammenz (GO Transit/Metrolinx) dated June 7, 2010. Acknowledged comments. Added to contact list May 27, 2010.
34	Email dated June 13, 2010. Asked to be added to contact list. Supports the expansion project into Niagara Region.	Email response from Leonard Rach (Burnside) dated June 14, 2010. Added to contact list June 14, 2010.
35	Email dated June 14, 2010. Asked to be added to contact list. Suggested looking into a lift bridge at Lock 3 to cross the Seaway.	Email response from Leonard Rach (Burnside) dated June 15, 2010. Acknowledged comments. Added to contact list June 15, 2010.
36	Email dated August 19, 2010. Supplied detail on existing service in the Niagara Region. Feels that there is enough transportation coverage and that rail expansion isn't required.	Email response from Jennifer Vandermeer (Burnside) dated August 20, 2010. Acknowledged comments. Added to contact list August 20, 2010.

ID	Comments Received	Response Given
37	Email dated September 7, 2010. Welcomes the expansion of GO train services along the Niagara peninsula. Feels that it is critical and overdue.	Email response from Andreas Grammenz (GO Transit/Metrolinx) dated September 7, 2010. Acknowledged comments. Added to contact list September 7, 2010.
38	Email dated September 21, 2010. Expressed interest in the Stoney Creek area stations.	Email response from Andreas Grammenz (GO Transit/Metrolinx) dated September 23, 2010. Added to contact list on September 23, 2010. Acknowledged comments. Included the following link: http://www.gotransit.com/public/en/improve/projects.aspx
39	Email dated November 7, 2010. Asked to be added to contact list. Interested in the planned rail service for St. Catharines and Niagara Region.	Email response from Andreas Grammenz (GO Transit/Metrolinx) dated November 8, 2010. Added to contact list on November 8, 2010.

8.0 Description of Proposed Project

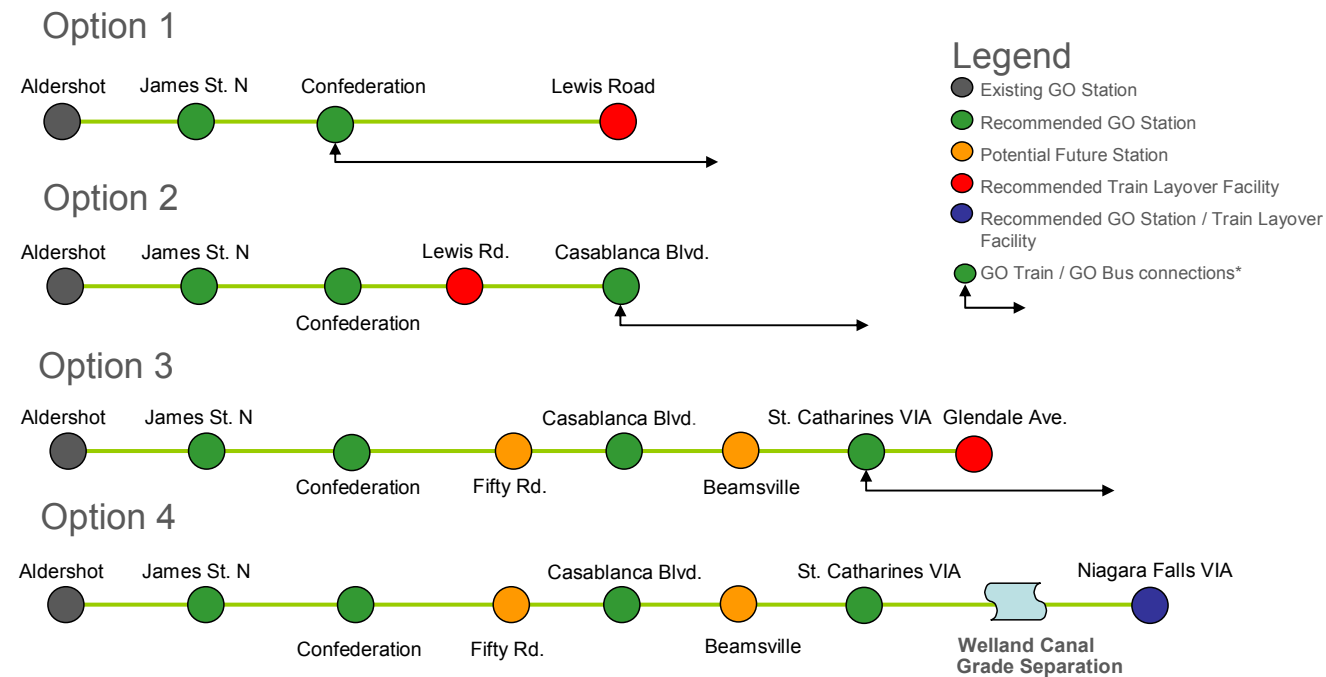
8.1 Project Implementation Options

Implementation of the expansion of GO rail service into Niagara Region will likely follow a phased approach. The extent and timing of the expansion options that are identified herein and service levels will be dependent upon funding and ridership demand for rail service. As well, within the overall context of options for rail expansion two distinct operating service levels are outlined, namely:

- Opening Day Service – consists of four Toronto-bound trains in the morning peak period and four Niagara-bound trains in the evening peak period; and,
- Future Service – as ridership demand for rail service increases and funding becomes available, future service is defined as two way service, seven days per week with 20 minute peak period service and 1 hour off-peak service.

Potential implementation options for consideration are illustrated in Figure 8.1.

Figure 8.1 Implementation Options



*For options 1-3, GO Bus service would provide a connection from the last station on the line to Niagara Falls, making stops in between.

On balance, Option 2, as an Opening Day service option, to extend rail service as far as Casablanca Boulevard has a great deal of merit. It not only intercepts the current park and ride trips from Hamilton / East Hamilton / Grimsby areas into the Burlington GO stations, but also provides an entry into the Niagara Region. With a Casablanca Boulevard GO station both the Province of Ontario and Region of Niagara

have the opportunity to continue to build strong transit links to encourage the modal shift away from roads and thereby hasten the timetable for further extensions of GO rail service to St. Catharines and Niagara Falls.

On the other hand, extending GO rail commuter service into Niagara Falls can be considered, at this time, as a long term future option, which is directly impacted by the Welland Canal crossing. Until the question of a rail grade separation across the Welland Canal is resolved or guaranteed crossing windows for commuter GO trains can be negotiated with the St. Lawrence Seaway Authority, the likely option for a terminal rail commuter station would be St. Catharines with bus connections into Niagara Falls.

It should be noted, that dependent upon the phasing/implementation of station/layovers selected for construction, the design may require adjustments to accommodate a pocket track in cases where a station is east of the proposed layover.

8.2 Railway Improvements

The proposed expansion of commuter rail services to the Niagara Peninsula beyond Grimsby will require track improvements to increase capacity of the rail corridor. In general, this will be achieved by the construction of a double mainline track of about 2.6 miles long through Hamilton Yard area to the east of the Confederation station and approximately 10 miles long between Nelles Road and 15th Street. As part of these works, some additional track work will be required in the Centennial Parkway area to ensure freight and passenger train operations are separated. Construction of this additional mainline track will minimize or eliminate conflicts between passenger and freight trains. A double mainline track will increase the efficiency and reliability of the proposed time sensitive GO weekday AM/PM services thus avoiding major disruptions to service, especially during winter. Track improvements in the Hamilton area are included in the Hamilton Junction Feasibility Study (Hatch 2011), which is located in **Appendix E**.

8.2.1 Opening Day

The construction of an additional mainline track on the south side of the existing single mainline track through Hamilton Yard area is feasible as most of the area was previously occupied by tracks. The major work in general consists of changes to the interlocking signal plants at Hamilton Junction and Mile 43.1, Grimsby S/D, modifications to CN's Cargo-Flow facility at South Hamilton Yard, reconfiguration of tracks at Centennial Parkway to provide improved route isolation and major grade work to provide standard overhead clearances under the roadway structures at James Street, John Street, Mary Street, Ferguson Street and Redhill Creek Expressway.

8.2.2 Future

As GO commuter rail service is expanded into Niagara Region, additional track will be required between Nelles Road and 15th Street. This section of track was once double mainline track. The south mainline was removed approximately 10 years ago due to low levels of traffic. The south mainline track can be easily re-established as the railway embankment and bridge structures are in good condition to

accommodate double tracks. There are approximately 17 at-grade public road crossings with automatic warning systems consisting of gates that require relocation including reconstruction of their south approaches.

The recommendation to upgrade the 15th Street/Nelles single track to double track is primarily based on the need to minimize or eliminate major conflicts between the proposed GO AM/PM weekday service and primarily freight traffic on this 10-mile section of the corridor. A Hot Box and Dragging Equipment Detector is located at Mile 18.8, within the single track section. Trains receiving alarms must stop immediately to determine extent of damage before receiving instruction from the RTC to proceed. Freight trains, especially in the winter, are more susceptible to braking, wheel, and dragging equipment problems. CNR has daily freight trains to Buffalo (considered snow belt). Consequently, there is the potential for delays of 30 minutes or more before the 10-mile single track is cleared. If this incident were to occur just prior to the morning rush hour from St. Catharines, there is the possibility that the entire AM service would be cancelled. The occurrence of such a prolonged delay under summer conditions may not be as extensive. CNR's manifest freight trains usually run closer to a regular/predictable schedule, whereas under winter conditions the freight trains have a more random schedule.

The Recommended Track Design is illustrated on Figure T-1 to Figure T-35.

8.2.3 Rail /Ties/Ballast

In recent years, CN has undertaken a staged tie/ballast replacement program which included replacement of all ties between Hamilton and St. Catharines and as such, existing track conditions are good.

8.2.4 Roadway Grade Crossings

Within the rail corridor study area between James Street North on the CNR Oakville S/D and Niagara Falls VIA Station on the CNR Grimsby S/D, the rail corridor has 70 at-grade crossings; 63 public and 7 private crossings.

As most of the corridor was at one time double mainline track, many of the existing level grade crossings include gate and flashing light protection and do not require additional upgrades. Existing protection systems are currently inspected and maintained by CNR.

Any noted upgrades would be part of future phases and are to be completed in accordance with Transport Canada's draft RTD-10 "Road/Railway Grade Crossings" manual and includes upgrades required, appropriate signage, etc.

It should be noted that due to existing and proposed traffic volumes on some of the roads currently crossing the CNR, there may be a need to further upgrade the existing protection system to a grade separation. For the purposes of this report, further analysis has been completed only for roads crossing the CNR which are adjacent to proposed station locations. From a railway perspective, many of the

existing protection systems, i.e., gates, lights, etc. are sufficient to protect railway traffic from road traffic based upon rail volumes and speed. The opportunity for upgrading to a grade separation is largely a function of road traffic and as such, this responsibility would fall to the road authority. As part of this process, the road authority would be responsible for completing a separate Environmental Assessment to assess potential road improvements as well as determining whether the potential grade separation would be an over/under scenario.

Table 8.1 summarizes the crossing locations, existing conditions and suggested improvements for both Opening Day and Future.

Table 8.1 Proposed Crossing Improvements

Mileage	Subdivision	Road Name	Existing	Proposed
33.31	OAKVILLE	King Road	RFBG	No Change Required
43.14	GRIMSBY	Wellington Street	RFBG	No Change Required
42.99	GRIMSBY	Victoria Avenue	RFBG	No Change Required
42.61	GRIMSBY	Wentworth Street	RFBG	No Change Required
42.07	GRIMSBY	Sherman Avenue	RFBG	No Change Required
41.82	GRIMSBY	Lottridge Avenue	RFBG	No Change Required
41.54	GRIMSBY	Gage Avenue	RFBG	No Change Required
41.02	GRIMSBY	Ottawa Street	RFBG	No Change Required
39.50	GRIMSBY	Parkdale Avenue	RFBG	No Change Required
39.04	GRIMSBY	Woodward Avenue	RFBG	No Change Required
38.56	GRIMSBY	Nash Road	RFBG	No Change Required
38.31	GRIMSBY	Kenora Road	RFBG	No Change Required
36.97	GRIMSBY	Gray's Road	RFBG	No Change Required
36.39	GRIMSBY	Green's Road	RFBG	No Change Required
35.87	GRIMSBY	Millen Road	RFBG	No Change Required
35.32	GRIMSBY	Dewitt Road	RFBG	No Change Required
34.29	GRIMSBY	Jones Road	RFBG	No Change Required
33.74	GRIMSBY	Glover Road	RFBG	No Change Required
33.22	GRIMSBY	McNeilly Road	RFBG	No Change Required
32.69	GRIMSBY	Lewis Road	RFBG	No Change Required
32.17	GRIMSBY	Winona Road	RFBG	No Change Required
31.67	GRIMSBY	Fifty Road	RFBG	No Change Required
31.39	GRIMSBY	Conc. No. 1	RFBG	No Change Required
30.90	GRIMSBY	Kelson Avenue	RFBG	No Change Required
30.39	GRIMSBY	Oakes Road N.	RFBG	No Change Required
29.87	GRIMSBY	Hunter Road	RFBG	No Change Required
29.37	GRIMSBY	Casablanca Boulevard	RFBG	No Change Required
28.84	GRIMSBY	Roberts Road	RFBG	No Change Required
28.32	GRIMSBY	Kerman Avenue	RFBG	No Change Required

Mileage	Subdivision	Road Name	Existing	Proposed
27.42	GRIMSBY	Ontario Street	RFBG	No Change Required
26.79	GRIMSBY	Nelles Road	RFBG	No Change Required
24.79	GRIMSBY	Durham Road	RFBG	No Change Required
24.27	GRIMSBY	Mountainview Road	RFBG	No Change Required
23.74	GRIMSBY	Lincoln Avenue	RFBG	No Change Required
23.21	GRIMSBY	Ontario Street	RFBG	No Change Required
22.67	GRIMSBY	Bartlett Road S.	RFBG	No Change Required
22.13	GRIMSBY	Sann Road	RFBG	No Change Required
21.76	GRIMSBY	Farm Crossing	R - Passive	RF
21.61	GRIMSBY	Tufford Road	RFBG	No Change Required
21.09	GRIMSBY	Merritt Road	RFBG	No Change Required
20.59	GRIMSBY	Farm Crossing	R - Passive	RF
20.51	GRIMSBY	Maple Grove Road	RFBG	No Change Required
20.01	GRIMSBY	Cherry Avenue	RFBG	No Change Required
19.67	GRIMSBY	Farm Crossing	R - Passive	RF
19.47	GRIMSBY	Martin Road	RFBG	No Change Required
18.65	GRIMSBY	23rd Street	RFBG	No Change Required
18.13	GRIMSBY	21st Street	RFBG	No Change Required
17.19	GRIMSBY	Jordan Road Reg. Road 26	RFBG	No Change Required
16.65	GRIMSBY	15th Street Louth Township	RFBG	No Change Required
16.50	GRIMSBY	Farm Crossing	R - Passive	RF
16.04	GRIMSBY	13th Street	RFBG	No Change Required
15.50	GRIMSBY	11th Street	RFBG	No Change Required
13.39	GRIMSBY	Third Street Louth Conc. 4	RFBG	No Change Required
12.85	GRIMSBY	First Street Louth Townline	RFBG	No Change Required
12.55	GRIMSBY	Vansikle Road	RFBG	No Change Required
12.02	GRIMSBY	Louth Street Reg. Road 72	RFBG	No Change Required
9.93	GRIMSBY	Private	R - Passive	RF
9.24	GRIMSBY	Glendale Avenue Reg Road 89	RFBG	No Change Required
	GRIMSBY	Private	R - Passive	RF
8.41	GRIMSBY	Private	R - Passive	RF
6.35	GRIMSBY	Gamer Road	RFBG	No Change Required

Mileage	Subdivision	Road Name	Existing	Proposed
4.39	GRIMSBY	Dorchester Road	RFBG	No Change Required
2.84	GRIMSBY	Stanley Avenue	RFBG	No Change Required
2.63	GRIMSBY	Church's Lane	RFBG	No Change Required

Notes: 1 - Automatic Warning Devices consisting of Reflectorized Cross Bucks, Flashing Lights, Bell and gates are shown as R, F, B, G respectively.

The following criteria were important considerations in determining the feasibility of grade separating the at-grade road/rail crossings.

The draft Grade Crossing Regulations (DGCR), dated December 2002 and prepared by Transport Canada, indicate that new at-grade crossings will not be constructed if the maximum permissible speed on the railway exceeds 80 mph (130 Kph) or if the roadway is classified as a freeway by The Geometric Design Guide for Canadian Roads (1996) and prepared by the Transportation Association of Canada (TAC).

Section six of the DGCR indicates that before a responsible authority causes or authorizes any of the following changes, it shall conduct a detailed safety assessment:

- A significant change in the road or railway infrastructure, including a relocation of the at-grade crossing, or in the traffic patterns at or in the vicinity of a grade crossing, such as the installation of traffic signals on road approaches or a change in the location of the meeting or passing points of trains or engines on sidings or on passing tracks or in the switching of equipment;
- Anything that is likely to cause a significant increase in the traffic volume of on the road or line of the railway at or in the vicinity of a grade crossing, such as the addition of a new commuter rail service or the development of a residential area or an industrial area or an industrial, commercial or recreation facility;
- A significant increase in the speed of traffic on the road or line of railway at or in the vicinity of a grade crossing;
- A significant change on the type of vehicle passing over the grade crossing; or,
- Any other action that might cause a significant change in road or railway operations that could adversely affect the safety of a grade crossing.

There are also a number of variables that factor into the decision to a grade separated road/rail crossing. These variables were developed based on the Canadian Road/Railway Grade Crossing detailed Safety assessment Field Guide, dated April 2005 and prepared by Transport Canada. The Variables include but are not limited to the following:

- Vehicular traffic volumes over the crossing;
- Frequency of train movements over the crossing; Public transportation surface usage (Bus, street cars, LRT, etc);
- School bus usage;

- Interconnectivity of the current and future road networks;
- Physical site constraints;
- Collision history;
- Number of tracks through the crossing;
- Number of road lanes over the crossing;
- Maximum permissible speed on the road and on the tracks;
- Existing levels of safety; and,
- Other physical characteristics such as gradient.

Road crossings adjacent to proposed stations are noted below. It should also be noted that identified traffic volumes used to assess exposure index were provided through Municipal Official Plans and are to be confirmed during the detailed design stage at which time a detailed Traffic Impact Study will be completed for each specific site. Traffic volumes do not account for any future developments which may occur in the noted yearly projections.

Hamilton – James Street North

Existing crossings in and around the proposed James Street North station site (James Street and McNabb Street) are currently already grade separated.

Hamilton – Confederation

Existing crossing at Centennial Parkway is already grade separated. The City of Hamilton have identified that the crossing requires reconstruction to accommodate widening of Centennial Parkway. Further details regarding the structure upgrades are detailed within Section 8.5.

Hamilton – Fifty Road

Further assessment of the crossing improvements will be required as part of the detailed design phase of the project. Traffic volumes associated with future developments, proximity of QEW interchange and proposed GO station in this area may cause delays/queuing at the level crossings. Below are details regarding the location as well as associated exposure index.

Existing Rail Conditions

Road Authority	Road Classification	Max Train Speed	No. Tracks	Existing Protection	Daily Trans		
					VIA/Amtrak	Freight	GO
City of Hamilton	Major Arterial	50 m/hr	2	RFBG	7	6	0

Future Rail Conditions

Road Authority	Road Classification	Max Train Speed	No. Tracks	Existing Protection	Daily Trans		
					VIA/Amtrak	Freight	GO
City of Hamilton	Major Arterial	50 m/hr	2	RFBG	8	8	8

Note: Traffic Volumes as provided through Official Plans – 2007 Data and Mady Traffic Impact Study (April, 2009)

Daily Crossings	2007	2016	2031
Annual Growth	5%	1%	1%
Vehicular	7,100*	11,650	13,525
Rail	13	20	24
Exposure Index	92,300	233,000	324,600

Note: *Traffic Volumes as provided through Official Plans – 2007 Data and Mady Traffic Impact Study.

Although requirements are to be confirmed through the completion of a detailed Traffic Impact Study for the area, potential exists to grade separate the Fifty Road railway crossing in the future.

Grimsby – Casablanca Boulevard

Further assessment of the crossing improvements will be required as part of the detailed design phase of the project. Traffic volumes associated with the recent and future developments, proximity of QEW interchange and proposed GO station in this area may cause delays/queuing at the level crossing. Below are details regarding the location as well as associated exposure index.

Existing Rail Conditions

Road Authority	Road Classification	Max Train Speed	No. Tracks	Existing Protection	Daily Trans		
					VIA/Amtrak	Freight	GO
Town of Grimsby	Regional Arterial	50 m/hr	2	RFBG	7	6	0

Future Rail Conditions

Road Authority	Road Classification	Max Train Speed	No. Tracks	Existing Protection	Daily Trans		
					VIA/Amtrak	Freight	GO
Town of Grimsby	Regional Arterial	50 m/hr	2	RFBG	8	8	8

Note: Traffic Volumes as provided through Official Plans – 2007 Data.

Daily Crossings	2007	2016	2031
Annual Growth	1%	1%	1%
Vehicular	8,000*	8,800	10,200
Rail	13	20	24
Exposure Index	104,000	176,000	244,800

Note: *Traffic Volumes as provided through Official Plans – 2007 Data.

Although requirements are to be confirmed through the completion of a detailed Traffic Impact Study for the area, potential exists to grade separate the Casablanca Boulevard railway crossing in the future.

Beamsville – Ontario Street

Further assessment of the crossing improvements will be required as part of the detailed design phase of the project. Due to the crossing being in a relatively urbanized area, construction of a potential grade separation may be difficult to construct without greatly effecting adjacent businesses. Below are details regarding the location as well as associated exposure index.

Existing Rail Conditions

Road Authority	Road Classification	Max Train Speed	No. Tracks	Existing Protection	Daily Trans		
					VIA/Amtrak	Freight	GO
Town of Lincoln	Arterial	50 m/hr	1	RFBG	7	6	0

Future Rail Conditions

Road Authority	Road Classification	Max Train Speed	No. Tracks	Existing Protection	Daily Trans		
					VIA/Amtrak	Freight	GO
Town of Lincoln	Arterial	50 m/hr	2	RFBG	8	8	8

Note: Traffic Volumes as provided through Official Plans – 2007 Data.

Daily Crossings	2007	2016	2031
Annual Growth	1%	1%	1%
Vehicular	15,000*	16,400	19,000
Rail	13	20	24
Exposure Index	195,000	328,000	456,000

Note: *Traffic Volumes as provided through Official Plans – 2007 Data.

Although requirements are to be confirmed through the completion of a detailed Traffic Impact Study for the area, potential exists to grade separate the Ontario Street railway crossing in the future.

St. Catharines – St. Catharines VIA

Through discussions with the City of St. Catharines and the Region of Niagara, the potential need for a grade separation may be required at the existing Louth Street level crossing. As traffic may potentially increase through the City’s efforts for intensification of the area, traffic volumes may warrant a need for a potential grade separation at this location. Below are details regarding the location as well as associated exposure index.

Existing Rail Conditions

Road Authority	Road Classification	Max Train Speed	No. Tracks	Existing Protection	Daily Trans		
					VIA/Amtrak	Freight	GO
City of St. Catharines	Regional Arterial	50 m/hr	2	RFBG	7	6	0

Future Rail Conditions

Road Authority	Road Classification	Max Train Speed	No. Tracks	Existing Protection	Daily Trans		
					VIA/Amtrak	Freight	GO
City of St. Catharines	Regional Arterial	50 m/hr	2	RFBG	8	8	8

Note: Traffic Volumes as provided through Official Plans – 2007 Data.

Daily Crossings	2007	2016	2031
Annual Growth	1%	1%	1%
Vehicular	14,100*	15,400	17,900
Rail	13	20	24
Exposure Index	183,300	308,000	429,600

Note: *Traffic Volumes as provided through Official Plans – 2007 Data.

Although requirements are to be confirmed through the completion of a detailed Traffic Impact Study for the area, potential exists to grade separate the Louth Street railway crossing in the future.

St. Catharines – Glendale Avenue Layover

Glendale Avenue is a Regional arterial road and currently has a relatively high volume of traffic. The lands adjacent to the Glendale Avenue site are largely industrial in use with residential lots to the west. Below are details regarding the location as well as associated exposure index.

Existing Rail Conditions

Road Authority	Road Classification	Max Train Speed	No. Tracks	Existing Protection	Daily Trans		
					VIA/Amtrak	Freight	GO
City of St. Catharines	Regional Arterial	50 m/hr	2	RFBG	7	6	0

Future Rail Conditions

Road Authority	Road Classification	Max Train Speed	No. Tracks	Existing Protection	Daily Trans		
					VIA/Amtrak	Freight	GO
City of St. Catharines	Regional Arterial	50 m/hr	2	RFBG	8	8	8

Note: Traffic Volumes as provided through Official Plans – 2007 Data.

Daily Crossings	2007	2016	2031
Annual Growth	1%	1%	1%
Vehicular	12,900*	14,100	16,400
Rail	13	20	24
Exposure Index	167,700	282,000	393,600

Note: *Traffic Volumes as provided through Official Plans – 2007 Data.

Although requirements are to be confirmed through the completion of a detailed Traffic Impact Study for the area, potential exists to grade separate the Glendale Avenue railway crossing in the future.

Niagara Falls – Niagara Falls VIA

Victoria Avenue which is located at the western portion of the station/layover site proposed at Niagara Falls VIA is currently grade separated.

As previously noted, all other grade crossings should be formally assessed by the municipality as rail/vehicular traffic continues to grow in the area.

8.3 Station Location and Preliminary Site Layouts

The following sections describe the location and preliminary layout for each of the recommended potential stations. Further details are provided on Figures ST-1 to ST-9.

8.3.1 Hamilton James Street North

The James Street North station site is located adjacent to the former LIUNA Station which has been converted to a banquet hall, and the property is also owned by the LIUNA group. The site is at Mile 39.5 of the Oakville S/D. Below is a brief description of recommended improvements.

8.3.1.1 Opening Day

The proposed scenario would require a station building along the south side of the new GO track to the south of the CNR mainline, along with parking, bus bays and a Kiss and Ride area to allow for drop-offs and taxi patrons. Initial parking would be sized to accommodate 180 spaces. Below is a brief description of recommended Interim improvements:

- Construction of south platform;
- Construction of south mini-platform;
- Construction of south side parking area which accommodates 180 spaces;
- Construction of bus bays;
- Construction of a Kiss and Ride area along the east portion of the site;
- Construction of site servicing, i.e., sanitary, potable water, fire protection, etc.; and,
- Construction of Station Building and Station Tunnel / Bridge at James Street and stairs to Bay Street (including stairs/elevators).

8.3.1.2 Future

Below is a brief description of recommended Future improvements:

- Construction of island platform and mini-platform.
- Construction pedestrian tunnel including stairs/elevators between platforms and possible connection to James, McNabb, and Bay Streets.
- Construction of west side parking, which will add an additional 280 spaces to the station site (460 total).
- Potential expansion of parking along the north to be considered.

In order to accommodate additional parking at this location, further consideration could be given for the construction of a multi-level parking facility. It is expected that the James Street station is to be serviced by GO trains in conjunction with the existing Hamilton GO Centre station. This would allow for GO Transit to service both the north and south population centres of Hamilton and provide Hamilton with full day service.

Also, Bay Street and James Street bridge structures are to be reconstructed to accommodate future track improvements.

Preliminary discussions with VIA Rail indicated an interest of a joint use station to service both VIA and GO riders.

Further details are provided in Figure ST-1.

8.3.2 Hamilton – Confederation Station

The proposed Confederation site is located along the west side of Centennial Parkway. A portion of the site is greenfield with the remainder being existing commercial/industrial lands located approximately at Mile 38.04 of the Grimsby S/D. This site will service existing and proposed developments in the area. The Confederation site will function as a GO Park and Ride facility. Below is a brief description of recommended improvements:

8.3.2.1 Opening Day

The proposed Opening Day scenario would require a station building along the north side of the CNR mainline, along with parking, bus bays and a Kiss and Ride area to allow for drop-offs and taxi patrons. Initial parking would be sized to accommodate 325 spaces. Below is a brief description of recommended Opening Day improvements:

- Construction of an island platform;
- Construction of island mini-platform;
- Construction of north side parking area which accommodates 325 spaces;
- Construction of bus bays;
- Construction of stairs, elevators and tunnels;
- Construction of a Kiss and Ride area along the west portion of the site;
- Construction of site servicing, i.e., sanitary, potable water, fire protection, etc. and,
- Construction of Station Building.

To allow for construction of the Confederation site, GO will be required to coordinate with the local municipality and developers to allow for upgrades to Goderich Road and Centennial Parkway, including; turning lanes, traffic signals, etc. The City of Hamilton has also advised that the existing Centennial Parkway grade separation will need to be upgraded to accommodate additional traffic lanes along Centennial Parkway. The structure is to be designed to accommodate four tracks crossing Centennial Parkway. Further discussions will be required as part of the detailed design process.

8.3.2.2 Future

The future alternatives for Confederation Station would allow for a second platform along the north side of the CNR mainline. Below is a brief description of recommended Future improvements:

- Construction of a Kiss and Ride area along the west portion of the site;
- Construction of bus bays;
- Construction of stairs, elevators and tunnels; and,
- Construction of south side parking, which will add an additional 270 spaces to the station site (595 total).

Further details are provided on Figure ST-2.

8.3.3 Hamilton – Fifty Road

The development of a Fifty Road GO station will be considered in future subject to the City of Hamilton extending LRT service to Fifty Road and lands being available to construct a combined LRT / GO rail station hub. During the course of the EA study, significant effort was made to identify potential lands for a GO rail station site to the east or west of Fifty Road. However, in the end, planned developments in this area precluded the designation of a specific site at this point in time.

Further details are provided on Figure ST-4.

8.3.4 Grimsby – Casablanca Boulevard

The proposed Casablanca Boulevard Station is a green field site, located approximately five miles east of Hamilton at Mile 29.37 of the Grimsby S/D. This site will service existing and proposed developments in the area. The Casablanca site will function as a GO Park and Ride facility. Below is a brief description of recommended improvements:

8.3.4.1 Opening Day

The proposed Opening Day scenario would require a station building along the north side of the CNR mainline, along with parking, bus bays and a Kiss and Ride area to allow for drop-offs and taxi patrons. Initial parking would be sized to accommodate 470 spaces. Below is a brief description of recommended Opening Day improvements:

- Construction of a south platform;
- Construction of south mini-platform;
- Construction of north side parking area which accommodates 470 spaces;
- Construction of a storm water management pond;
- Construction of bus bays;
- Construction of stairs, elevators and tunnels;
- Construction of a Kiss and Ride area along the east portion of the site;
- Construction of site servicing i.e., sanitary, potable water, fire protection, etc.; and,
- Construction of Station Building.

To allow for construction of the Casablanca site, GO will be required to coordinate with the local municipality and developers to allow for upgrades to the existing service road and Casablanca Boulevard, including; turning lanes, traffic signals, etc. As development continues to grow in the area, further discussions will be required as part of the EA/detailed design process.

8.3.4.2 Future

The future alternatives for Casablanca Boulevard would allow for a second platform along the north side of the CNR mainline along with, stairs, elevators and tunnels to allow for access to both north and south side platforms. Below is a brief description of recommended Future improvements:

- Construction of a north platform;
- Construction of north mini-platform;
- Construction of south side parking, which will add an additional 970 spaces to the station site (1,440 total); and,
- Reorganize access and parking lot for adjacent church.

Further details are provided on Figure ST-5.

8.3.5 Beamsville – Ontario Street

The Ontario Street site is located in relatively developed area (industrial) of Beamsville, and is considered a potential future GO station and will come online as ridership warrants. The site will act as a good location to service the central portion Niagara region. At Mile 23.21 of the Grimsby S/D, the site is located at the approximate mid-point between Grimsby – Casablanca Boulevard and St. Catharines VIA. Below is a brief description of recommended improvements.

8.3.5.1 Opening Day

The proposed Opening Day scenario would require a station building along the north side of the CNR mainline, along with parking, bus bays and a Kiss and Ride area to allow for drop-offs and taxi patrons. Initial parking would be sized to accommodate 630 spaces. Below is a brief description of recommended Opening Day improvements:

- Construction of a north platform;
- Construction of north mini-platform;
- Construction of north side parking area which accommodates 630 spaces;
- Construction of bus bays;
- Construction of a Kiss and Ride area along the east portion of the site;
- Construction of site servicing i.e., sanitary, potable water, fire protection, etc. and,
- Construction of Station Building.

To allow for construction of the Ontario Street site, GO will be required to coordinate with the local municipality to allow for upgrades to the existing service road and Ontario Street, including; turning lanes, traffic signals, etc. Further discussions will be required as part of the EA/detailed design process.

8.3.5.2 Future

The future alternatives for Ontario Street would allow for a second platform along the south side of the CNR mainline along with, stairs, elevators and tunnels to allow for access to both north and south side platforms. Below is a brief description of recommended Future improvements:

- Construction of a south platform;
- Construction of south mini-platform;
- Construction of stairs, elevators and tunnels; and,
- Construction of Phase 2 of north side parking, which will add an additional 1,290 spaces to the station site and construction of future south side parking which will add additional 280 spaces (2,200 total).

Further details are provided on Figure ST-6.

8.3.6 St. Catharines – VIA Station

The St. Catharines VIA station is located outside the downtown core adjacent to the City's western limit at Mile 11.8 of the Grimsby S/D. Below is a brief description of recommended improvements.

8.3.6.1 Opening Day

The proposed Opening Day scenario would require minimal work for operation and would take advantage of the existing platform along the north side of the mainline. Below is a brief description of recommended Opening Day improvements:

- Refurbishing of existing north platform and alterations to existing VIA station building to accommodate GO ticketing staff;
- Easterly extension of existing north platform (as required);
- Construction of south side parking area which accommodates 240 spaces;
- Construction of a south Kiss and Ride;
- Construction of south bus bays; and,
- Construction of stairs, elevators and tunnels.

Opening Day scenario would also take advantage of the Capital Infrastructure investments already constructed for the weekend service project, i.e. platform extensions, etc.

8.3.6.2 Future

The Future alternatives for the St. Catharines VIA Station would allow for a south side platform. Below is a brief description of recommended Future improvements:

- Construction of south platform;

- Construction of south mini-platform;
- Construction of additional parking and Kiss and Ride along north; and,
- Expansion of parking area to provide a total of 660 spaces.

Through discussions with the City of St. Catharines and the Region of Niagara, it was identified that potential exists for a grade separation between the CNR and Louth Street. The City also identified the need for improvements at St. Paul Street West and Great Western Avenue which is located at the eastern limit of the site. This project would not directly affect proposed expansion to the St. Catharines VIA station but any future plans for CNR/GO must be considered during the design.

Further details are provided on Figure ST-7.

8.3.7 Niagara Falls – VIA Station

The Niagara VIA station is located adjacent to the Niagara Falls downtown core. An inter-regional bus service is also located across from the existing VIA station along Bridge Street. The station is located at Mile 0.54 of the Grimsby S/D. Below is a brief description of recommended improvements:

8.3.7.1 Opening Day

The proposed Opening Day scenario would require minimal work for operation and would take advantage of the existing platform along the north side of the mainline. Below is a brief description of recommended Opening Day improvements:

- Refurbishing of existing north platform and alterations to existing VIA station building to accommodate GO ticketing staff;
- Westerly extension of existing south platform to accommodate 12-car trains;
- Construction of north platform;
- Construction of north/south mini-platform;
- Construction of north bus bays;
- Construction of additional parking and Kiss and Ride along north;
- Expansion of parking area to provide a total of 770 spaces; and,
- Construction of stairs, elevators and tunnels.

8.3.7.2 Future

The Future alternatives for the Niagara Falls VIA Station would allow for an expansion of the existing south side platform. Recommended future improvements would include expansion of the parking area to provide a total of 1,160 spaces.

Extension of service to the Niagara Falls VIA site will be largely dependent upon negotiations between GO and the St. Lawrence Seaway as a result to potential delays that could occur with existing lift bridge.

Further details are provided on Figure ST-9.

8.4 Layover Location and Preliminary Site Layouts

8.4.1 Hamilton – Lewis Road

The Lewis Road layover is a greenfield site, located between Lewis Road and McNeilly Road at Mile 31.67 of the Grimsby Guelph S/D. The site is located within lands currently designated as Business Park. Some residential properties do exist to the southeast of the site but few exist along McNeilly Road where GO consists would be entering the CNR corridor.

8.4.1.1 Opening Day

Initial layover facility to consist of:

- Four train storage tracks;
- Crew Centre and staff parking;
- Service roadway connecting to Lewis Road;
- Fuelling facility consisting of dispensers and storage tanks;
- Electrical substation, power house and wayside power cabinets; and,
- Yard lighting, security surveillance system and fencing.

8.4.1.2 Future

The Lewis Road site can accommodate eight storage tracks. At this time, Lewis Road is seen as interim layover to service initial expansion. Further expansion into Niagara Region will warrant a layover further to the east which also has the ability to accommodate eight tracks.

Further details are provided on Figure ST-3.

8.4.2 St. Catharines – Glendale Avenue

The Glendale Avenue layover is located on industrial lands approximately 2.6 miles east of the St. Catharines VIA Station at Mile 9.24 of the Grimsby S/D.

8.4.2.1 Opening Day

The proposed Opening Day scenario would require a base facility to accommodate the overnight storage of four GO trains along with a crew centre and related infrastructure. Below is a brief description of recommended improvements:

- Construction of four storage tracks along the south side of mainline;

- Construction of lead track to connect storage tracks with existing mainline;
- Construction of crew centre;
- Construction of fueling facility;
- Construction of sub-station/wayside power for train plug-in;
- Yard service road; and,
- Construction of site servicing, i.e., sanitary, potable water, fire protection, etc.

Although the topography does vary throughout the site, sufficient grading can be completed to allow for constructing the proposed site and access road.

8.4.2.2 Future

The future alternatives for the Glendale Avenue layover would allow for additional storage tracks (eight total) as well as the potential for PM Bays (if required). Below is a brief description of recommended Future improvements:

- Construction of four additional storage tracks for a total of eight storage tracks;
- Construction of a second lead track; and,
- Construction of an equipment track and two potential PM Bay tracks.

As GO ridership continues to increase along the Grimsby S/D, so may the need for additional maintenance facilities for GO trains along this corridor. The proposed Glendale Avenue site has allowed sufficient space to accommodate for PM Bays as well as an ancillary building.

Further details are provided on Figure ST-8.

8.4.3 Niagara Falls – VIA Station

The Niagara VIA layover is located adjacent to the Niagara Falls downtown core. The layover is located at Mile 0.54 of the Grimsby S/D and in close proximity to the Niagara Falls/Buffalo border. Below is a brief description of recommended improvements:

8.4.3.1 Opening Day

The proposed Opening Day scenario would require a base facility to accommodate the overnight storage of four (4) GO trains along with a crew centre and related infrastructure. Below is a brief description of recommended improvements:

- Construction of four storage tracks along the south side of mainline;
- Construction of lead track to connect storage tracks with existing mainline;
- Construction of pull-back track;
- Construction of crew centre;

- Construction of fueling facility;
- Construction of sub-station/wayside power for train plug-in;
- Yard service road; and,
- Site servicing, i.e., sanitary and potable water.

8.4.3.2 Future

The future alternatives for the Niagara Falls VIA layover would allow for additional storage tracks (eight total) as well as the potential for PM Bays (if required). Below is a brief description of recommended Future improvements:

- Construction of four additional storage tracks for a total of eight storage tracks;
- Construction of a second lead track; and,
- Construction of an equipment track and two potential PM Bay tracks.

As GO ridership continues to increase along the Grimsby S/D, so may the need for additional maintenance facilities for GO trains along this corridor. The proposed Niagara Falls VIA site has allowed sufficient space to accommodate for PM Bays as well as an ancillary building.

Further details are provided on Figure ST-9.

8.5 Detailed Design Requirements

As the project progresses to the detailed design stage, detailed topographic and geotechnical surveys will be required to supplement the base mapping coverage used for the preliminary design.

8.5.1 Property Acquisition

As the existing CNR mainline was once entirely double tracked through this corridor, no property acquisition is anticipated as a part of the track improvements.

Property that will be required is associated with the construction of station, layover and parking facilities. Railway right-of-way is assumed to be available as it is currently owned by CNR and it is also assumed that a form of master lease agreement between the railway and GO Transit/Metrolinx will cover occupation. VIA properties are included in this group and it is assumed that an agreement can be reached with VIA for joint use. Table 8.2 summarizes the estimated property requirements for the stations and layover sites.

Table 8.2 Property Requirements

Location	Land Required (ha)	Plan
Hamilton - James Street North Station	1.5	ST-1
Hamilton – Confederation Station	2.1	ST-2
Hamilton – Lewis Road Layover	7.4	ST-3
Hamilton – Fifty Road Station	To be determined**	ST-4
Grimsby - Casablanca Boulevard Station	5.4	ST-5
Beamsville – Ontario Street Station	11.2	ST-6
St. Catharines - VIA Station	2.2	ST-7
St. Catharines – Glendale Avenue Layover	8.2	ST-8
Niagara Falls – VIA Station and Layover	11.0	ST-9
TOTAL	49.0	

**Note: The development of a Fifty Road GO station will be considered in future subject to the City of Hamilton extending LRT service to Fifty Road and lands being available to construct a combined LRT / GO rail station hub. During the course of the EA study, significant effort was made to identify potential lands for a GO rail station site to the east or west of Fifty Road. However, in the end, planned developments in this area precluded the designation of a specific site at this point in time.

As the project progresses into the EA/detailed design stages, further property assessment to determine fair market value will be required. Once a detailed assessment is completed, the process may proceed to the negotiations/offer stage.

8.5.2 Stations and Layover Facility

Hamilton – James Street North Station

The James Street North site is approximately 1.5 ha and a large portion of the proposed James Street North site is currently owned by CNR, with the remainder being owned by LIUNA. LIUNA has been circulated conceptual plans for the site and are prepared to discuss further when appropriate.

Legal, topographic and geotechnical surveys are required for the site.

Hamilton – Confederation Station

The Hamilton – Confederation Station is approximately 2.1 ha currently consists of a number of different parcels of land. The vacant northwest portion of the site is currently owned by the City of Hamilton, who has already identified an interest in the potential operation of the proposed station. The remaining three parcels of land are separately owned and currently occupy a mix of industrial/commercial businesses. The noted property requirements do not include any additional lands required to accommodate the reconstructed grade separation along Centennial Parkway.

Legal, topographic and geotechnical surveys are required for the site.

Hamilton – Lewis Road Layover

The Lewis Road site is approximately 7.4 ha and a small portion of the proposed Lewis Road layover is currently owned by CNR, with the remainder being owned privately.

Legal, topographic and geotechnical surveys are required for the site.

Hamilton – Fifty Road Station

Due to developer conflicts, there is no specific location selected at this time. This site will be confirmed once ridership numbers warrant.

Legal, topographic and geotechnical surveys will be required for the site.

Grimsby – Casablanca Boulevard Station

The Casablanca Boulevard site is approximately 5.4 ha and consists of lands to the north of the rail ROW being designated as a service commercial area. While, lands south of the rail ROW fall within the Tender Fruit and Grape Lands of the Greenbelt Plan and are locally designated as Specialty Crop Area. Lands southwest of the rail ROW are in orchard/fruit production. No agricultural production is currently taking place on remaining portion of the southern property.

Legal, topographic and geotechnical surveys are required for the site.

Beamsville – Ontario Street Station

The Ontario Street site is approximately 11.2 ha and lands on both sides of Ontario Street fall within Beamsville's urban boundary. The western portion is designated Prestige Industrial and includes some industrial development as well as an orchard. The portion of the site east of Ontario Street is designated General Commercial although the area is not currently developed.

Legal, topographic and geotechnical surveys are required for the site.

St. Catharines – St. Catharines VIA

The St. Catharines VIA station is currently owned and operated by VIA Rail. A co-occupancy agreement would be required to allow for GO Transit to provide service from this station. The portion of the site south

of the rail ROW is paved and used for industrial/commercial storage. Lands are designated as Major Institutional and Industrial.

Topographic surveys are required for the site.

St. Catharines – Glendale Avenue Layover

The Glendale Avenue site is approximately 8.2 ha and is located within an industrial zone. Niagara Region's environmental screening mapping identifies that soil contamination may be present as a result of existing industrial uses in the area. Lands to the south are located within the Niagara Escarpment Plan Urban Area and are designated for neighbourhood residential uses in the St. Catharines Official Plan and as an Environmental Conservation Area and Potential Natural Heritage Corridor, according to the Region.

Legal, topographic and geotechnical surveys are required for the site.

Niagara Falls – Niagara Falls VIA

The Niagara Falls VIA station/layover site is approximately 11.0 ha and a large portion is currently owned and operated by VIA Rail. A co-occupancy agreement would be required to allow for GO Transit to provide service from this station. Additional property to the north of the station would also be required to accommodate the potential layover at this location.

Legal, topographic and geotechnical surveys are required for the site.

8.6 Construction Phase

The proposed project involves upgrading some sections of existing tracks and construction of new mainline track in identified corridors as well as associated stations and the layover facility. The construction phase of the project involves the following works and activities:

- site preparation including removal of vegetation (where required);
- construction of retaining walls where required;
- grading;
- dewatering of excavations, as required. Dewatering requirements to be determined as part of the geotechnical investigation to be completed as part of the detailed design process;
- constructing new mainline tracks;
- related signal work;
- fencing;
- new platforms and platform extensions;
- new pedestrian tunnel and elevators;
- mini platforms for barrier free accessibility;
- layover construction;
- utility protection/relocation (ancillary work);
- construction of drainage works;

- landscaping; and,
- Protection/relocation of existing Bell fibre optics, CNR fibre optics and CNR signal cables.

The construction activities associated with the proposed improvements encompass long stretches of longitudinal work (track construction, etc.) as well as site-specific activities, i.e., station improvements, road reconstruction, etc. Construction traffic will access the corridor via the existing road network. It is not anticipated that private properties will be used as access; however, if the need arises, property owners would be contacted and negotiations would be undertaken if property owners are in agreement.

Track construction work will be completed by a qualified track contractor with track equipment and with little need for access from adjoining property. Residents may experience the passage of trucks or trains removing and supplying materials to the construction area for longer durations. Track work and the installation of signals may commence following the completion of track construction. As schedule is largely dependent upon available funding for the project, the exact timing of these construction activities are subject to change throughout the detailed design stage of the project. The construction work will comply with applicable municipal by-laws.

8.6.1 Track Bed Construction

The guiding principles in designing the earth work are to avoid the use of privately held property wherever possible and to utilize construction techniques that are as unobtrusive to adjacent private residences as practical.

Subject to detailed engineering, it is planned to use earth from cut sections to construct fill sections, thus keeping all earth material on CNR property. Any excess soils will be recycled to other construction sites. In the case that contaminated soils are found, MOE will be consulted to determine the appropriate disposal of the material.

The surface of the track bed will be covered with a clean 300 mm layer of compacted sandy gravel. Normal small to medium sized excavating, compacting and hauling equipment is expected to be used on this project. All construction materials and equipment will be transported to the site on the rail line or by truck. Access to the site by truck will be primarily from existing CNR/GO access roads, CNR or GO Transit/Metrolinx owned property, municipal or regional roads.

Track improvements are further detailed on Figures T-01 to T-35.

8.6.2 Retaining Wall Construction

As the majority of the rail corridor was once double track, most of the proposed rail improvements can occur within the existing right-of-way without retaining structures. Some potential for retaining wall construction exists for the rail expansion associated with track improvements between Hamilton Junction and Hamilton Yard. Any retaining wall construction associated with station/layover construction will be

minimized as much as possible and contained within each localized site and is further detailed on Figures ST-1 to ST-9.

8.6.3 Bridge/Grade Separations

From a rail capacity perspective, all bridges/grade separations located within the corridor between Hamilton and Niagara Falls are currently constructed to accommodate two tracks. Structural inspection details were not available during the duration of the project and as such proposed plans/estimates do not include any upgrades to existing structures. Regular inspection and upgrade needs are normally completed by CN for the corridor.

In cases where the Municipality has identified the need for upgrading an existing grade crossing/separation to accommodate adjacent road widening, the Municipality is to at a minimum allow for a third track across the structure, excluding Centennial Parkway as it will require four tracks across the structure. Subsequent sections outline potential bridge/grade separation improvements identified to date.

In general, in cases where bridge/grade separation improvements are required, the work would consist of demolition, forming and placing reinforced concrete, steel erection and site restoration. Any wastes generated will be recycled where possible or disposed of in appropriate facilities. Access for construction materials and equipment will be from city or regional streets.

8.6.3.1 Centennial Parkway Grade Separation

In order to accommodate proposed road widening of Centennial Parkway, the City of Hamilton is currently undertaking the detailed design for replacing the existing two track grade separation. More specifically:

- a total possible six through traffic lanes (possible three in each direction);
- a median sufficient in width to accommodate any bridge loading structures or support columns and also to accommodate any northbound left turn lanes on Centennial Parkway;
- a municipal sidewalk on each side of Centennial Parkway;
- a sufficient boulevard width to accommodate utilities, snow storage, etc.;
- sufficient side slopes to grade back to original ground; and,
- lowering the roadway to provide the required height clearance between the top of pavement and the underside of the new structure.

Through discussions with the City, it has been determined that the bridge design is to be designed to allow for a four track bridge as well as a pedestrian walkway along the north side. The pedestrian walkway is to offer accessibility for pedestrians wishing to access the GO Confederation station along the western portion of Centennial Parkway from the proposed Smart Centre development along the eastern portion of Centennial Parkway, is to accommodate the City of Hamilton bus station giving the city access for the Confederation Station.

8.6.3.2 Bridge 6 – Welland Canal

As previously discussed, Bridge 6, located at the Welland Canal along the CN corridor will greatly effect full extension of GO services into Niagara Region. The existing condition of the seventy-nine year old structure is deteriorating and in need of rehabilitation/ replacement.

During discussions with the St. Lawrence Seaway, it was identified that a preliminary feasibility study had been completed in 2004 with an update currently being completed. The following alternatives were assessed as part of the 2004 report:

- Temporary Repairs;
- Major Repairs;
- Major Repairs and Bascule Roll-back;
- New Double Track Bridge;
- New Single Track Bridge;
- Double Track Railway Tunnel;
- Single Track Railway Tunnel;
- Double Track Railway Tunnel Plus 4 Lane Roadway Tunnel; and,
- Reroute Through Townline Tunnel.

As part of the service expansion, the St. Lawrence Seaway information was used to further review alternatives, associated costs and impacts to GO Operations. Along with the above noted alternatives, the following were also included:

- Overhead Bridge Over Welland Canal; and,
- Double Track Railway Tunnel Plus 6 Lane Roadway Tunnel.

Further details are provided in Appendix F.

As the St. Lawrence Seaway identified the Bridge 6 project as a priority due to deteriorating conditions and the fact that Bridge 6 had been constructed to Cooper E-60 standards as opposed to Cooper E-90 (current rail bridge design standards), it is intended that the improvements at this location are implemented within the Seaway's 5-Year plans.

The Seaway should be consulted as the project proceeds to detailed design. Construction of a new grade separation at the Canal would allow for unimpeded GO Train Service into Niagara Falls, Ontario.

8.6.3.3 Future Grade Separations

Aside from the above noted structural improvements already identified by effected parties, a potential need also exists for upgrading the existing level crossing at the following locations associated with the Niagara expansion project, as outlined in Section 8.2.4:

- Hamilton Fifty Road;
- Grimsby - Casablanca Boulevard;
- Beamsville - Ontario Street;
- St. Catharines – Louth Street; and,
- St. Catharines – Glendale Avenue.

As the need for grade separations at these locations is largely dependent upon future vehicular traffic volumes, final determination of warrant is to be identified as part of the Traffic Investigations which will be completed during the detailed design. As GO may be required to contribute to a portion of the construction costs, an allotment has been included within subsequent cost estimates.

8.6.4 Station / Layover Work

Station work will be required at James Street North, Confederation, Casablanca Boulevard, Fifty Road, Ontario Street, St. Catharines VIA and Niagara Falls VIA to accommodate full service expansion of the Niagara Region.

Enhancements to ensure a barrier free environment will also be included in this work. Municipal streets will provide access for construction materials and equipment. The work will consist of demolition, concrete work, fencing, elevator and shelter installation, and paving. Any wastes generated will be recycled where possible or disposed of in appropriate facilities. Normal small to medium sized construction equipment is expected to be used.

The Layover sites will include the construction of storage/lead tracks, along with site servicing, fuelling, crew centre, electrical substation, internal service roads, and a landscaped berm and fence on the north side of the site.

The extent of the works required at the stations and layovers are shown on Figures ST-1 to ST-9.

8.7 Stormwater Management

8.7.1 Railway

The existing rail corridor drains to adjacent lands or across the corridor in one of the crossing culverts. The corridor is vegetated in areas outside the rail line, with some trees and dense bushes. Construction of an additional mainline track will not increase peak flow within the existing drainage areas. As the corridor was once entirely double track, in most cases, ditching is located such that the second track could be re-established with little to no impact to the existing drainage system. In cases where ditching may require temporary diversion/relocating to accommodate construction, any diversion ditches would be large enough to accommodate existing flows. Following construction, the ditch would be reinstated to its original location and vegetated accordingly. Most of which would be determined during the detailed design.

Although detailed culvert inspection information was not available, it is expected that in most cases the existing culverts span the length of the existing two track beds. Further investigations should be completed as part of the detailed design to confirm whether the existing culverts are acceptable or whether a liner or replacement should be considered.

8.7.2 James Street North

The site is a greenfield development and generally drains northwest along the rail corridor and continues west to the low point at the Hamilton Yard (see Figure DR-1). There is an existing storm sewer parallel to the tracks and within the site but the condition and remaining capacity of the sewer is unknown. The imperviousness of the site will increase and stormwater detention facilities will be required to control runoff to predevelopment flows.

8.7.3 Hamilton – Confederation

The proposed Confederation Station site is divided into three drainage areas (see Figure DR-2). The site is divided first by the tracks which bisects it from east to west, and then by a ridge running in a northerly direction from the tracks to the adjacent roadway. Drainage from Area 1 and Area 3 flows to an existing watercourse on the site. Area 2 drains to the storm drains on Centennial Parkway North. The stormwater management needs of the facility can be addressed through the installation of underground stormwater detention structures which discharge to the existing outlets.

8.7.4 Hamilton – Fifty Road

The development of a Fifty Road GO station will be considered in future subject to the City of Hamilton extending LRT service to Fifty Road and lands being available to construct a combined LRT / GO rail station hub. A detailed stormwater assessment will be required once a potential site has been determined/finalized.

8.7.5 Hamilton – Lewis Road

The proposed layover on this Greenfield development site is divided into two drainage areas by a ridge running perpendicularly to the tracks (see Figure DR-4). Drainage from Area 1 flows north to an existing culvert under the rail corridor. Flow from Area 2 is directed east along the tracks and outlets to an existing watercourse east of Lewis Road. The stormwater management needs of the facility can be addressed through the installation of a stormwater management pond or an underground stormwater detention structures which discharge to the existing outlets.

8.7.6 Grimsby – Casablanca Boulevard

The proposed greenfield site is divided by the rail corridor into two drainage areas (see Figure DR-5). Runoff from Area 1 flows north into existing municipal sewers on South Service Road. Flows from Area 2

will be directed to the existing watercourse west of the proposed site. As with the other greenfield sites, stormwater management needs can be addressed through the installation of a stormwater management pond or an underground stormwater detention structures which discharge to the existing outlets.

8.7.7 Beamsville – Ontario Street

The greenfield development site is divided into four drainage areas (see Figure DR-6). The majority of the proposed station is within Area 2, and drainage for this area is provided by the existing watercourse adjacent to the western property line. The elevation of Area 1, however, is too low to outlet to the existing watercourse and stormwater at the parking lot entrance will be routed to the municipal sewers on Ontario Street. Area 3 is the future south platform and is expected to continue to drain to the existing watercourse to the west. Area 4 will be graded to connect to the municipal sewers on Green Lane Road. Due to the significant increase in impervious area, stormwater detention structures will be required to match pre-development flows.

8.7.8 St. Catharines – VIA Station

The proposed St. Catharines VIA expansion site is divided into two drainage areas, one area north of the rail corridor and one south of the corridor (see Figure DR-7). The expansion of the station in Area 1, north of the corridor, will increase the imperviousness of the site as the land is currently greenfield. Drainage from the new parking facility will be accommodated in municipal sewers on Louth Street. Stormwater detention structures will be required to attenuate the flow from the proposed site. The imperviousness of Area 2 will remain the same as the site is currently an existing parking lot. Existing drainage patterns will be maintained.

8.7.9 St. Catharines – Glendale Avenue

The proposed layover site consists of one drainage area north of the rail corridor which drains towards the road side ditches along Glendale Avenue (see Figure DR-8). The majority of the site is currently undeveloped and therefore the imperviousness of the site will increase with the construction of the layover site. Stormwater detention structures will be required to match pre-development flows.

8.7.10 Niagara Falls – VIA Station

The existing VIA rail station site is divided by two drainage areas, an existing industrial area north of the rail corridor and the existing VIA station area south of the rail corridor (see Figure DR-9). The majority of the existing industrial site to the north has been cleared, but is not paved. Converting the site will therefore increase the imperviousness and stormwater detention structures will be required to match pre-development flows. Drainage from the northern portion of the site will continue to drain to the storm sewers on Buttrey Street as well as to the sewers on River Road. The southern portion of the site, where the current VIA station is located will remain unchanged. Existing drainage patterns will be maintained.

8.8 Operations/Maintenance Phase

The construction of an additional mainline track on the south side of the existing single mainline track through Hamilton Yard area is feasible as most of the area was previously occupied by tracks. The major work in general consists of changes to the interlocking signal plants at Hamilton Junction and Mile 43.1, Grimsby S/D, modifications to the CN's Cargo-Flow facility at South Hamilton Yard and major grade work to provide standard overhead clearances under the roadway structures at James Street, John Street, Mary Street and Ferguson Street, and a new bridge structure over the Red Hill Parkway. This upgraded section will increase freight and passenger capacity in the area.

Future construction of the second mainline between Nelles Road and 15th Street will again allow for two track service from Hamilton to Niagara Falls.

The expansion will accommodate four trains for the morning peak period, returning in the evening peak. The total train movements to/from Hamilton and the Niagara area will increase from zero to eight trains per day for Opening Day and possibly eight to 16 for future servicing, dependent upon ridership demands and potential off peak service.

The infrastructure provided under both Opening Day and Future scenarios for this project provides residual capacity to accommodate increased freight and passenger demands.

8.9 Cost Estimate

The following table presents the cost estimates for four basic options to extend commuter rail service from Hamilton to Niagara Falls. The costs shown in the table and in **Appendix G** are preliminary reflecting the level of detail completed as part of the ESR. All cost sharing is suggested only and subject to agreement between all applicable parties. A potential cost sharing agreement between GO, CNR, VIA and local municipalities is to be determined during detailed design. As noted earlier, timing of the implementation of service options is contingent upon funding approvals and authorization to proceed.

Option	Description	Opening Day	Future	Total Cost
1	James Street North	\$17,200,000	\$11,400,000	\$28,600,000
	Confederation	\$16,600,000	\$7,400,000	\$24,300,000
	Lewis Road Layover	\$33,500,000		\$33,500,000
	Grade Separations	\$11,700,000		\$11,700,000
	Rail Corridor Improvements	\$98,800,000		\$98,800,000
	Total Option 1	\$177,800,000	\$19,100,000	\$196,900,000
2	James Street North	\$17,200,000	\$11,400,000	\$28,600,000
	Confederation	\$16,600,000	\$7,400,000	\$24,300,000
	Lewis Road - Layover	\$33,500,000		\$33,500,000
	Casablanca Boulevard	\$10,000,000	\$12,600,000	\$22,600,000
	Grade Separations	\$11,700,000		\$11,700,000
	Rail Corridor Improvements	\$98,800,000		\$98,800,000
	Total Option 2	\$187,800,000	\$31,700,000	\$219,500,000
3	James Street North	\$17,200,000	\$11,400,000	\$28,600,000
	Confederation	\$16,600,000	\$7,400,000	\$24,300,000
	Casablanca Boulevard	\$10,000,000	\$12,600,000	\$22,600,000
	St. Catharines VIA	\$14,000,000	\$2,800,000	\$16,800,000
	Glendale Avenue - Layover	\$33,500,000		\$33,500,000
	Grade Separations	\$11,700,000	\$63,300,000	\$75,000,000
	Rail Corridor Improvements	\$100,800,000	\$53,900,000	\$154,700,000
	Total Option 3	\$203,800,000	\$151,700,000	\$355,500,000
4	James Street North	\$17,200,000	\$11,400,000	\$28,600,000
	Confederation	\$16,600,000	\$7,400,000	\$24,300,000
	Casablanca Boulevard	\$10,000,000	\$12,600,000	\$22,600,000
	St. Catharines VIA	\$14,000,000	\$2,800,000	\$16,800,000
	Niagara Falls VIA	\$68,300,000	\$7,200,000	\$75,500,000
	Grade Separations	\$11,700,000	\$63,300,000	\$75,000,000
	Rail Corridor Improvements	\$100,800,000	\$53,900,000	\$154,700,000
	Welland Canal Grade Separation	\$750,000,000		\$750,000,000
Total Option 4	\$988,600,000	\$158,900,000	\$1,147,500,000	

A copy of the itemized cost estimate for rail corridor improvements, stations and layover facilities is provided in **Appendix G**.

As noted previously, alternatives for upgrading Bridge 6 at the Welland Canal are currently being considered by the St. Lawrence Seaway and could greatly affect full GO service into Niagara Falls. Although costs for these potential works have not been included within GO Interim, Opening Day and Future scenarios, \$600 – 750 million could be used as a reference for order of magnitude for a grade separation at this location. As a preference alternative becomes established discussions with all effected parties will be required.

Environmental Effects and Mitigation Measures

The proposed project includes rail improvements (within the existing CNR ROW), station improvements at the existing VIA Stations in St. Catharines and Niagara Falls, and potential new stations in Hamilton at James Street North, Confederation (west of Centennial Parkway) and Fifty Road, in Grimsby at Casablanca Boulevard, in Beamsville at Ontario Street and potential new layover facilities in Hamilton at Lewis Road, St. Catharines at Glendale Avenue and in Niagara Falls at the VIA Station. The proposed project is generally located on previously disturbed lands with the exception of the some areas which are currently being used for agriculture or tender fruit production such as corn, soy beans, and apples.

Major construction activities include the upgraded track, station works and layover facilities. Track construction generally includes site preparation grading, drainage and culvert bridge construction / replacement (as required). Station works include grading, drainage, stormwater management, building construction/refurbishment, site servicing and site access roads. Works associated with the layover facility generally includes grading, drainage, stormwater management, construction of substation and crew centre, installation of fueling tank, site servicing and site access roads. Effects associated with construction activities are discussed below.

Effects associated with operation/maintenance of expanded GO rail services along the CNR mainline and operation/maintenance of the station(s) and layover facility are discussed in the following sections.

8.10 Vegetation, Wildlife/Habitat

Effect

a) Loss of vegetation/habitat loss (see Table 9.1 for quantification of vegetation loss). However, the project is primarily proposed in previously disturbed areas where limited vegetation/habitat exists. Limited natural vegetation will be lost. The majority of vegetation is representative of culturally-influenced communities such as cultural meadows, thickets and woodlands. No impact to Species At Risk, or their associated habitats, are anticipated. Wildlife present in the area includes species that are tolerant of urban environments and anthropogenic conditions and disturbances.

Table 8.3 Summary of Vegetation/Habitat Loss

Station/Layover	Area of Natural Vegetation Lost			Area of Culturally-Influenced Vegetation Lost		
	Community Name	ha	acres	Community Name	ha	acres
Hamilton James St. N	Sugar maple deciduous forest (FOD5)	0.27	0.68	Cultural meadow (CUM1)	0.91	2.25
Hamilton Confederation	Deciduous forest (FOD4)	0.76	1.90	Cultural meadow (CUM1)	0.43	1.07

Station/Layover	Area of Natural Vegetation Lost			Area of Culturally-Influenced Vegetation Lost		
	Community Name	ha	acres	Community Name	ha	acres
Hamilton Lewis Road	N/A			Cultural meadow (CUM1)	2.35	5.84
				Cultural thicket (CUT1)	0.14	0.35
				Cultural woodland (CUW1)	1.27	3.14
Hamilton Fifty Rd	N/A			Cultural meadow (CUM1)	11.83	29.33
				Cultural thicket (CUT1)	13.96	34.63
Grimsby Casablanca Boulevard	N/A			Cultural meadow (CUM1)	2.49	6.17
Beamsville Ontario St.	Deciduous forest (FOD4)	0.21	0.52	Cultural meadow (CUM1)	0.89	2.20
St. Catharines VIA	N/A			Cultural meadow (CUM1)	1.24	3.08
				Cultural woodland (CUW1)	0.32	0.80
St. Catharines Glendale Ave.	N/A			Cultural thicket (CUT1)	2.21	5.47
Niagara Falls VIA	Sugar maple deciduous forest (FOD5)	2.12	5.26	Cultural meadow (CUM1)	0.52	1.28
Total		3.37	8.36		38.56	95.62

Mitigation

a) Limit vegetation disturbance to the footprint of the station/layover facilities to the extent possible. The movement of equipment and machinery should be kept to the construction side of the rail ROW and environmentally sound practices will be followed. Landscape plans should be developed to stabilize and re-vegetate any disturbed areas surrounding the buildings and facilities. Landscape plans should include native vegetation to the extent possible. Topsoil should be stockpiled separately and used for restoration to facilitate natural regeneration of native species.

In order to remain in compliance with the *Migratory Birds Convention Act*, vegetation removal may not take place between May 31 and July 15. Vegetation removal could take place within these times if a recent nesting survey is completed by a qualified ornithologist and no active nests are observed in the work area.

Additional mitigation with regard to surface water, soils and sedimentation is provided in Section 9.3.

Should the proponent encounter a species at risk at any time during the project, they should contact Environment Canada – Ontario Region, for advice on how to proceed.

8.11 Agricultural and Tender Fruit Lands

Effect

a) Loss of agricultural or tender fruit lands (see Table 9.2 for quantification of land loss).

Table 8.4 Summary of Agricultural / Tender Fruit Land Loss

Site Name	Current Agricultural Use	Soil Capability (CLI Soil Class)*	Approximate Area of Agricultural /Tender Fruit Land Loss
Hamilton Lewis Road	Cash crop/orchard/other fruit	Class 3	0.07 ha (0.18 acres)
		Class 4	3.21 ha (7.98 acres)
Grimsby Casablanca Blvd.	Orchard	Class 3	1.65 ha (4.10 acres)
Beamsville Ontario St.	Orchard/cash crop	Class 3	6.69 ha (16.59 acres)
Total agricultural land loss			11.63 ha (28.85 acres)
Total prime agricultural land loss			8.42 ha (20.9 acres)

*Classes 1-3 are considered to be prime agricultural lands.

Mitigation

Station and layover sites were selected to minimize the loss of prime agricultural lands and lands under tender fruit and grape production. Agricultural losses have been minimized to the extent possible.

8.12 Surface Water, Soils and Sedimentation

Effect

a) Potential for sediments to enter watercourse as a result of the following project activities:

- site clearing;
- stockpiling;
- cut/fill activities;
- excavation (including potential to encounter contaminated materials);
- construction (including soil compaction);
- storm water management; and,
- operation of the project.

b) Potential for localized water quality impacts as a result of spills.

Mitigation

a) GO Transit/Metrolinx is required to comply with the *Ontario Water Resources Act* with respect to the quality of water discharging into natural receivers.

The footprint of disturbed area will be minimized as much as possible, for example, vegetated buffers will be left in place adjacent to watercourses/waterbodies to the maximum extent possible.

An Erosion and Sediment Control Plan will be developed in consultation with the appropriate conservation authority. Implementation of the erosion and sediment control measures will conform to recognized standard specifications such as Ontario Provincial Standards Specification.

Stockpiled material will be stored at a safe distance from the waterway to ensure that no deleterious substances enter the water.

Sediment and erosion control measures (silt curtains, silt fence, temporary sedimentation basins) will be installed and will be maintained during the work phase and until the site has been stabilized. Control measures should be inspected daily to ensure they are functioning and are maintained as required. If control measures are not functioning properly, no further work will occur until the problem is resolved.

Any temporary mitigation measures will be installed prior to the commencement of any site clearing, grubbing, excavation, filling or grading works and will be inspected and maintained on a regular basis, prior to and after runoff events.

Wet weather restrictions will be applied during site preparation and excavation.

A Stormwater Management Plan will be prepared for all station and layover sites being developed in consultation with the appropriate conservation authority.

b) All equipment fuelling and maintenance will be done at a safe distance from the water to ensure that no deleterious substances enter the waterway.

The contractor will be required to develop spill prevention and contingency plans for construction and operational phases of the project. Personnel will be trained in how to apply the plans and the plans will be reviewed to strengthen their effectiveness and ensure continuous improvement. Spills will be immediately contained and cleaned up in accordance with provincial regulatory requirements and the contingency plan. A hydrocarbon spill response kit will be on site at all times during the work. Spills will be reported to the Ontario Spills Action Center at 1-800-268-6060.

8.13 Groundwater

Effect

a) Potential for localized groundwater quality impacts as a result of spills.

b) Potential for temporary dewatering during construction activities.

Mitigation

a) Refuelling of equipment and fuel storage should be conducted in designated areas with spill protection.

b) Appropriate mitigation measures relating to dewatering will be determined at the detailed design phase of the project based on geotechnical investigations and provincial standards.

8.14 Fish and Fish Habitat

Effect

a) Potential water quality impairments (sediment loading; fuels and lubricants from machinery). No in-water works are anticipated; however, a detailed inspection of all structures will be undertaken during detailed design which may result in the potential need for in-water works. No impact to Species At Risk anticipated.

Mitigation

a) Compliance with the Ontario Water Resources Act will be maintained with respect to the quality of water discharging into natural receivers. Sediment and erosion control measures (such as silt fence barriers, turbidity curtains, etc.) will be installed and maintained during the work phase and until the site has been stabilized. Control measures will be inspected daily to ensure they are functioning and are maintained as required. If control measures are not functioning properly, no further work will occur until the problem is resolved. All temporary erosion and sediment control measures will be installed in accordance with recognized provincial standards. Extra silt fence/turbidity curtain will be on site, should additional sediment control be required.

Minimize any in-water operation of heavy equipment and minimize operation of the same on the banks of the watercourse. All equipment fueling and maintenance will be done a safe distance from the edge of the water to ensure that no deleterious substances enter the water.

Any stockpiled material will be stored and stabilized away from the watercourse. All materials and equipment used for the purpose of site preparation and project completion should be operated and stored in a manner that prevents any deleterious substance (e.g., petroleum products, silt, etc.) from entering the water.

All disturbed areas of the work site should be stabilized immediately and re-vegetated as soon as conditions allow.

Following the culvert inspections in the detailed design phase of the project, should any locations be identified where in-water works are required, consultation shall be undertaken with the appropriate conservation authority and DFO for further guidance regarding potential impacts under the *Fisheries Act* (see Section 10.0 for further discussion).

8.15 Land Use

Effect

a) The project is compatible with the existing land uses and in keeping provincial and municipal land use policies which generally encourage increased ridership over auto dependency and the enhancement of public transit services. The proposed improvements to existing infrastructure will enhance GO train commuter service, thus addressing latent demand and providing for increased demand in the future.

Some parcels of land will be required for the potential station and layover sites. Property requirements are identified in Section 8.4.1.

Mitigation

During the detailed design phase of the project, properties will be assessed to determine fair market value. Preliminary discussions have been made with property owners for the potential station sites at Confederation (west of Centennial Parkway), Fifty Road and Casablanca Boulevard as well as the potential layover facility site at Lewis Road to indicated Metrolinx's interest in pursuing these sites for future station development.

8.16 Archaeology / Cultural Heritage

Effect

a) There is a potential to expose items of archaeological interest; however, the project is primarily proposed in previously disturbed areas. Archaeological Service Inc. conducted a Stage 1 Archaeological Assessment for the proposed alternative station sites and alternative layover sites (see Appendix C5). The results of the Stage 1 Archaeological Assessment show that there is some potential for archaeological resources at three of the preferred station sites (Hamilton – Fifty Road, Grimsby – Casablanca Boulevard and Beamsville – Ontario Street and train layover site at Lewis Road.

b) Potential impact to cultural and built heritage features. ASI conducted a Cultural and Built Heritage Assessment for the proposed alternative station sites and alternative train layover sites (see **Appendix C4**). The results of the assessment show that six of the potential preferred station sites retain cultural heritage resources. The train station buildings at the Grimsby VIA Station, St. Catharines VIA Station and Niagara Falls VIA Station are designated under the *Railway Station Protection Act*.

Mitigation

a) Conduct a Stage 2 archaeological assessment during the detailed design phase of the project in accordance with Ministry of Culture standards for all areas of the potential station and layover sites exhibiting potential for archaeological resources as illustrated the ASI report.

b) Any proposed rail service expansion improvements undertaken between James Street North and Niagara Falls VIA should be suitably planning in a manner that avoids and identified, above ground, cultural heritage resources.

During the detailed design phase of the project, a qualified cultural heritage specialist should evaluate each proposed design to confirm impacts on identified cultural heritage resources and to identify if detailed heritage impact assessments should undertaken to determine a resource's conservation strategies or mitigation measures. In this regard, relevant municipal or provincial guidelines should be consulted for particular heritage impact assessment guidelines, heritage evaluation criteria, and conservation principles.

Should the St. Catharines or Niagara Falls VIA Stations be moved forward into detailed design, it should be confirmed that the proposed undertaking will not directly impact rail stations. Should VIA rail stations be directly impacted, detailed heritage impact assessments should be undertaken, given that they have been designated under the *Railway Station Protection Act*.

8.17 Noise/Vibration

Effect

a) Potential temporary noise/vibration impacts during construction.

b) Potential noise/vibration impact during operation.

Aercooustics Engineering Ltd. conducted an independent noise and vibration assessment for the rail corridor, alternative station sites and alternative train layover sites (see **Appendix C2**).

Rail Corridor Noise Effects

Table 9.3 summarizes the noise impacts of GO train traffic throughout the rail corridor during Opening Day Service and Future Service conditions. There are no significant noise impacts during Opening Day or Future Service Scenarios along the rail corridor.

Table 8.5 Summary of Rail Traffic Noise Effects

Rail Corridor Section	Description	Future Sound Level (dBA)				Increase in Leq (dBA)			
		Opening Day Service		Future Service		Opening Day Service		Future Service	
		Day	Night	Day	Night	Day	Night	Day	Night
Mile 39 to 43.7 Grimsby S/D	Speed of Trains Limited to 48 km/h	62.5	62.5	64	63.5	0.5	0.5	2	1.5
Mile 0.6 to Mile 39 Grimsby S/D	Max Speed of 80/105 km/h	66	66	68	67	0.5	1	2.5	2

Recommended GO Station Noise Effects

Table 9.4 summarizes the noise impacts at the recommended GO Station sites. There are no significant noise impacts at any of these sites.

Table 8.6 Summary of Station Noise Effects

Station Location	Distance to Closest Receptor (m)	Future Sound Level (dBA)				Adjusted Noise Impact (dBA)			
		Opening Day Service		Future Service		Opening Day Service		Future Service	
		Day	Night	Day	Night	Day	Night	Day	Night
Hamilton James St. N	63	58.5	58.5	60	59.5	1.5	1.5	3	2.5
Hamilton Centennial Pkwy W	270	51	51	52.5	52.5	1	0.5	2.5	2
Hamilton Fifty Road	100	58	58	59.5	59	1	1	2.5	2
Grimsby Casablanca Boulevard	125	56	56.5	58	57.5	0.5	0.5	1.5	1.5
Beamsville Ontario St.	200	53	53	54.5	54.5	1	0.5	2.5	2
St. Catharines VIA	60	62.5	62	63	62.5	2	1.5	2.5	2
Niagara Falls VIA	45	64.5	64.5	65	64.5	2	2	2.5	2

Recommended Layover Facility Noise Effects

Table 9.5 summarizes the noise impacts at the recommended layover facility sites. The future sound level increase at the recommended layover sites is between 8 to 13.5 dBA without noise mitigation, which is considered significant to very significant.

Table 8.7 Summary of Layover Noise Impact

Layover Location	Distance to Closest Receptor (m)	Future Sound Level (dBA)	Incremental Sound Level (dBA)
Hamilton Lewis Road	250	53	8
St. Catharines Glendale Ave.	225	53	8
Niagara Falls VIA	120	58	13

Vibration Effects

Aeroustics found that the vibration impact throughout the rail corridor are classified as insignificant.

Mitigation

a) Noise control measures will be implemented where required, such as restricted hours of operation and the use of appropriate machinery and mufflers. Any relevant municipal by-laws will be followed.

b) Any receptors along the study corridor within 60 m of the mainline track should include noise mitigation where administratively, technically and economically feasible upon commencement of Ultimate GO Service.

GO Transit/Metrolinx will include provision for a 5 m high acoustical barrier or equivalent (e.g., landscape berm) adjacent to the Lewis Road and Glendale Avenue layover sites and a 10 to 14 m high acoustical barrier or equivalent (e.g., landscape berm) adjacent to the Niagara Falls layover yard which would reduce the future sound level impacts at the closest receptor to below the 55 dBA limit per the MOE/GO Protocol.

8.18 Air Quality**Effect**

a) Potential air quality impacts during construction.

Effects to air quality resulting from construction activities along the corridor, at station(s) and the layover facility are extremely localized, short term in duration and controlled by good construction practices, local legislation and manufacturing design. Emissions which are associated with construction activities are dust and typical emissions from construction equipment.

b) Potential air quality impacts during operation of stations and layover facilities.

Ortech Environmental conducted an independent air quality assessment for the rail corridor, alternative station sites and alternative layover sites (see **Appendix C1**). The air quality impacts of were assessed using the estimated emissions of the locomotives and the passenger vehicles and conservative air dispersion modeling. Maximum concentrations of the three contaminants; NO₂, CO and particulate were determined at distances from 2 m to 110 m from the centre of the train virtual sources. This range of distances accounts for receptors at the station platforms, the parking lots and off-site at surrounding residential communities and along the rail line.

The maximum calculated concentrations from the air dispersion modeling are summarized in Table 9.6 for the three contaminants at the receptors of interest.

Table 8.8 Air Dispersion Modelling Results

Location/Activity	Maximum 30-minute Concentrations (µg/m ³)		
	Nitrogen Dioxide	Carbon Monoxide	Particulate
Stations-Enter, Stop and Exit			
- On Platform	22	69	<0.1
- Parking Lot	23	98	<0.1
- 40 m off-site	14	36	<0.1
- 110 m off-site	11	24	<0.1
Layovers			
- Property Line	27	17	3
- 40 m off-site	22	14	3
- 110 m off-site	15	7	2
Along Rail Line			
- Fence Line	16	2	0.5
- 40 m off-site	15	1	0.4
- 110 m off-site	11	1	0.3
MOE Air Quality Standards	500	6,000	100

These calculated maximum contaminant concentrations at the receptors of interest are well below the MOE air quality standards for nitrogen dioxide, carbon monoxide and particulate.

The cumulative impacts of these very low levels on the existing good air quality would be insignificant.

Mitigation

a) Vehicles/machinery and equipment should be in good repair, equipped with emission controls, as applicable, and operated within regulatory requirements. The Contractor will also be required to implement

dust suppression measures to reduce the potential for airborne particulate matter resulting from construction activities. This should be in the form of water applications on exposed soils.

b) No air quality mitigation required for operations.

8.19 Human Health and Safety

Effect

- Potential safety hazard from construction activities, heavy equipment and increased construction traffic.
- Potential safety hazard from train traffic on mainline track and operation of layover facilities.

Mitigation

a) The contractor will be required to implement a Health and Safety Plan (OHSA 1990).

b) Operations of GO trains and layover facilities will be done in accordance with all appropriate Metrolinx operation and safety policies and procedures.

8.20 Transportation Infrastructure

Effect

a) Modifications at-grade crossings.

b) Temporary effects associated with construction traffic.

Mitigation

a) Project will improve safety at-grade crossings. Construction operations will include roadwork, upgrading signage, fencing and improving sight lines. Work will be done in such a manner as to minimize disruption to the adjacent residential neighbourhood. Work will be done during the daytime and noise and dust emissions will be controlled. Contract specifications will ensure that all equipment and vehicles are compliant with noise and air emission standards for applicable equipment.

b) Contractor will be required to develop and implement a Traffic Management Plan in coordination with region(s)/municipality(ies).

9.0 Approvals

There are a number of approvals pursuant to other applicable federal, provincial and/or Municipal legislation required prior to construction of recommended stations, layovers and track improvements. GO will obtain all applicable approvals required to facilitate the expansion of services along the study area corridor include:

- Hamilton Conservation Authority (HCA Development, Interference with Wetlands, and Alterations to Shorelines and Watercourses Regulation 161/06), related to works within the regulated flood plain and within watercourses, and sign-off on Stormwater Management Plan;
- Niagara Peninsula Conservation Authority (NPCA: Regulation of development, interference with wetlands and alterations to shorelines and watercourses, Ontario Regulation 155/06), related to works within the regulated flood plain and within watercourses, and sign-off on Stormwater Management Plan;
- As per a Level 2 Agreement between HCA and DFO and NPCA and DFO, HCA and/or NPCA will review of detailed design plans to identify any impacts to fish and fish habitat. If there are potential impacts to fish and fish habitat, HCA and/or NPCA will determine how GO Transit / Metrolinx can mitigate any potential impacts to fish and fish habitat. If impacts to fish and fish habitat can be mitigated, then HCA and/or NPCA issue a letter of advice. If impacts to fish and fish habitat cannot be fully mitigated, the project is forwarded to the local DFO office for further review and to determined potential for a HADD. If a HADD is determined, a federal Fisheries Act Authorization will be required. The need for a Fisheries Act Authorization will trigger the *Canadian Environmental Assessment Act* (CEAA);
- MOE (Approval under the Ontario Water Resources Act), related to Stormwater Management Plan. In addition, Metrolinx will require a Permit to Take Water (PTTW) in the event construction dewatering discharge is estimated to be greater than 50,000 L/day;
- Applicable approvals (e.g., site plans, building permits) from the municipalities throughout the study area corridor including City of Hamilton, Town of Grimsby, Town of Lincoln, City of St. Catharines and City of Niagara Falls;
- CN Agreement to permit construction of the future GO stations and layover facility/facilities within their ROW;
- Confirmation of potentially affected utilities, including current municipal infrastructure (Agreement on and Approval of construction procedures to cross these facilities); and,
- Consultation with Hydro One (Agreement for power supply, illumination and signal plant).

In addition to the above, archaeological clearance, if applicable, will need to be secured from MCL prior to construction. Due to the high archaeological potential within certain areas of the future GO stations and layover facility/facilities, a Stage 2 Archaeological Assessment will be conducted prior to construction for lands that will be directly impacted the proposed developments as per the recommendations of the Stage 1 Archaeological Assessment Report by Archaeological Services Inc. (see **Appendix C5**).

10.0 Future Commitments

It is important that the environmental mitigation measures be monitored before, during and after the construction phase. This is necessary to ensure that the environmental protection measures identified during this EA, and as required by the various approving authorities, be implemented as intended.

10.1 Pre-Construction Monitoring/Inspection

The following activities should occur before construction:

- Inspection in the field of all sediment and erosion control measures such as silt fences;
- Installation and inspection of any tree preservation measures including hoarding around drip line of trees near construction areas;
- Landscape plans, setbacks and floodplain protection measures; and,
- An on-site review with the contractor of his installed environmental protection measures before construction begins. The importance of maintaining these measures can be stressed with the contractor during the pre-construction field review.

10.2 Monitoring/Inspection during Construction

During the construction phase the following monitoring activities are required:

- Maintenance and fuelling of construction equipment well away (i.e., 30 m+) from any creeks, streams, rivers, marshes, wetlands or drainage courses;
- Stockpiling of fill, granulars, topsoil and other materials away from drainage courses in allocated storage areas. These materials should be enveloped by silt control fence or other measures as appropriate to control sediment and erosion; and,
- Maintain limited and controlled access of construction equipment in and around environmentally sensitive areas such as watercourses, marshes, setback areas and other naturalized areas.

Construction activities will be monitored by an on-site Environmental Specialist to ensure that the Contractor's Plans and the contract constraints and provisions are adhered to and in order to recommend remedial action in the event of an unforeseen situation.

10.3 Post-Construction Monitoring/Inspection

During the period following construction, monitoring of the environmental mitigation measures should continue to ensure that they are functioning as intended. Some of the post-construction monitoring activities should include:

- A review of the storm water management controls to ensure that they are operating properly.

- Maintenance of the sediment and erosion control measures during the period immediately following construction until vegetative restoration and ground cover has established.
- During the contractor's maintenance period, all new vegetation and natural restoration must continue to be watered and monitored.
- All temporary culverts will be removed.
- All disturbed areas will be re-graded and re-seeded as required.
- Surplus materials left over from construction will be removed off-site.
- All waste materials will be removed and sent to appropriate waste facilities.

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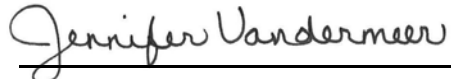
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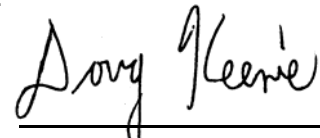
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12.0 Document Approval

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