CEAA ENVIRONMENTAL SCREENING REPORT

GO Transit

West Toronto Diamond
Rail-to-Rail Grade Separation

18 November 2005

Transports Canada Transport Canada

CEAA ENVIRONMENTAL SCREENING REPORT

SCREENING SUMMARY

A. PROJECT IDENTIFICATION

Project Title/Type	GO Transit – West Toronto Diamond Rail-to-Rail Grade Separation		
Project Location:	Toronto, Ontario	Estimated Cost:	$ 75 million
CEAA Trigger:	Funding	EA Start Date:	Dec 15, 2004
CEAR No.:	04-01-08320	NOC Posting Date:	Dec 15, 2004
TC File No.:			

B. CONTACTS

Transport Canada:	Name: Rob McCallum – Transport Canada Program Manager Highways, Surface Programs	Telephone No.: Fax No.:	613-998-5162 613-990-8889
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Other RAs:	Name: Keith Grady - Infrastructure Canada Senior Environmental Coordinator,	Telephone No.: Fax No.:	613-948-8136 613-946-9888
Proponent:	Name: Greg Ashbee – GO Transit Senior Project Engineer	Telephone No.: Fax No.:	416-869-3600 ext. 5211 416-869-9011

C. NOTIFICATION

Federal departments notified in accordance with Federal Co-ordination Regulations:

Other Responsible Authorities:	Yes [X]	None identified [ ]
Expert Federal Departments:	Yes [X]	None identified [ ]
Project harmonized with another jurisdiction:	Yes [X]	None identified [ ]

D. MITIGATION AND FOLLOW-UP

Mitigation and follow-up to be implemented for this project?

Yes [X] None identified [ ]

Federal Authority will provide assistance during implementation of:

Mitigation measures	[ ]	FA responsible:
Follow-up	[ ]	FA responsible:
Not applicable	[X]	

E. *CEAA* DETERMINATION

What is the *CEAA* determination for this project?

[X] The project is not likely to cause significant adverse environmental effects.
[ ] The project is likely to cause significant environmental effects. The project does not proceed.
[ ] Referral to a mediator or a review panel because of uncertain significant environmental effects.
[ ] Referral to a mediator or a review panel because of likely significant environmental effects.
[ ] Referral to a mediator or a review panel because of public concern.

Determination date: _____/____/_____

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Screening

1 Project Description

1.1 Project Description

The project includes the construction of two rail/rail grade separations to separate the CN Weston Subdivision (S/D) tracks from the CPR North Toronto S/D tracks and the CPR Wye track (which connects the CPR MacTier S/D tracks with the CPR Galt S/D tracks) and construction of a road/rail grade separation to separate the CN Weston S/D tracks from Old Weston Road (Figure 1.1). The existing rail configuration, termed the 'West Toronto Diamond' is situated in the west central part of the City of Toronto. This project is being undertaken by GO Transit, whose Georgetown Line operates on CN's Weston S/D in the project area.

The grade separation project will include the following works and activities:

- Construction of a grade separation (underpass bridge) to carry the CN Weston S/D tracks under the CPR North Toronto S/D tracks. Provision will be made for future expansion of CN Weston S/D from two tracks to four tracks and of CPR North Toronto S/D from two tracks to four tracks. Activities associated with bridge construction include construction of diversion tracks around the work area for both S/Ds.
- Construction of a grade separation (underpass bridge) to carry the CN Weston S/D tracks under the CPR Wye track and under Old Weston Road (one underpass structure to separate both rail and road).
- Construction of an 1100-m long depressed rail corridor for the CN Weston S/D tracks (allowing for future expansion from two to four tracks) from St. Clair Avenue to Dupont Street. Activities associated with corridor construction include, excavation, retaining wall construction and concrete slab floor construction.
- Replacement of tracks within the depressed corridor. Activities associated with track replacement include placing of ballast, tracks and creosoted ties.
- Construction of a drainage system for the underpass including drainage collection ditches and catch basin in the depressed corridor, pump system, stormwater management pond and outlet facilities to local sewer network.
- Installation of fencing, landscaping and lighting.
- Relocation / removal of the CN railway grade crossing automatic warning devices at Old Weston Road. (The CPR grade crossing will remain).

- Relocation of existing utility lines including combined and storm sewers, water mains, hydro lines, fibre optic cables and gas mains
- Conduct ongoing maintenance of the GO alignment following construction.

The purpose of the project is to facilitate operational improvements to the commuter rail service on GO Transit's Georgetown line in order to achieve better on-time performance, decreased journey times and enhanced safety. This project will not result in increased train movements on the Georgetown rail corridor.

For a detailed description of all project components, please refer to Table 3.1 of this report. The study area is depicted in Figure 1.1 and the existing site layout is depicted in Figure 1.2.

1.2 Project Scheduling

Detailed design for the project is scheduled for completion the end of 2005. Pending receipt of all required approvals and permits, it is anticipated that construction will commence in spring 2006 and be completed by spring 2008.

Given the nature of this project and the complexity of the rail operations through this corridor, this project will be implemented cooperatively between CPR / CN and GO Transit. Specific roles and responsibilities will be assigned and agreed upon during the detailed design stage. It is anticipated that CN will provide the construction for the rail and associated rail works, while the remainder of the project will be publicly tendered and carried out under the guidance of GO Transit.

1.3 Project Justification – Need/ Alternatives to the Project

GO Transit's Georgetown commuter rail service runs from Toronto's Union Station out through Malton, Bramalea and Brampton to Georgetown. The service runs over CN's Weston Subdivision (S/D) tracks to the northern boundary of Mississauga, and then joins CN's Halton S/D tracks and continues to Georgetown. A significant impediment to the service on this route is the West Toronto Diamond where the Georgetown GO trains (on the Weston S/D) must cross frequent Chicago-Montreal freight traffic that runs on the CPR North Toronto S/D (see Figure 1.2).

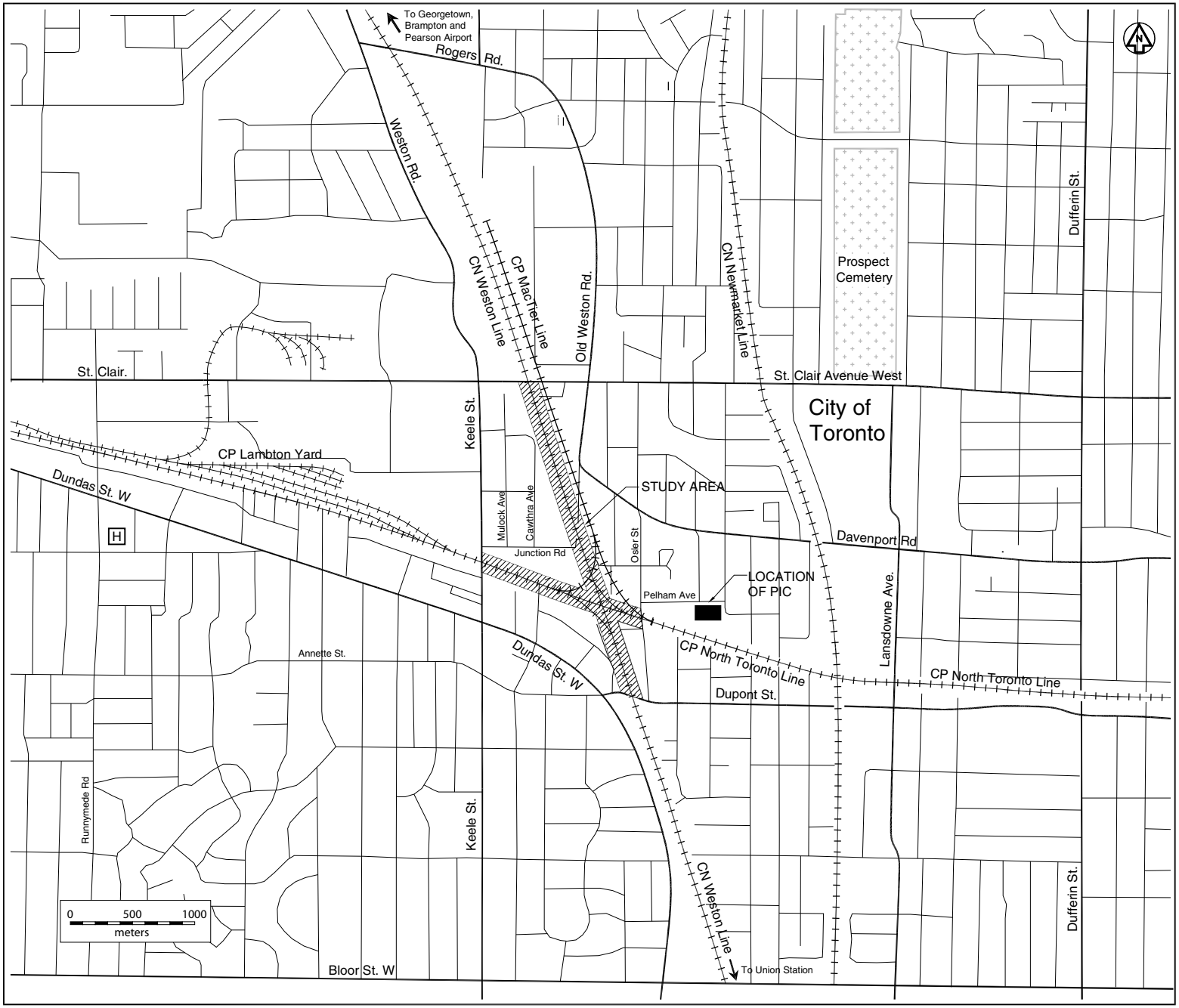


Fig 1.1
Study Area Location

Fig 1.2
Study Area

Each train on the CN line has to wait for a "window" in the east-west CPR freight traffic to allow it to cross the diamond safely and, in addition, train speeds are restricted over the diamond. This results in increased travel times for all trains on the Weston S/D, and can lead to delays to GO service. The solution to this bottleneck is to grade separate the current at-grade intersection of the two rail lines. This will allow improved travel times (by removing the current speed restrictions over the diamond) and improve the on-time performance of the current GO train service. It should be noted, however, that there will be no increase in the number of GO trains on the Georgetown line as a result of this project. Other constraints on the Georgetown line have to be addressed before service can be improved.

Provision has been made (at the railways' request) in the preliminary design of the grade separation to accommodate a future expansion of both the CN Weston and CPR North Toronto S/Ds from their current two tracks to an ultimate four-track configuration.

Several alternative concepts for the grade separation were considered:

- Do Nothing
- Overpass Alternatives
  - Raise CN tracks over CPR tracks
  - Raise CPR tracks over CN tracks
- Underpass Alternatives
  - Lower CN tracks under CPR tracks
  - Lower CPR tracks under CN tracks.

The alternatives were evaluated in terms of their impacts on the biophysical and socio-economic environments and their technical feasibility. The analysis of the concept alternatives identified the underpass option, with the CN Weston S/D tracks being lowered, as the preferred option. In this option the CN Weston S/D rail lines drop down just north of the existing Dupont Street underpass, pass under the CPR rail tracks, and rise up again to pass over the existing St. Clair Avenue West underpass. Although the justification for the project is based on the need to grade separate the CN Weston and CPR North Toronto rail corridors, lowering the CN tracks under the CPR tracks also results in the CN tracks passing under the CPR Wye track and under Old Weston Road.

The layout of the preferred option is depicted in Figure 1.3. The plan and profile of the grade separation is shown in Figure 1.4 and a typical cross-section of the depressed portion of the CN Weston rail corridor is shown in Figure 1.5.

For a detailed description of the identification and evaluation of the concept alternatives, please refer to the *GO Transit – West Toronto Rail/Rail Grade Separation Environmental Study Report*, January 2005, prepared by Acres International Limited. The conclusion reached in this report is, in fact, similar to the conclusions reached in earlier studies that include:

- *GO Train Expansion Program, Georgetown Corridor Full Service Study*, 1990, GO Transit
- *West Toronto Rail/Rail Grade Separation Pre-Engineering Feasibility Study*, 1994, for CN North America by Morrison Hershfield
- *Georgetown Corridor All Day Service, Environmental Study Report*, 1994, GO Transit
- *Georgetown Corridor Planning Study*, 2002, for GO Transit by McCormick Rankin.

Fig 1.3
Preferred Alternative

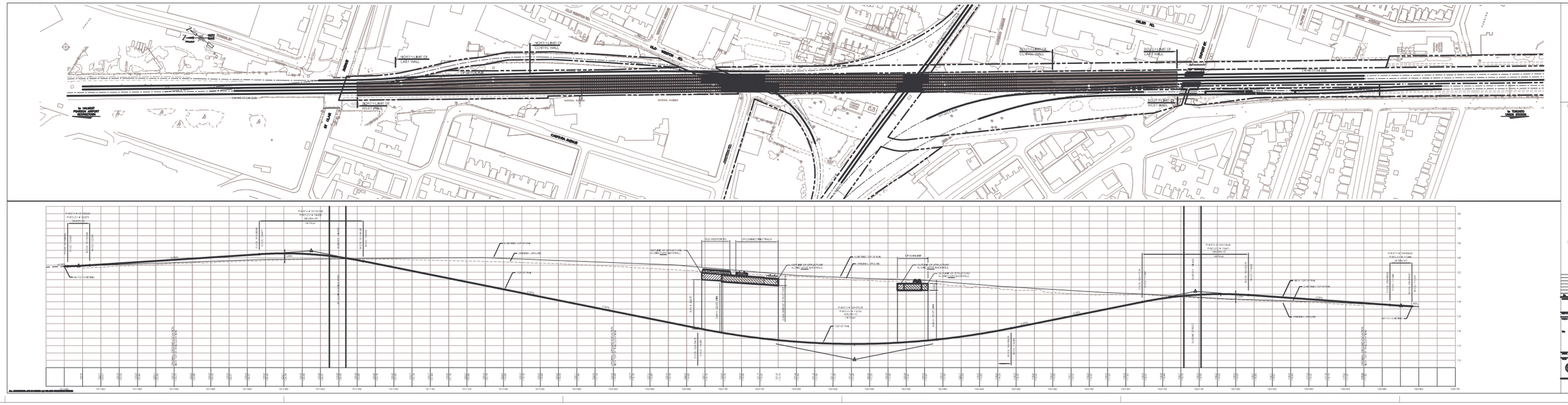
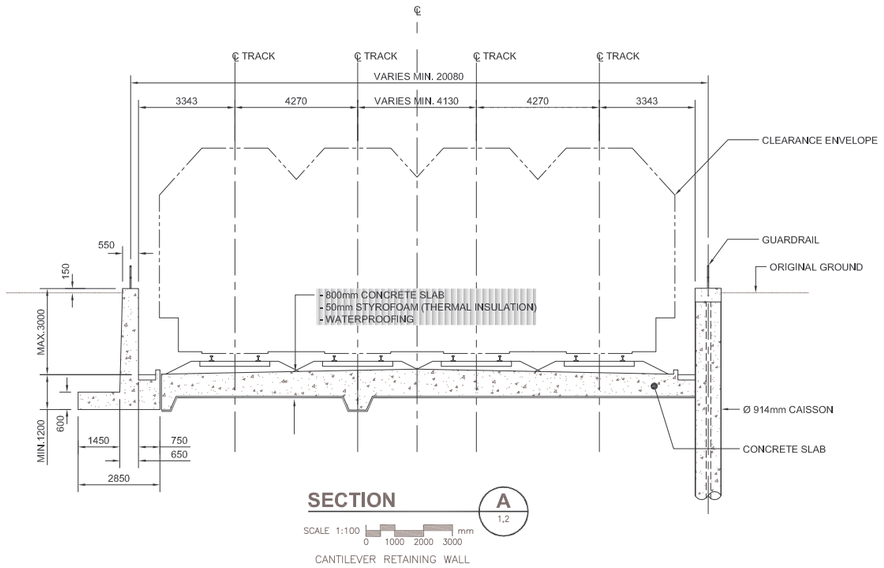

LANSDOWNE AVE
DUNDAS ST. WEST
KEELE ST.
LOCATION PLAN
LEGEND
E. EXISTING TRACK
E. NEW TRACK
E. FUTURE TRACK
EXISTING CLASS
EXISTING CLASS
EXISTING GRAVEL ROADWAY
EXISTING GRAVEL ROADWAY
EXISTING DRIVE
SCALES (PLAN ONLY)
SCALE METRIC (1:500)
SCALE IMPERIAL (1" = 40'-0")
WEST DOWNSVIEW GRADE SEPARATION PROJECT
PHASE 3 CONSTRUCTION PLAN & PROFILE
GO TRANSIT

Figure 1.4



SECTION A (1,2)

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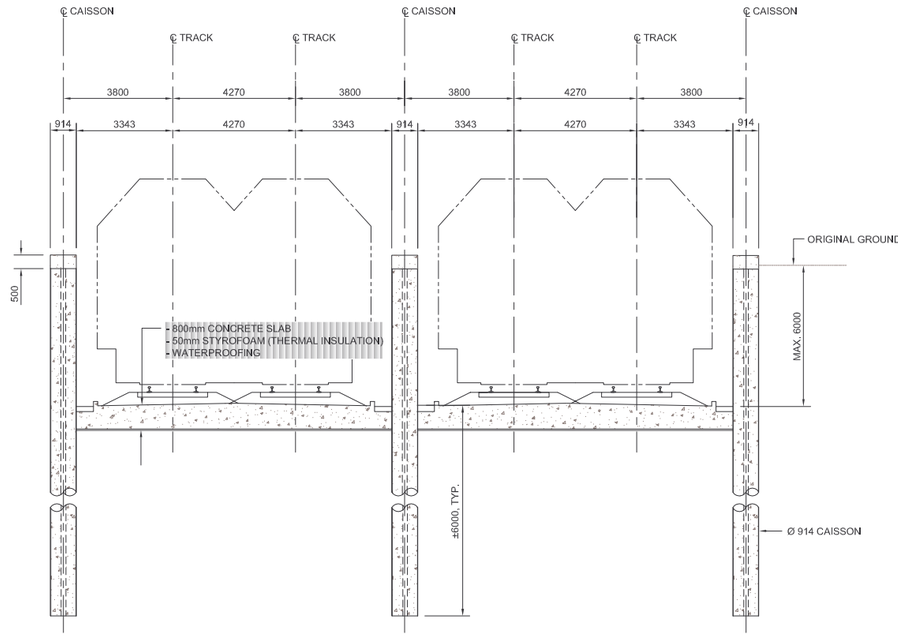
CANTILEVER RETAINING WALL



SECTION C (1,2)

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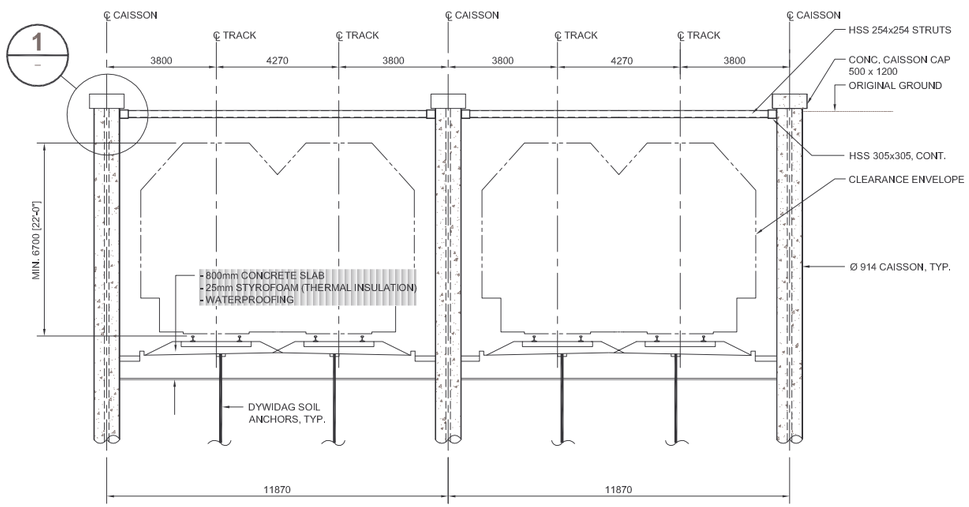
CAISSON WALL WITHOUT STRUTS



SECTION B (1,2)

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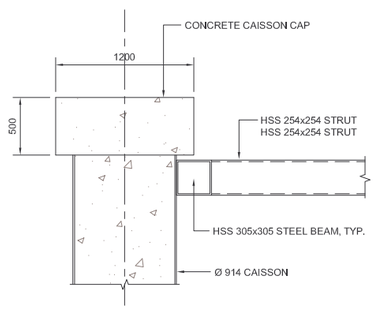
CAISSON WALL WITH STRUTS



DETAIL 1

SCALE 1:25 0 250 500 750 mm

LOCATION PLAN

LEGEND:

NOTES:

ALL DIMENSIONS ARE IN MILLIMETERS (mm) UNLESS OTHERWISE NOTED

NOT FOR CONSTRUCTION

No.	Date	Revision	By / Pmk
A	03/MM/DD	ISSUED: XXXXXXXXXXX	X.X.

Consultant: AGRES; UMA Engineering Ltd., 6360 Cantay Rd., Mississauga, ON L4W 0P2, Tel. (905) 624-7337

SUB + MLE: CN WESTON SUB Mi. 4.8, CP NORTH TORONTO SUB. Mi. 5.9

Project: WEST TORONTO RAIL / RAIL GRADE SEPARATION PROJECT

Title: RETAINING WALLS: TYPICAL SECTIONS

Drawn V.K./A.B. | Designed P.K. | Checked S.B. | Scale AS SHOWN | Date 03/10/10

Client: GO TRANSIT

Figure 1.5

2 CEAA Trigger

Transport Canada, along with Infrastructure Canada

[ ] is the proponent of the project.
[X] proposes to fund part or all of the project.
[ ] proposes to sell, lease or otherwise dispose of land for the project.
[ ] proposes to issue a permit, approval or other authorization on the CEAA Law List Regulations

Other Federal Involvement? Yes [X] not applicable [ ]

Federal Authority	**Trigger or Role**
Transport Canada	FEAC
Canadian Transportation Agency	Expert Advisor
Environment Canada	Expert Advisor
Health Canada	Expert Advisor

3 Scope

3.1 Scope of the Project

The project involves the construction and operation of the rail/rail grade separation at the West Toronto junction of the CN Weston S/D and CPR North Toronto S/D, the construction and operation of the rail/rail grade separation of the CPR Wye track and the CN Weston S/D, and the construction and operation of the road/rail grade separation at Old Weston Road and the CN Weston S/D.

The project will not result in increased service on GO Transit's Georgetown commuter rail service, but it will improve the journey time and on-time performance of the existing service.

A complete description of the project and associated activities is provided in Table 3.1.

Table 3.1: Project Component Identification

PROJECT PHASE	PROJECT COMPONENTS		
	Core Project Components	**Ancillary Works, Other Projects and Activities**	**Description**
Construction	• Grading and placement of granular ballast • Construction of temporary railway diversion tracks	• Relocate signalling to temporary track • Removal of existing tracks	To enable train traffic to be maintained during construction, temporary diversion tracks will be installed, complete with signalling. The existing tracks will then be removed to allow construction to proceed.
	• Construction of retaining walls	• Utility relocation as required	Retaining walls will be constructed along both sides of the proposed depressed CN rail corridor. The retaining walls will consist of vertically driven pipe piles that will act both as a temporary excavation support system and as the final, permanent retaining walls.
	• Excavation between retaining walls and placement of concrete track slab	• Dewatering of excavation • Erosion and silt control measures	Excavation of existing ground from between the retaining walls to form the depressed rail corridor, followed by the construction of a concrete base slab (from wall to wall) below track level.
	• Construction of pump station, stormwater management pond, and outlet to City storm sewer.	• Landscaping of pond • Erosion and silt control measures	A pumping station is required to pump stormwater from the depressed rail corridor. Water will be pumped into a stormwater management pond and then released at a controlled rate to the municipal sewer system.

PROJECT PHASE	PROJECT COMPONENTS		
	Core Project Components	**Ancillary Works, Other Projects and Activities**	**Description**
	• Construction of bridge to carry CPR North Toronto S/D over depressed CN tracks		A new flat slab bridge, supported on the pipe pile retaining walls / abutments, will be constructed to support the CPR North Toronto S/D tracks.
	• Construction of bridge to carry CPR Wye track and Old Weston Road over depressed CN rail tracks	• Temporary closure of CPR Wye track. • Temporary closure of Old Weston Road	A new flat slab bridge, supported on the pipe pile retaining walls / abutments, will be constructed to support the CPR Wye tracks and Old Weston Road over the depressed CN rail corridor.
	• Construction of new CN tracks in depressed rail corridor	• Placement of ballast, ties and rail • Installation of new CN signalling	The new permanent CN tracks and signalling system will be installed in the depressed rail corridor.
	• Removal of temporary rail diversion track • Removal of old rail/rail crossing • Removal of Old Weston Road/CN rail/road crossing		After train operations have been transferred to the new tracks, the temporary diversion tracks will be removed. At that time the old West Toronto Diamond rail/rail at-grade crossing will be removed, as well as the Old Weston Road rail/road crossing and associated warning devices.
	• Site restoration	• Fencing • Landscaping	General restoration of site following completion of construction
Operations/ Maintenance	Maintenance of Railway infrastructure including: • Track and ballast • Structures • Signal system • Fencing • Storm drainage system • Landscaping and graffiti removal	Not Applicable	General maintenance of rail infrastructure as typically carried out on railways in an urban area.
Accidents/ Malfunctions	• Removal of at-grade rail/rail crossings • Removal of CN/Old Weston Road at-grade rail/road crossing	Not Applicable	CN/GO crossings of the CPR diamond, of the CPR Wye track, and of Old Weston Road will be grade separated. This removes the potential for train-train, train-vehicle or train-pedestrian accidents at these crossings. It also removes the potential for signal malfunctions leading to accidents.
Decommission/ Abandonment	• No plans for decommissioning of the rail lines have been identified within the planning horizon (lifespan of the infrastructure)	Not Applicable	

3.2 Scope of Assessment

The interaction of the construction and operation phases of the project with the various environmental components is illustrated in Table 3.2. The only decommissioning anticipated to occur as a result of this project is that of the existing West Toronto Diamond rail crossing and the Old Weston Road crossing on the CN Weston S/D. These activities have been assessed as though they were part of the construction phase of the project as they will occur during the same time period as other construction activities.

The environmental components to be included in the scope of assessment are outlined in Table 3.2 and listed below. A "Y" in Table 3.2 indicates that there may be a potential interaction between the associated project activity and the environmental component.

- Air quality
- Noise and vibration
- Surface water quality and quantity
- Groundwater quality and quantity
- Soils
- Vegetation and wetlands
- Wildlife/habitat, including migratory birds
- Fish and fish habitat
- Species of special concern
- Official plan, land use designations and existing land use
- Traffic and transportation
- Utilities
- Safety
- Archaeological and cultural resources.

The temporal boundary guiding the assessment is GO Transit's, CN's and CPR's continued operations through the study area, which is, at present, indefinite. There are no plans to abandon the GO Transit service along this corridor. The temporal boundary for construction activities is the 2006 through 2007 construction seasons.

The spatial boundary of the study area is defined as the rail corridor from Dupont Street to St Clair Avenue, and lands directly adjacent to the corridor (i.e. within 200 metres directly adjacent to the right-of-way) as it represents the area of potential effects (incidental impacts) associated with the construction of this project. There are no other matters affecting the scope of the assessment.

Table 3.2: Project-Environment Interaction Matrix

Component	Air Quality	Surface water	Groundwater	Soils	Vegetation	Wildlife including Migratory Birds	Fish and Fish Habitat	Species of Special Concern	Official Plan and Land Use	Traffic and Transportation	Utilities	Noise/ Vibration	Safety	Archaeology and Cultural Heritage
Grading, placement of ballast	Y	Y	Y	Y	Y	Y					Y	Y	Y	
Diversion track construction	Y	Y	Y	Y	Y	Y				Y		Y	Y	
Retaining wall construction	Y	Y	Y	Y	Y	Y				Y	Y	Y	Y	
Excavation for depressed rail corridor	Y	Y	Y	Y	Y	Y				Y		Y	Y	
Utility Relocations	Y	Y	Y	Y	Y	Y				Y	Y	Y	Y	
Drainage and Stormwater Management	Y	Y	Y	Y	Y	Y						Y	Y	
Construction of CPR North Toronto grade separation bridge	Y	Y								Y		Y	Y	
Construction of CPR Wye track and Old Weston Road grade separation bridge	Y	Y								Y		Y	Y	
Construction of new CN tracks	Y	Y								Y		Y	Y	
Removal of old West Toronto Diamond rail/rail crossing and track	Y	Y								Y		Y	Y	
Removal of Old Weston Road crossing	Y	Y								Y		Y	Y	
Landscaping, fencing	Y	Y	Y	Y	Y	Y						Y	Y	
Rail Bed and Track Maintenance	Y	Y		Y	Y	Y						Y		
Security Fence Maintenance	Y	Y		Y										
Structure Inspections and Maintenance	Y	Y		Y								Y		
Storm Drainage System Maintenance	Y	Y		Y								Y		
Other Maintenance	Y	Y		Y										

4 Description of Existing Environment

4.1 Description of Biophysical Environment

4.1.1 Climate

The study area is subject to a continental climate moderated considerably by the presence of Lake Ontario on a local scale and the other Great Lakes on a broader regional scale (Auld et al., 1990). Daily mean temperatures in proximity to the study area range from a high of 22.1ºC in July to a low of -4.5ºC in January (MSC, 2003). Due to the high degree of development in the surrounding area, the study site may be at times subject to the urban heat-island effect, whereby nighttime temperatures are significantly higher than surrounding areas. This is due to daytime heat storage in concrete, asphalt and other man-made components of the urban environment (Auld et al., 1990). Average annual precipitation is 818.9 mm, with 689.3 mm (84%) being rainfall and 135 mm (16%) being snowfall (MSC, 2003).

4.1.2 Air Quality

Air quality in Ontario is affected by variables acting on local, regional and global scales. Local determinants of air quality include sources such as industrial emissions and emissions from the transportation sector (e.g., motor vehicles), and local air flow and weather patterns. Regional and global emissions, larger-scale weather patterns and overall climate considerations also play a role in determining local air quality conditions.

In Ontario, the primary parameters used to measure air quality, through the Air Quality Index (AQI), include sulphur dioxide (SO_2), ozone (O_3), nitrogen dioxide (NO_2), total reduced sulphur compounds, carbon monoxide (CO) and fine particulate matter. These parameters are measured by the Ministry of the Environment (MOE) at six long-term monitoring stations in the City of Toronto, with the monitoring station closest to the study area being situated approximately 6 km northwest of the West Toronto Diamond ("Toronto West" at 125 Resources Road).

At the Toronto West monitoring station in 2004, there were no instances of Poor or Very Poor air quality, based on the daily AQI ratings. Air quality was rated as Moderate for 35 days of the year, with the first instance occurring on

February 12 and the last occurring on September 23. Ozone and fine particulate matter were typically the main causes of the Moderate rating. All other days of the year were rated as Good or Very Good (MOE, 2005).

In 2003, the mean ozone concentration at the Toronto West station was 18.7 parts per billion (ppb) while the maximum 1-hour concentration was 104 ppb. For comparison, the Ontario Ambient Air Quality Criteria (AAQC) for ozone is 80 ppb over a 1-hour period (MOE, 2001). This criteria was exceeded 40 times in 2003 (MOE, 2004). The recommended Canada-wide Standard for ozone, to be achieved by 2010, is 65 ppb, averaged over an 8-hour period (CCME, 2000). Annual mean ozone levels steadily rose from 17.4 ppb in 1994 to 22.0 in 2002, before decreasing in 2003 (Note: the monitoring station location changed in 2003).

The annual mean fine particulate matter ($PM_{2.5}$) concentration at Toronto West in 2003 was 9.8 $\mu g/m^3$ (MOE, 2004). For comparison, the recommended Canada-wide Standard for $PM_{2.5}$, to be achieved by 2010, is 30 $\mu g/m^3$ averaged over a 24-hour period (CCME, 2000). This level was exceeded 8 times in 2003.

The annual mean NO_x concentration at Toronto West in 2002 was 32 ppb, with maximum 1-hour and 24-hour readings of 645 ppb and 265 ppb, respectively (MOE, 2003). The AAQC for NO_x is 200 ppb over a 24-hour period and 400 ppb over a 1-hour period. Mean annual NO_x concentrations have been steadily decreasing over the past 10-year period with a high of 49.0 ppb in 1994 and a low of 32 ppb in 2002 (MOE, 2004). The Toronto Board of Health estimates that 65% of all NO_x emissions in the city are from the transportation section, primarily cars, buses and trucks (Toronto Board of Health, 2004; cited in Marshall Macklin Monaghan, 2004).

The annual mean CO concentration at Toronto West in 2002 was 0.60 parts per million (ppm) with a 1-hour maximum of 3.13 ppm (MOE, 2003). The AAQC for CO is 30 ppm over 1 hour and 13 ppm over 8 hours (MOE, 2001). There were no exceedances of these levels in 2002 at the Toronto West monitoring station. Mean annual CO concentrations at Toronto West rose from 1994 to 2000 (0.7 ppm to 1.8 ppm) and then decreased to 0.6 ppm in 2002 (MOE, 2004).

The mean annual SO_2 concentration at Toronto West in 2003 was 2.9 ppb, well below the 1-year AAQC of 20 ppb (MOE, 2004). There were no exceedances of the 1-hour, 24-hour or yearly SO_2 AAQCs at this monitoring station. Over the past 10-year period, mean annual SO_2 concentrations have fluctuated between 2.9 ppb (2003) and 5.4 ppb (2002) with no exceedances of the annual AAQC (MOE, 2004).

4.1.3 Noise and Vibration

Existing noise sources in the study area are related mainly to road and rail traffic. Rail related noise at the West Toronto Diamond is generated by the operation of not only the GO trains on the Georgetown line, but also VIA trains, GO Milton line trains, and CN and CPR freight traffic. As well as the "normal" operating noise of the trains, additional "clickity-clack" noise is generated by the train wheels as they traverse the small gaps in the track that are required for the diamond crossings. Every train on the CPR North Toronto S/D (approximately 80 trains per day) crosses two diamonds, trains on the CN Weston S/D (approximately 30 trains per day) cross three diamonds, and trains on the CPR Wye track (approximately 2 trains per day) cross two diamonds. Existing conditions are typical of an urban area, and this project is not expected to contribute additional noise in the long term.

Noise sensitive receptors in the study area include residential and commercial areas immediately adjacent to the West Toronto Diamond (Figure 4.1), particularly in the northeast quadrant of the diamond where seven residential properties abut the railway corridor with no buffering from industrial/commercial facilities. These residential properties, on Linden and Miller Streets, are immediately adjacent to (i.e. within 25 metres of) the CPR MacTier rail line but are further away (between 50 and 150 metres) from the CN Weston rail tracks. These are older homes, which have been in the area since about 1900. Local schools (as identified in Section 4.2.2) are located at least a distance of 350 metres from the CN Weston rail corridor and therefore outside of the zone of potential noise / vibration impacts.

4.1.4 Landforms, Soils and Topography

The study area is situated within the physiographic region known as the Iroquois Plain, the lowlands bordering the western end of Lake Ontario (Chapman and Putnam, 1984). The plain, the bottom of the former glacial

Lake Iroquois, gently slopes northward from Lake Ontario. The study area is situated on the former glacial Lake Iroquois era Humber River Delta, an extensive sand and gravel deposit laid down at the former mouth of the glacial era Humber River. Surficial topography in the study area is quite flat, sloping from northwest to southeast with gradients averaging less than 1.0%.

Soils in the study area consist primarily of shallow surface layers of topsoil (ranging from 0.2 to 1.5 m thick) and fill materials (sand and gravel ranging from 0.6 to 3.3 m thick), underlain by fine grained clay and silt in the upper 5 to 7 m, and non-plastic silt and sand at depth (Thurber Engineering Ltd., 2003). Soils below the groundwater table are cohesionless. These soils are slowly permeable and exhibit moderate surface runoff potential when encountered on moderately sloping topography.

The potential for some contamination of soils within the study area is high due to the long-standing history of railway and other industrial uses in the area. Soil sampling was conducted in 2003 to characterize the quality of the soils in the study area (Thurber Engineering Ltd., 2003). Trace to non-detectable levels of benzene, toluene, ethylbenzene and xylene (BTEX) and total petroleum hydrocarbons (TPH) were found in samples from within the upper 6 m of the subsurface profile. These results were well below the MOE 1997 Table B soil criteria for Industrial/Commercial Land Use[1]. However, one sample location (0 to 0.9 m sand and gravel) had TPH (Heavy Oil) and TPH (Diesel) concentrations exceeding the MOE Table B soil guidelines.

The testing program noted that, although the majority of samples were well below guidelines, other areas of contamination may exist in sites not tested during the current sampling program, especially below the existing tracks (Thurber Engineering Ltd., 2003).

Samples were also tested for conformance with Toronto Region Conservation Authority (TRCA) Lakefill Guidelines and Canadian Council of Ministers of the Environment (CCME) Soil Quality (commercial/industrial) Guidelines. Most of the samples tested for inorganic parameters were well below the above-noted guidelines. However, three samples (ranging in depth from 0 to 2.1 m) showed exceedances in a number of parameters of the TRCA Lakefill

[1] Now replaced by Table 3 from 2004 Soil, Groundwater and Sediment Standards for Use Under Part XV.I of the Environmental Protection Act.

Guidelines, but were below CCME guidelines. Slightly elevated PCB levels were found during the 1992 sampling program in one sample located beside a transformer.

4.1.5 Surface Water Quality and Quantity

Surface water drainage of the urban areas adjacent to the study area is collected and conveyed to Lake Ontario via a network of combined, separated and partially separated storm sewers. There are no natural watercourses within the immediate study area vicinity.

There are no storm sewer inlets within the railway property and, given the relatively flat topography, overland flow patterns and many of the ditches are either not well defined or non-existent. As such, the majority of the surface runoff from the railway lands would be either retained in surface depressions within the grassed quadrant areas and infiltrate into the soil and/or will be conveyed as overland flow in a north to south direction towards Dupont Street.

4.1.6 Groundwater Quality and Quantity

Groundwater investigations conducted in 1992 and 2003 found that the groundwater table ranged in elevation from 113.5 m to 116.6 m (existing grade ranges from approximately 118 m to 124 m), with the highest groundwater table elevation being approximately 4.3 m below grade (Thurber Engineering Ltd., 2003). Groundwater flow vectors in the study area are either north or south with Old Weston Road serving as the approximate groundwater flow direction divide (i.e., south of Old Weston Road, groundwater flows south, with the opposite occurring north of Old Weston Road). Seasonal fluctuations in the groundwater table are expected (Thurber Engineering Ltd., 2003).

One groundwater sample was collected for chemical characterization in 2003 (Thurber Engineering Ltd., 2003). Concentrations of TPH (heavy oil), TPH (gas and diesel) and oil & grease were below method detection limits. Trace amounts of BTEX were found, but the observed values were well below the Toronto Sewer Use By-Law parameters for sanitary and combined sewer discharge. Volatile organic compounds (VOCs), pesticides, PCB's, and base-neutral or acid extractables were not detected in the groundwater sample. A

slight exceedance of the Sewer Use By-law for storm sewer discharge for NP Ethoxylates was noted in the sample. There were a number of pH, biochemical oxygen demand (BOD) and metal exceedances compared to the Storm Sewer Use By-Law limits.

Groundwater in the study area is not known to be a source of potable water.

4.1.7 Vegetation and Wetlands

The natural environment features of the study area have been significantly altered due to the longstanding history and high degree of urban industrial development in the study area. However, upland cultural vegetation communities (i.e., vegetation communities originating from or maintained by anthropogenic or culturally based disturbances [Lee et al., 1998]) exist in the study area in narrow bands along the railway line corridors. These communities are dominated by cultural meadow and shrub thicket vegetation, typical of disturbed areas, including a high proportion of non-native species. Common forb species include Queen Anne's Lace (*Daucus carota*), common mullein (*Verbascum thapsus*), teasel (*Dipsacus sylvestris*), common milkweed (*Asclepias syriaca*) and goldenrod species (*Solidago* sp.). Common shrubs include staghorm sumac (*Rhus typhina*) and small trees such as Manitoba maple (Acer negundo) and poplar species (*Populus* sp.). There are no wetlands within the study area.

4.1.8 Wildlife

The highly disturbed nature of the environmental features of the study area and the ongoing disturbance provided by rail activities in the corridor preclude the presence of a diverse wildlife community. However, urban-tolerant wildlife species, including small mammals such as grey squirrel (*Sciurus carolinensis*) and deer mouse (*Peromyscus maniculatus*), and a few birds, such as American robin (*Turdus migratorius*) and European starling (*Sturnus vulgaris*) may use the vegetated patches of the study area for residence or foraging but overall populations would be limited by the extent of habitat available.

The vegetated railway corridors likely provide a minor wildlife corridor to facilitate movement throughout the surrounding urban areas, although they

would not be classified as significant natural area linkages due to the degraded nature of surrounding areas.

4.1.9 Fish and Fish Habitat

There are no watercourses capable of providing fish habitat on or in close proximity to the study area. Storm water flow conveyed in combined sewers in the area is treated at the wastewater treatment plant prior to discharge to Lake Ontario.

4.1.10 Species of Special Concern

The Ontario Ministry of Natural Resources (MNR) Natural Heritage Information Centre (NHIC) database notes the historical occurrence of several Species at Risk (SAR) in the study area. However, the MNR has indicated that the SAR historically recorded in the study area are now extirpated (Followes, pers. comm., 2004), most likely due to the longstanding history of development in the area. Accordingly, there are no species listed under the federal *Species at Risk Act* (SARA) known to be present in the study area, per Environment Canada SARA Registry.

4.2 Description of Socio-economic and Cultural Environment

4.2.1 Official Plans and Land Use Designations

The study area lies within the City of Toronto and falls within the jurisdiction of the Official Plan for the City of Toronto, dated November 2002. The Plan was updated in 2002 to support the amalgamation of the municipalities of Metropolitan Toronto, York, East York, Etobicoke, Scarborough, North York and Toronto (City of Toronto, 2004).

According to the Official Plan, the railway lands in the study area are designated as a Utility Corridor (Map 12 Land Use Plan). The existing CN and CPR lines are considered High Order Transit Corridors and part of the Surface Transit Priority Network (Maps 4 and 5 respectively of the Official Plan).

Land use for the area to the north of the east–west corridor and west of the CN Weston S/D is mainly designated as an Employment Area. According to the Plan, Employment Areas are designated for growth. Additional Employment Areas lie immediately adjacent to the CN Weston S/D in the area of the proposed construction. There are some Mixed-Use areas located along the roadways (Dundas Street West and Dupont Street) comprised of mixed commercial and residential use.

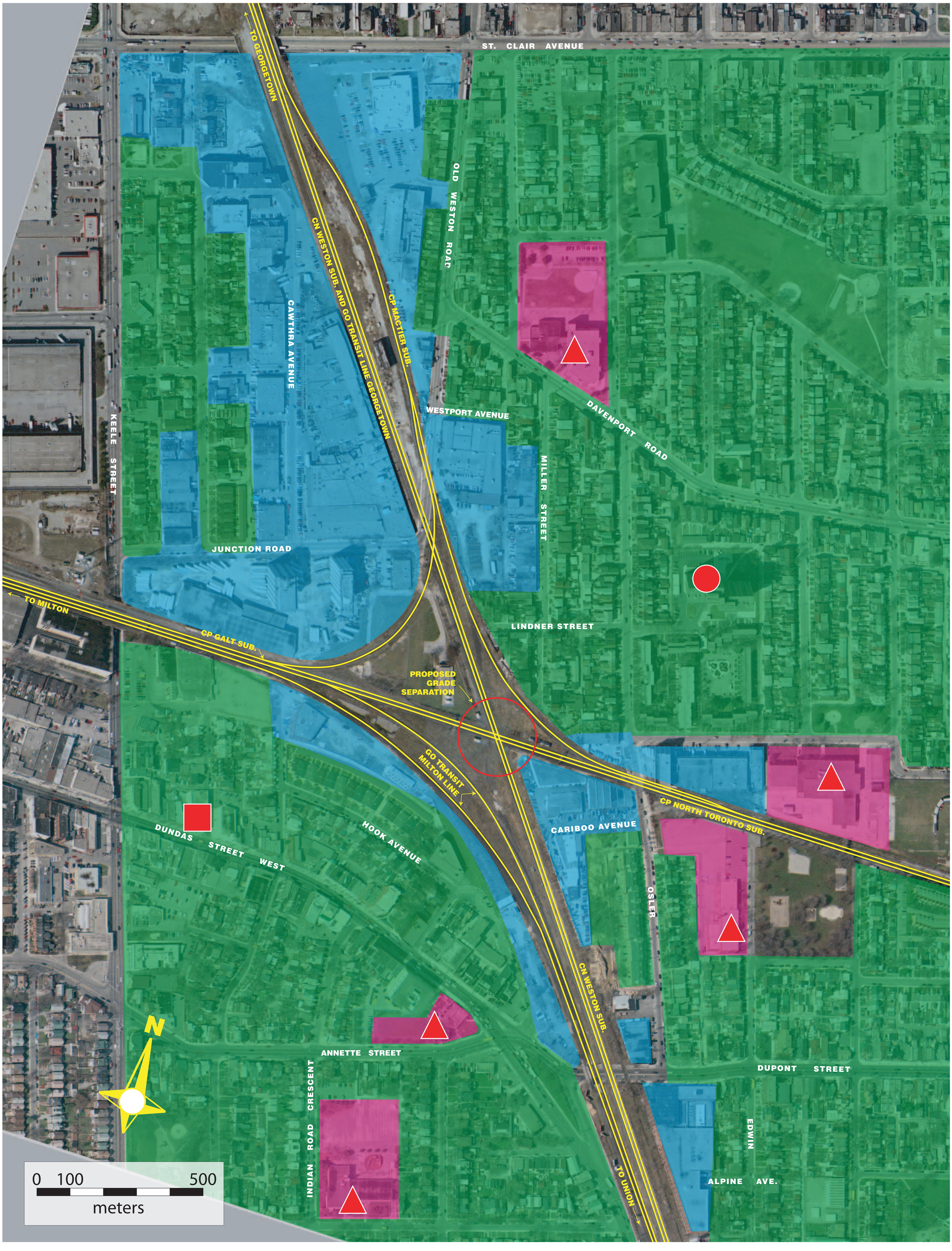
Areas designated as Neighbourhoods with predominantly residential land use are located on the east side of the CN Weston S/D, east of the Employment Areas. The Plan supports maintenance of the existing physical conditions of these areas. A small Neighbourhood area is found between the CPR Galt S/D and Dundas Street West. There are a number of Specific Policies Areas related to Employment Areas that lie adjacent to the study area (Areas 154, 156 and 234). In these areas, there is a mix of employment and residential uses and the policies are in place to restrict employment land use to uses that are compatible with residential use.

4.2.2 Existing Land Use

Existing land use is shown in Figure 4.1. The railway lines in the area are used for movement of passengers and goods. GO Transit moves passengers out of the downtown area of Toronto to the surrounding environs, terminating in Georgetown and Milton. This land parcel (West Toronto Diamond) has historically been railway use.

There is some residential land use in the study area, comprised of detached, semi-detached and town houses, though only a small portion directly abuts the rail corridor. The nearest residence is 50 meters from the CN Weston rail corridor. There are several social housing units on the east side of the CN Weston S/D and a hostel located in the area of Dundas Street and Keele Street. Both of these are located over 500 metres from the closest rail track, outside of the study area. Some mixed uses can be found mainly along the major roadways with commercial, retail and residential use.

Industrial activity is established in the area. NRI Industries has a large facility located east of Cawthra Road and north of Junction Road NRI has three other operations in Toronto related to manufacturing, warehousing and recycling



Employment Area

Schools

Mixed Residential, Some Commercial & Small Greenspace

Hostel

Social Housing

Elementary School

Fig 4.1
Existing Land use

(NRI, 2004). Other industries are located on the east side of the CN Weston S/D, north of Lindner Street and south of Junction Road.

There are several elementary schools located in the adjacent neighbourhoods but they all fall outside the study area. Carleton Village Junior and Senior Public School, St Josaphat Elementary Catholic School and St. Rita Elementary Catholic School are located on the east side of the CN Weston S/D. Indian Road Crescent Junior Public School and Lucy McCormick Senior Public School are located on the west side of the corridor, in the area of Annette Street. The nearest is located 350 meters from the CN Weston rail corridor.

Two small parks/green spaces are located in the adjacent neighbourhoods (Brother Edmund Rice Park and Wadsworth Park) but theses parks fall outside the study area.

4.2.3 Labour Force and Employment

The railway tracks at the West Toronto Diamond form the boundaries of four City Wards. Ward 11 is in the northwest quadrant, Ward 17 in the northeast, Ward 18 in the southeast, and Ward 14 in the southwest quadrant. Urban Development Services, City Planning, Policy and Research (City of Toronto, 1998-2004) prepared information regarding the labour force for each ward in the City of Toronto, based on Statistics Canada, 2001 Census. This information indicated that there was a strong industrial base in Ward 17 in 2001 (labour force by occupation) with 20.6 % involved in trades, transport and equipment operation and 11.9% in processing, manufacturing and utilities. Similar but slightly lower percentages were found in Ward 18 and Ward 11. Ward 14 has figures that are closer to Toronto's average figures of 10.3% involved in trades, transport and equipment operation and 8.3% in processing, manufacturing and utilities.

4.2.4 Archaeological and Heritage Resources

A Stage 1 archaeological resource assessment was conducted for the proposed grade separation. It determined that two archaeological sites are registered within 2 km of the project site, but none are located within the study area.

A field survey of the study area determined that the entire corridor has been heavily and repeatedly disturbed by railway construction and use over 135 years. There are no features of heritage interest within the project area.

4.2.5 Roads

The study area falls within the area bounded by Keele Street to the west, St Clair Avenue to the north, Osler Avenue to the east, and Dupont and Annette Streets to the south. All these roads cross the railway tracks; Dupont Street, St Clair Avenue and Keele Street have underpasses at the tracks, while Osler Avenue has an at-grade crossing. The only intermediate street that crosses a railway is Old Weston Road, at its southern limit, just north of Junction Road.

4.2.6 Recreational Paths

The City of Toronto is supporting an initiative to create a walking and bicycle path that passes through the study area. The path will use property formerly owned and used by CPR Rail, on the east side of the CN Weston S/D south from Cariboo Avenue. The intent is that the path will run south from Cariboo Avenue and follow the railway as far south as Bathurst Street. The City has recently purchased a section of this CPR Rail property, from immediately south of Cariboo Avenue and extending south to almost Dundas Street West.

4.2.7 Utilities

Several local utilities including gas and water mains, storm sewers and combined trunk sewers pass through the study area. The utilities that cross the CN Weston S/D that might be affected by the grade separation, include:

Crossing the rail right-of-way at Old Weston Road

- 1200-mm diameter watermain running north from the City pumping station
- 150-mm watermain
- 1050-mm partially separated storm sewer segments draining south to Junction Road and then west to a combined trunk sewer at Cawthra Road
- 300-mm and 450-mm combined sewers draining south to Junction Road where they join together and then drain west in a 600-mm sewer to a combined trunk sewer at Cawthra Road

- 150-mm abandoned gas main
- Toronto Hydro ductbank.

Crossing the rail right-of-way near Cariboo Avenue

- 600-mm x 900-mm egg-shaped combined sewer extending from west of Cariboo Avenue to Watkinson Avenue
- 965-mm x 1450-mm egg-shaped combined sewer extending from Cariboo Avenue to Watkinson Avenue.

Within the rail right-of-way

- Fibre optic cables owned by Level 3 Networks
- Fibre optic cables owned by 360 Networks
- Fibre optic cables owned by Sprint
- Communication and Signalling cables owned by the railways.

4.2.8 Local Transit

The Toronto Transit Commission (TTC) currently runs several bus routes and a streetcar route in the study area. The routes include:

- 26 Dupont
- 40 Dundas
- 41 Keele
- 89 Weston
- 127 Davenport
- 168 Symmington
- 512 St. Clair Streetcar
- 312 St. Clair night bus.

All of these routes skirt the study area, traveling on Keele Street, St. Clair Avenue West, Old Weston Road, Davenport, Dupont Avenue and Dundas Street West. None of the routes use Junction Road, which crosses the study area.

4.2.9 Commuter Rail

GO Transit trains from Union Station to Georgetown and Milton run through the study area, but there are no local stations. The closest stations on the Georgetown line are Weston to the north and Bloor to the south. On the Milton line the closest stations are at Kipling to the west and Union to the

south. At both Bloor and Kipling, GO train passengers can connect to the TTC's Bloor Street subway line (at Dundas West and Kipling respectively).

As part of the agency consultation process conducted for this project, the TTC suggested that GO Transit add a GO train station on the Georgetown line to allow passengers to interchange with the St Clair Avenue streetcars. GO Transit has no plans to add a station at this location, and believes that connection between the Georgetown GO trains and the TTC system can be better handled at the existing Bloor Street station or, in the future, at the York City Centre Station on the potential Eglinton West Subway (at Eglinton Avenue West and Black Creek Drive). GO Transit is currently planning to upgrade the connection between their Bloor Station and the TTC subway station.

4.2.10 Intercity Rail

VIA Rail operates trains through the study area from Union Station to Kitchener, London and Sarnia. There are three trains a day in each direction. The nearest stations are Union Station to the south and Malton station to the north. VIA used to operate Toronto West station within the study area, but abandoned its operations at the station in 1989.

4.3 Identification of Valued Ecosystem Components

Valued Ecosystem Components (VECs) are features of the environment that have been selected to be a focus of the EA because of their ecological, social or economic importance, and their potential vulnerability to effects due to the project.

They are referred to as Valued Ecosystem Components (VECs) and Valued Social Components (VSCs) depending on the component of the environment under investigation. VECs are usually individual valued species or represent important groups of species within food webs. Social aspects of the environment are identified in terms of their valued components termed VSCs.

Generally, VEC selection considers the following:

- Abundance in the Site, Local and Regional Study Areas;

- Ecological importance - position in the food web; relative contribution to productivity;
- Baseline data availability - sufficient information should be available to allow a reasonable evaluation of effects;
- Native species;
- Exposure - the VEC should have some degree of exposure to the "stressors" produced by the Project Works and Activities;
- Sensitivity - the VEC should be sensitive to the "stressors" produced by the Project Works and Activities;
- Ecological health – potential to affect the growth or sustainability of biota;
- Human health – potential to affect human health as represented by air quality guidelines, water quality criteria and guidelines and criteria;
- Socio-economic importance – e.g. value as commercial, recreational or subsistence fishery; inherent aesthetic value;
- Conservation status - specifically protected by law, designated as rare, threatened, or endangered;
- Traditional and current importance to Aboriginal people; and
- Cultural and heritage importance to society.

For the West Toronto Diamond Grade Separation there are very few environmental components of value likely to be affected by the project construction activities. As described above, the project location is already disrupted by active rail traffic and there will be no change to the current rail traffic as a result of this project. Accordingly, the VECs identified for this project are:

- Air quality
- Noise and Vibration
- Soil quality
- Surface water quality and quantity
- Ground water

5 Environmental Effects and Mitigation

The following section documents the anticipated environmental impacts associated with all phases of the project, including construction and operations, and the identified mitigation measures that will be used to minimize/eliminate the identified impacts. Given the nature of this project and the complexity of the rail operations through this corridor, this project will be implemented cooperatively between CPR, CN and GO Transit. The railway companies will generally carry out track and signalling work while the remainder of the project will be publicly tendered and carried out under the guidance of GO Transit. GO Transit will work with the railway companies and the contractors to ensure that all of the mitigation measures outlined in this report are implemented

Likely adverse effects have been described based on their magnitude, geographic extent and duration. Definitions for the variables used to describe likely adverse effects based on this terminology are provided below. The evaluation of the significance of residual adverse environmental effects (i.e., those occurring after the implementation of mitigation measures) has been included at the end of this section (Section 5.6).

Variable	Descriptors	Definition
Magnitude	Minor	Effects are easily defined and mitigated.
	Some	Effects are definable but there may still be effects after mitigation.
Geographic Extent	Local	Within site and immediate adjacent areas.
	Regional	Extending beyond site boundaries and immediately adjacent areas
Duration	Short-term	Construction phase.
	Medium-term	Construction phase plus five years.
	Long-term	Operational life of rail corridor

5.1 Construction

5.1.1 Air Quality

Minor impacts to air quality in the study area could occur during the construction phase due to dust emissions. Dust may occur due to vehicular traffic, heavy machinery use, drilling, soil excavation, and soil stockpiling/moving activities.

It is anticipated that dust generation will not be a significant problem due to the relatively small size of the construction site, and the anticipated

effectiveness of mitigation measures. Mitigation measures to be used to control dust include addition of water or other suppressants to work areas and/or local roads. If chemical suppressants are to be utilized, MOE recommends the use of non-chloride based compounds to reduce environmental impacts and this recommendation will be followed. Other mitigation includes sweeping of local roads, and hard surfacing (addition of coarse rock) of construction roads or haul routes through the work area. Dust covers will be required for loaded dump trucks hauling materials to or from the site to prevent release of dust. Soil stockpiles on the construction site will be stabilized as necessary (e.g., tarpaulin) to prevent excess dust generation due to wind erosion.

Following construction, all disturbed areas will be rehabilitated through vegetation planting or other landscaping means to prevent erosion of exposed soils due to wind.

The machinery to be used during construction of this project will be conventional in design and equipped with air emission control equipment installed by the manufacturer. Use of heavy machinery (e.g., dump trucks, hydraulic excavators) at the site will result in the release of combustion by-products such as NO_x, volatile organic compounds (VOCs), CO and fine particulate matter from vehicle exhaust. Local ozone levels may increase as a result of these emissions. As a best management practice (BMP) intended to reduce air emissions, vehicles will be run only when necessary. Unnecessary idling will be limited as per the City of Toronto By-Law with respect to Idling of Vehicles and Boats, which restricts idling of vehicles to no more than 3 minutes in a 60-minute period. Provisions in the construction contract will require the contractor to regularly inspect and maintain all equipment emission control devices to ensure air emissions are within manufacturer and legislative limits.

The small increase in airborne pollutants due to vehicle exhaust levels during construction is not anticipated to result in any significant change in local or regional air quality and associated human health concerns, although there may be some minor, localized, short-term contribution to air quality contaminant concentrations.

The adverse effects of dust and combustion by-products on air quality during the construction period are therefore anticipated to be minor in magnitude, short-term in duration and localized in the construction area.

5.1.2 Noise and Vibration

Noise and vibration from the construction of the grade separation will be temporary in nature and will be generally limited to daytime operating hours as per Municipal by-laws. In addition, all construction equipment used on site will conform to MOE sound emission standards as required in Noise Pollution Control (NPC) publications NPC-115 Construction Equipment and NPC 118-Motorized Conveyances. Nevertheless, there will be some minor increase in noise/vibration levels in the study area during the construction period due to the use of heavy machinery for excavation and for pile auguring and installation. The worst-case construction impacts are predicted to be from pile auguring but these levels would be short term in duration, taking place at the beginning of the project and for a duration of approximately three months.

The lands immediately adjacent to the study area are mainly industrial or commercial and currently experience noise and vibration from the existing rail lines. Therefore a slight increase in construction noise is not considered significant to these businesses.

The nearest school building is situated approximately 350 m from the construction area, and therefore beyond the zone that will be affected by noise and vibration.

Construction work will occur a distance of approximately 25 m from the nearest residential receptors (i.e., houses on Lindner Street and Miller Street which back directly onto the railway corridor). In order to minimize adverse effects from noise on these local sensitive receptors, adjacent construction will be limited to daytime hours (0700 to 1900 hours) in accordance with the municipal noise by-law.

Construction traffic will follow designated routes and be kept off residential roads to minimize the effect on local residents. The construction contractor will be required to coordinate construction haul routes with the City of Toronto.

GO Transit requires their construction contractors to comply with standard contract constraints and provisions to mitigate the potential for adverse noise impacts. Such contract constraints and provisions include requiring the contractor to maintain all noise control devices in good working condition to ensure that sound emission levels are within manufacturer and legislative limits. Unnecessary idling of heavy machinery will also be limited to further reduce potential noise impacts.

Noise impacts during construction will comply with provincial guidelines and will be short-term in duration and localized in the study area.

5.1.3 Surface Water Quality

During construction, runoff from the work site has the potential to increase sediment load to the combined sewer system, which subsequently leads to the wastewater treatment plant with eventual discharge into Lake Ontario. In addition to increased overall sediment loads, mobilization of contaminated soils may result in water quality deterioration due to chemical impairment.

On every construction contract, GO Transit requires their construction contractors to comply with standard contract constraints and provisions that mitigate the potential for adverse impacts to surface water quality. Specific mitigation measures to minimize the potential for impacts on surface water quality will include preparation by the contractor of a storm water management plan and sediment and erosion control plan detailing how surface runoff from the construction area will be collected/treated prior to flowing into the adjacent sewer system. For example, sediment control structures (e.g., silt fences, straw bales, check dams) must be in place to prevent discharge of sediment to the sewer system. Discharge from dewatering operations will be treated with filter bags or a settling pond prior to discharge to the sewer network. Other mitigation measures will include refuelling away from surface water drainage areas, minimizing the amount of vegetation clearing and soil disturbance and minimizing the duration that bare soils are exposed before stabilization (i.e., revegetation). Excavated soils with the potential for contamination will be expeditiously removed and disposed as per the procedures recommended in Section 5.1.4, to minimize the potential for contact with surface runoff and possible contamination of receiving surface water bodies. If surface water runoff is collected and treated prior to discharge to the sewer system, it will be done so in accordance with the

requirements of the *Ontario Water Resources Act* (OWRA) and any MOE approvals issued to do so. Municipal sewer use by-laws will be adhered to.

Therefore, based on the anticipated effect of mitigation measures, potential adverse effects on surface water quality due to erosion of soils (turbidity, chemical impairment) are anticipated to be localized, minor and short term.

The potential impacts of accidents or malfunctions (i.e., resulting in chemical spills) are assessed in Section 5.3. GO Transit takes a proactive approach to minimize the potential for off-site movement of potentially deleterious materials and plans for unforeseen events by requiring all construction contractors to develop and implement plans for Environmental Management and quality assurance to demonstrate actions to ensure compliance with construction constraints and provisions and to respond to emergency situations such as spills. Specific mitigation measures will include

- Use of established, supervised construction practices
- All machinery will be well maintained and monitored on a daily basis to ensure there are no leaks of deleterious substances
- All refuelling and maintenance activities will be conducted in designated areas well away from watercourses (at least 5 m, as per MOE guidelines, 1995)
- Excess fuels, lubricants and other potentially deleterious substances will be removed from the site and disposed of in an approved manner
- All chemicals, fuels and other potentially deleterious materials will be stored in containment facilities to prevent dispersal in the event of an accident
- Spill containment kit for petro-chemical fuels and any other potentially deleterious substances will be kept on-site and will be immediately available at all times. All contractor employees will be trained in appropriate spill response procedures. At a minimum, the kit will consist of absorbent boom and swabbing material to contain a spill and employee protective gear to allow handling of hazardous materials.

Construction activities on all GO Transit construction projects are monitored by an on-site Environmental Specialist to ensure that the Contractor's plans and the contract constraints and provisions are adhered to and to recommend remedial action in the event of an emergency or unforeseen situation.

5.1.4 Groundwater Quality and Quantity

Geotechnical investigations in the study area confirmed that the groundwater table lies above the proposed lower grade for the rail corridor. At the deepest portions of the excavation, the groundwater table may be at least 5 m above the proposed track grade and 7 m above the excavation grade (Thurber Engineering Ltd., 2003). Temporary dewatering during the construction period will be required for all excavations below the groundwater table. If greater than 50,000 L of water per day of dewatering is required, a Permit To Take Water (PTTW) will be required from the Ontario Ministry of the Environment, under the OWRA.

The groundwater level adjacent to the excavation will be maintained both during and after the construction of the depressed corridor. Groundwater quality sampling conducted in 2003 found that pH, BOD, NP Ethoxylates and metals exceeded the limits in the Toronto Sewer Use By-Law for storm sewer discharge (Thurber Engineering Ltd., 2003). All parameters were acceptable for discharge to the sanitary and combined sewer as per the applicable Sewer Use By-Law.

The potential effects of accidents or malfunctions on groundwater quality (i.e., adverse effects of chemical spill) are assessed in Section 5.3. The containment/mitigation measures identified in Section 5.1.3 with respect to protection of surface water quality will assist in mitigating potential effects on groundwater quality as well.

5.1.5 Soils

Excavation of existing soils will be required along the length of the depressed track and for the storm water pond. Based on the soil sampling program conducted as part of the baseline geotechnical studies for the project, much of the excess excavated soils from the site may be disposed of as inert soils (i.e., they conform with TRCA Lakefill Guidelines, MOE Table 3 Full Depth Generic Site Condition Soil Standards and CCME Soil Quality guidelines).

However, random areas of hydrocarbon impact may be present in the upper layers (approximately 0 to 3 m) (Thurber Engineering Ltd., 2003). Additional soil quality sampling is recommended, particularly in areas beneath the existing track, which may be more susceptible to contamination (particularly

where trains currently idle while awaiting clearance to pass through the diamond) in order to fully document the quality of soils requiring disposal. Therefore, soil samples will be taken from beneath the existing track area, once the tracks have been removed from the site in order to provide some additional indication of the potential for encountering impacted soils during excavation. Soils will be tested as per the Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the *Ontario Environmental Protection Act* (EPA) and as per the Canadian Council of Ministers of the Environment (CCME) Soil Quality Guidelines prior to excavation. In addition, samples of track ballast will be tested for PAHs, possibly leached from the creosote-treated railway crossties. Soils that meet the standards may be disposed of as inert soils. However, soils that fail the above standards must be tested as per the Toxicity Characterization Leachate Procedure (TCLP) for waste classification purposes, as defined in Ontario Regulation 347, as amended by Regulation 558/00. Any required site remediation activities would be conducted in accordance with Part II (General Provisions), Part V (Waste Management) and Part IX (Spills) of the EPA. The construction contract will specify constraints and provisions that the Contractor shall be required to comply with the terms and conditions of such an approval, if required.

Given that the environmental effects from the handling and disposition of contaminated soils resulting from construction operations are controlled by Ontario legislation and Ontario Standards and Specifications and that any disposition of waste or contaminated soils will be at approved facilities only, the residual effects of off-site soil disposal are not considered to be of significance.

5.1.6 Vegetation

Some clearing of vegetation, including shrubs, herbaceous plants and some immature trees will be required throughout the project site. The vegetation communities affected are typical of highly disturbed urban environments, and include a high proliferation of non-native species.

Within the railway right of way, vegetation is routinely removed as a function of ongoing corridor maintenance. The permanent loss of right of way vegetation as a result of this project is considered to be a neutral change in existing conditions and, accordingly, to have no residual effect.

When vegetation removal occurs outside of the maintenance zone, disturbed areas are re-vegetated after construction with an appropriate mix of native grasses, shrubs or trees or re-landscaped to existing or better conditions.

It is anticipated that the mitigation measures proposed in Section 5.1.1 to minimize dust generation will be effective in preventing/minimizing the impacts of dust on vegetation.

Therefore, the impact of permanent removal of some vegetation and temporary removal of other vegetation will be localized and minor in nature.

5.1.7 Wildlife

Disturbance to local wildlife (e.g., birds, mammals, insects) will occur during the construction period due to human presence, vegetation clearing and noise. However, the species using the study area are likely adapted to some degree of disturbance and can relocate to adjacent areas. As wildlife populations using the area that will be disturbed are thought to be limited (due to poor quality habitat and high existing degree of disturbance), the impact of short-term disturbance is thought to be minor.

Some loss of habitat will occur due to vegetation clearing along the rail corridor. Some of the loss will be short-term as disturbed areas are revegetated following completion of construction. Revegetation will use a combination of native grass, forb and woody species to rehabilitate habitat conditions for local wildlife species. Some permanent loss of vegetation is expected immediately adjacent to the depressed track corridor. However, given that the amount of habitat loss will be minor and the habitat that will be altered is already highly disturbed and no critical habitat will be altered, it is anticipated that the long-term adverse effect on wildlife will be minor and localized.

Vegetation clearing could potentially result in impacts to breeding birds if clearing were to occur during the breeding period. In order to mitigate this potential, vegetation clearing is not recommended between May 7 and July 21 to avoid disturbing nesting birds. If vegetation clearing must occur during this time period, a qualified avian biologist must complete a nesting survey in the area to be cleared. If no active nests are observed in the area, clearing will be allowed to occur. However, if migratory bird breeding activity is observed

within the construction area, specific mitigation measures, such as prohibition of clearing until after the nesting period or establishment of appropriate buffers around active nests, will be implemented to avoid impacts. The Canadian Wildlife Service (Environment Canada) will be contacted if vegetation removal is to occur during the breeding period to obtain their guidance.

Only short-term, minor, localized impacts on local wildlife species are anticipated during the construction period.

5.1.8 Fish and Fish Habitat

As there are no watercourses capable of providing fish habitat within the zone of impact of this project, there will be no impact on fish or fish habitat during the construction or operation periods.

5.1.9 Species of Special Concern

There will be no impact on species of special concern during either the construction or operation periods as none are known to be present within the study area.

5.1.10 Vehicular Traffic Movement

Construction of a road/rail grade separation at the Old Weston Road crossing of the CN Weston S/D will result in temporary closure of Old Weston Road at the crossing location. The City of Toronto has stated that it will permit closure of the road for short periods of time. Construction of the bridge over the lowered CN tracks will use pre-cast concrete panels to minimize the time that Old Weston Road will have to be closed. It is anticipated that two major closures will be required, each approximately three weeks in duration. Additional shorter closures (for a weekend, for example) may be required for track relocation or utility work. During the closure periods, traffic will be rerouted to the St. Clair Avenue crossing of the CN Weston S/D. Dupont Street would also provide an alternative crossing location.

No direct impact will occur to vehicular traffic movement on Dupont Street or St. Clair Avenue as a result of this project. However, during the closures of

Old Weston Road, traffic will be diverted to both Dupont Street and St. Clair Avenue.

Heavy construction traffic traveling to and from the construction site will utilize only approved construction haul routes to minimize impact on local communities (noise, aesthetics) and local vehicular traffic. There may be some minor short-term disruption to traffic at the construction site entrance if large transport trucks require flagmen to move into and out of the site.

5.1.11 Transportation

TTC bus and streetcar routes will not be directly affected during the construction work. No closures will be required on any of the routes followed by TTC transit vehicles.

Railway operations (including freight, GO Transit and VIA trains) will be maintained during the construction on diversion tracks. Short "work block" closures will be required to connect and remove these diversion tracks, but these will have minimal effect on the railways' operations. Discussions have been held with CPR and CN to determine acceptable work block and track closure timetables.

5.1.12 Recreational Paths

The proposed grade separation is contained within the CN right-of-way and will not impact the land purchased by the City of Toronto for the recreational path running south from Cariboo Avenue. There may be some minor disturbance to path users during the construction phase (if the path is commissioned by the time this project is implemented). The City property may be used for underground utility relocations, but this will have no effect on the path.

5.1.13 Utilities

Construction of the grade separation will impact several existing gas/water mains and storm/ combined sewers in the study area. This will necessitate the redirection and relocation of utilities including the following:

- 1200-mm diameter watermain running beneath Old Weston Road at Junction Road. A section of this watermain will be abandoned and a new section of 1200-mm diameter watermain will be constructed on the east side of the railway right-of-way. The new watermain will extend about 200 m south from Old Weston Road, at which point it will cross over the depressed CN Weston S/D tracks and connect back into the existing watermain. It is expected that a one-week shutdown will be required to connect each end of the rerouted section of watermain. The City has stated that the one-week shutdown should take place in the fall when water demand is low. In this way, the shutdown will not affect the City's water distribution network.

- 1050-mm diameter storm sewer and 300-mm and 450-mm diameter combined sewers flowing south on Old Weston Road and west on Junction Road into a 2400-mm diameter trunk sewer at Cawthra Road. These sewers will be connected into a new single trunk sewer, which will drop below the underpass structure and connect into the existing 2400 mm trunk sewer.

- Other utilities (Toronto Hydro ductbanks and a 150-mm diameter watermain) that run along Old Weston Road will either be accommodated on the new Old Weston Road bridge structure over the depressed CN Weston S/D, or will follow the route of the 1200-mm diameter watermain.

- 600-mm x 900-mm egg-shaped combined sewer (running beside the CPR North Toronto S/D and then across the CN and GO tracks to Watkinson Avenue) and the 965-mm x 1450-mm egg-shaped combined sewer (crossing the CN and GO tracks from Caribou Avenue to Watkinson Avenue). These sewers will be connected into a single 1350-mm sewer which will run south from Cariboo Avenue, across under depressed CN tracks and connect back into the existing low level sewer at Watkinson Avenue.

All utility reconstruction will be conducted in accordance with the requirements of the local utility companies. Construction will be scheduled to minimize the amount of time these utilities are out of service, and temporary alternative utility connections will be provided to ensure that the local

community is not impacted by the relocation work. Therefore, there are no associated environmental effects.

5.1.14 Safety

The Ministry of Labour occupational health and safety regulations (regarding worker safety) pertaining to construction sites should be followed by the contractor to minimize the hazards associated with construction. In addition, since the railway property is federally regulated, Labour Canada regulations will also apply. Adequate signage/speed restrictions should be introduced to minimize local hazards due to construction traffic, and construction traffic should be kept off residential roads. Train speed will be restricted through the construction area.

Therefore, there are no associated environmental effects.

5.1.15 Archaeological/Cultural Resources

No areas of archaeological site potential were noted within the study area, therefore there will be no impact to archaeological or cultural resources during the construction or operations phase.

5.2 Operation and Maintenance

5.2.1 Air Quality

Site rehabilitation measures (landscaping, site clean-up) will be conducted to eliminate potential sources of exposed soils such that there is limited potential for dust generation following the construction period. As the new track will be below grade, the potential for ongoing wind-induced erosion will be reduced.

This project will not result in any change in the number of GO (or other) trains operating on the CN Weston S/D, and so there will be no significant change to the existing conditions. It is expected that the 2% grade up from the underpass will not cause a change in locomotive emissions as the momentum of the 2% down grade will carry the trains through the grade separation. On the other hand, the project will eliminate the requirement for trains on the CN Weston S/D to slow down and/or stop, idle and power-up

again (activities which generally increase train emissions) while waiting for trains on the other lines to clear the diamond.

The net result may be a minor improvement to local air quality conditions by minimizing the amount of time trains remain in the local area.

Maintenance activities (bed, track and bridge maintenance) will not result in any additional adverse air quality impacts over and above those that would have occurred during regular maintenance to the existing line. Track reconstruction may reduce long-term maintenance requirements and therefore result in a reduction of associated maintenance vehicle emissions.

Therefore, no adverse effects on air quality are likely as a result of operation or maintenance of this project.

5.2.2 Noise and Vibration

Following construction there will be a minor decrease in rail related noise levels. Firstly, the "clickity-clack" noise caused by the wheels of trains on the CPR North Toronto and CN Weston rail tracks as they travel over the diamonds will be eliminated. Secondly, the noise of trains on the CN Weston S/D (including GO trains, VIA trains and freight traffic) will be masked as they travel below ground, through the grade separation. Thirdly, trains on the CN Weston S/D will no longer be required to stop, idle and restart while waiting for trains on other S/Ds to pass the diamond, thereby limiting the amount of time trains spend in the local area.

Maintenance activities will not change and will not result in any increase in noise/vibration levels. Noise levels emanating from maintenance activities may be slightly masked if activities are conducted below grade. Long-term maintenance requirements may be reduced due to construction of new facilities, thereby reducing noise levels associated with maintenance activities.

No adverse effects due to noise and vibration are expected during the operations and maintenance period.

5.2.3 Surface Water Quantity (Drainage and Stormwater Management)

The proposed grade separation will alter the existing surface drainage conditions within portions of the study area due to the addition of impervious surfaces and alterations to surface drainage patterns (i.e., regrading). These aspects, including the recommended mitigation measures are discussed below.

Surface drainage of the CPR rail corridor and the three large grassed areas within the study area is not expected to change significantly from existing conditions since the majority of these areas will be unaltered.

The CN Weston S/D will be depressed below ground and will slope down at 2% from each end towards a low point situated approximately 100 m north of the former CN/CPR crossing. This aspect, combined with the addition of concrete track bases (i.e., impervious surfaces) will increase the rate and volume of storm water runoff generated from the CN rail line over existing conditions. The total contributing rainfall-runoff catchment area draining to the low point will be approximately 2.9 ha in size. Drainage of storm water runoff to the low point will be accomplished by concrete-lined channels constructed into the bottom slab at the base of the retaining walls on each side of the tracks.

Active pumping of the storm water runoff from the depressed corridor will be required to avoid excessive ponding in the low point. The three pumps will be sized to handle the peak flow rate generated by a 25-year rainfall with one pump out of service (due to maintenance or malfunction). Flows in excess of this will cause ponding at the low point of the underpass, until the pumps "catch-up" and pump out the ponded rainfall. In the rare (once in 25 year) event that ponding, reaches the level of the rails, it will be dealt with by CN as an operational issue.

Pumping the storm water directly to a nearby storm (or combined) sewer is not considered viable as the increased flows may overload the existing sewers. Therefore, construction of a storm water management pond in the northwest quadrant is proposed to temporarily store storm water pumped from the railway low point and release it at a controlled rate into the nearby Junction Road storm sewer, which discharges into a combined trunk sewer at Cawthra Road. The storm water management pond would be approximately 3000 m^3

in size with a capacity to store the runoff generated from a 24-hour 100-year rainfall.

The location of the storm water management pond is shown on Figure 1.3.

5.2.4 Surface Water Quality

To address post-construction water quality effects associated with the build-up and wash-off of pollutants from the grade separated rail line, construction of a storm water management pond is proposed in the northwest quadrant of the study area as described in Section 5.2.3. The facility will temporarily store storm water runoff collected from the lower rail grade prior to discharge to the combined sewer system. This will enhance storm water runoff quality due to settling out of suspended sediment loads and mitigate increased peak flows that could overload the capacity of the existing combined sewer system. MOE approval conditions and Municipal sewer use by law provisions will be adhered to.

Creosote-treated railway ties will be used during construction of all new diversion and permanent tracks. The use of creosote as a wood preservative is necessary to ensure the long-term safety and integrity of railway infrastructure by preventing the breakdown of ties from fungal and insect activity. Creosote is a chemical compound with polycylic aromatic hydrocarbons (PAHs) forming the largest component (Government of Canada et al., 1993). Several studies regarding the environmental impact of the use of creosote-treated railway ties, and specifically the potential release of PAHs into the local environment, have indicated that newly treated and installed railway ties pose minimal environmental risk. However, studies have noted that newly treated ties undergo an early loss of creosote during first exposure to summer heat. PAHs have been noted to disperse down into the ballast to a depth of approximately 60 cm. In addition, studies have also shown that the concentrations of PAHs leaching into soils and groundwater and the residual concentrations subside over subsequent years. Experience from this and other studies has resulted in the following three management practices to ensure that risks are minimized:

- Ties removed from service should be properly disposed of at government approved sites in an expedient manner.

- To minimize the potential effects of early loss of creosote, the temporary storage of newly treated railway ties while awaiting installation should be avoided. Ties should be stored on the ballast or on railway cars until such time that they can be properly installed.
- Ensure that railway ties are produced using best management practices (BMPs) that reduce the probability of significant creosote loss from deep checks in the wood or from excess surface deposits.

GO Transit is committed to implementing the project in a manner that minimizes any possible impacts associated with the use of creosote-treated railway ties. To that end, site inspections of railway ties prior to installation will be undertaken to ensure that these BMPs are utilized.

The use of the BMPs described above will limit the medium to long-term adverse effects of installation/use/decommissioning of creosote-treated ties such that only minor, localized effects occur.

5.2.5 Groundwater Quality and Quantity

The railway track in the underpass will be constructed over a watertight concrete floor slab to minimize groundwater seepage up into the track area. A drainage system will be required to collect surface water that accumulates along the lower grade railway line, as well as any groundwater that is able to seep through the slab base. Any such seepage would include a minimal amount of pollutants. Groundwater collected in the surface drainage system must be pumped to a stormwater settling pond before eventual discharge to the existing partially separated storm sewer system beneath Junction Road, which in turn discharges to a combined sewer at the intersection of Junction Road and Cawthra Avenue for subsequent treatment at the wastewater treatment plant prior to eventual discharge to Lake Ontario.

As the track will be conducted over a watertight slab, the potential for leaching of PAHs and other materials from the creosote-treated ties into local groundwater supplies is minimized. The BMPs described in Section 5.2.4 with respect to use of creosote treated ties and the potential for surface water quality impacts will be followed to ensure that the potential for impacts on groundwater is further minimized.

Therefore, over the long-term, some loss of groundwater due to seepage up through the concrete slab may occur. However, the impact on local groundwater table levels will likely be insignificant due to the very small volume of groundwater likely to seep.

Potential impacts of accidents of malfunctions during the operations/maintenance phases are discussed in Section 5.3.

5.2.6 Soils

Operations and maintenance of the grade-separated railway line are not expected to have significant impacts on soil conditions. Minor impacts to local soils could occur during operations due to grease/oil drippings from the locomotives. However, a reduction in potential for contamination may be expected to occur as a result of the project through the elimination of the requirement for trains to idle while waiting for clearance to pass through the diamond. In addition, minor impacts could occur due to the use of creosote-treated railway ties. However, the mitigation measures (BMPs) described in Section 5.1.2.2 will assist in the mitigation of such effects. Thus, there will be no significant difference or possibly a decrease in the potential for soil contamination compared to existing conditions. The potential effects of accidents or malfunctions are assessed in Section 5.3.

5.2.7 Vegetation

A long-term vegetation management program may be conducted along the grade-separated railway corridor to ensure that vegetation (trees or shrubs) does not impact the structural integrity of the retaining walls and concrete slab or become an operational hazard by growing out and over the depressed corridor. Management would be comprised of mechanical removal of vegetation material and appropriate chemical treatment as required. Other vegetation maintenance includes grass cutting and snow plowing. Adjacent vegetation communities are adapted to disturbance and are unlikely to be impacted.

Long-term vegetation removal/control will occur adjacent to the corridor but it will be localized and minor in nature. No significant vegetation communities will be impacted.

5.2.8 Wildlife

There will be no additional impact on wildlife during the operations phase, over and above that which would normally occur due to railway operations or maintenance. Therefore, no adverse impact on wildlife during operations and maintenance is anticipated as a result of this project.

5.2.9 Fish and Fish Habitat

As there are no watercourses capable of providing fish habitat within the zone of impact of this project, there will be no impact on fish or fish habitat during the construction or operation periods.

5.2.10 Species of Special Concern

There will be no impact on species of special concern during either the construction or operation periods as none are known to be present within the study area.

5.2.11 Vehicular Traffic Movement

The existing at-grade rail/road crossing of the CN Weston S/D and Old Weston Road is subject to approximately 30 GO Transit, CN freight and VIA rail trains per day. Each of these crossings requires temporary halting of vehicular traffic movement on Old Weston Road. Once the construction work is complete, the grade separation of Old Weston Road and the CN Weston S/D will improve traffic flow on Old Weston Road.

5.2.12 Safety

Once construction is complete, the grade separation will eliminate the at-grade crossings of the CN Weston S/D with the CPR North Toronto S/D, the CPR Wye track and Old Weston Road. Note, however, that the at-grade crossing of the CPR MacTier S/D with Old Weston Road will remain. The existing Old Weston Road crossing is a very long and awkward crossing, located at the intersection of Junction Road and Old Weston Road. The removal of the CN Weston S/D tracks from this crossing will shorten the crossing and move it away from the road junction, improving both pedestrian and automobile safety. The rail/rail grade separations of the CN and CPR tracks will

eliminate potential for a rail to rail collision at the existing diamonds, thereby improving rail safety.

5.2.13 Archaeological/Cultural Resources

No areas of archaeological site potential were noted within the study corridor therefore there will be no impact to archaeological or cultural resources during the construction or operations phase.

5.3 Accidents and Malfunctions

5.3.1 Construction

Adverse environmental impacts resulting from accidents or malfunctions during construction could result from;

- Accidental spills (fuel, oil, hydraulic fluid)
- Train to train collisions
- Train to car collisions.

Accidental spills could result in soil, groundwater or surface water contamination. Associated impacts could include damage or loss of local vegetation and impacts on terrestrial fauna. As discussed in Section 5.1.3, GO Transit requires all construction contractors to develop and implement plans for Environmental Management, construction safety and quality assurance to demonstrate actions to ensure compliance with construction constraints and provisions and to respond to emergency situations such as spills. An on-site Safety Officer monitors construction activities and all operations are required to comply with Labour Canada and Ontario Ministry of Labour Safety Regulations. Permits and approvals for relevant construction operations are acquired in advance of such operations and the contractor is required to comply with all terms and conditions of such approvals.

Mitigation measures include provision of established refueling and maintenance protocols and locations to minimize potential for spills and the magnitude of impacts resulting from spills, provision of adequate spill containment and clean-up material on site at all times, ensuring a spill management procedure is in place (including contacting necessary regulatory authorities in the event of a spill) and ensuring that construction crews are

trained in the implementation of any spill management protocol. Implementation of these mitigation measures in the event of an accidental spill would be anticipated to be effective in minimizing the potential adverse environmental impact of the spill. Volumes of potentially contaminating materials to be used on site will be relatively low such that significant adverse effects would not be anticipated.

Train to train collisions during the construction period could result from signal malfunctions, communication errors or track (main line or diversion) failures. In addition, train to vehicle collisions at Old Weston Road could possibly occur as a result of signal failure or driver error. However, construction operations will not increase the potential for such collisions above the current minimal level and, as a result, no specific mitigation measures will be put into place. Road closures will occur during construction of the Old Weston Road grade separation, thereby eliminating the potential for accidents during those periods. Standard monitoring of signal operation will occur throughout the construction period to ensure continued safe operation.

5.3.2 Operations

The provision of rail/rail grade separations for the CN Weston S/D and the CPR North Toronto S/D crossing and at the CN Weston S/D and the CPR Wye track crossing eliminates the potential for rail to rail collisions due to signal malfunctions, communication errors or track failures. Provision of a road/rail grade separation at the crossing of the CN Weston S/D and Old Weston Road eliminates the potential for train/vehicle and for train/pedestrian collisions resulting from signal malfunction or human error.

Malfunction of the pumps in the depressed corridor could result in flooding of the subway. To mitigate this potential the system will be designed with three pumps. The pumps will be sized such that two of them can handle a 25-year rainfall event. The third similar pump is there as a standby pump and will operate if one of the other pumps fails, or if one of the other pumps is removed for maintenance. If all three pumps are in place and operational, the third pump will provide a total capacity in excess of the 25-year flow.

Accidental spills during normal maintenance activities may result in some minor soil contamination. However, the volumes of potentially contaminating materials (fuels, oils) used during normal maintenance activities are relatively

low. Spills are also possible in the unlikely event of a rail accident. In either case, appropriate spill response measures (i.e., containment, clean-up, agency contact) will be implemented. GO Transit and CN Rail have standardized spill response protocols that would be implemented in the event of a spill. These mitigation measures would be expected to be effective in minimizing the adverse environmental impact of a small volume spill such that effects would be localized and minor in nature.

5.4 Effects of the Environment on the Project

Ice/Snow Storms

Major ice and snow storms have the potential to impact the project during the construction phase (physical impacts to structures, delays due to adverse weather) and during the operations phase (physical impacts to structures, delays of rail service).

During construction, major ice and snow storms could affect equipment performance or worker visibility. This may result in temporary delays in construction until conditions are suitable. No specific mitigation measures other than normal construction site management during winter operations (e.g., snow clearing, construction heating if required) will occur. Short, temporary delays in construction may result in some minor overall increase in the construction timeline, but no additional environmental impacts would be expected as a result.

Extreme ice and snow conditions could have a physical impact on rail infrastructure including rail lines and overpass bridges or result in temporary, short-term disruptions to rail service. Ice could cover rails or snow could bury tracks, thereby impacting train maneuverability resulting in temporary service reductions (slower trains speeds) or temporary complete cessation of rail service (due to very extreme conditions). Service delays may result in minor short-term impacts to rail users but no other environmental impacts would be expected.

Severe ice conditions could also cause physical damage to elements of the project during either construction or operations phases. Physical damage may result in short-term rail service disruptions but no other environmental impacts would be expected. Elimination of the at-grade crossing of the CN Weston S/D tracks and Old Weston Road will reduce the potential for adverse train-vehicle interactions due to extreme snow or ice conditions (i.e., due to malfunctions of signals, impaired road driving conditions). No rail switches, which have the potential to

be impacted due to snow or ice, will be altered due to this project. The project will be designed such that it can safely operate in most extreme weather conditions, and only rarely would the type of problem described in this section occur.

Severe snow and ice conditions would be anticipated to be infrequent in nature and short-term in duration, and mitigation measures to be implemented would involve temporary construction shutdown, temporary interruption in rail service, and route inspection and maintenance of track conditions.

Tornadoes

Tornadoes could result in damage to tracks or ancillary rail facilities or displacement of trains. However, tornadoes are a very infrequent occurrence in the study area and there is a very low likelihood of their occurrence. This project would not result in any additional impact to that which would occur if a tornado happened under existing conditions. Construction crews would be expected to take appropriate precautions (i.e., temporary shutdown) should a tornado warning be put into place during the construction period.

Precipitation

Precipitation could result in flood conditions (due to overland flow as there are no watercourses in the project vicinity), which could impact soil erosion potential during construction. Appropriate mitigation measures will be implemented as part of the sediment and erosion control plan to minimize the potential impacts of extreme flooding conditions. As local surface water is captured in the sewer network, the potential impact of excess erosion and sediment transport on receiving waterbody water quality would be mitigated by the Wastewater Treatment Plant, which would capture and treat floodwater prior to release to Lake Ontario. Therefore, no residual impact would be anticipated due to an increase in erosion due to extreme flood conditions during construction.

Extreme flooding could result in ponding at the low point in the depressed CN Weston S/D. A pump station with three pumps will be installed to pump the water out from the underpass. The pumps will be sized such that any two pumps can handle the peak flow rate generated by a 25-year rainfall. Flows in excess of this will cause ponding at the low point of the underpass, until the pumps “catch up” and pump out the ponded rainfall. This could result in temporary service delays or disruptions if trains cannot pass through the ponded water safely.

The storm water management pond will have the capacity to store the runoff generated from a 24-hour 100-year rainfall. Flows in excess of those generated by this storm will exceed the pond capacity thereby resulting in an increase in surface runoff from the site. However, this represents an improvement over current conditions as there is no existing stormwater management facility.

Earthquakes

Minor earthquakes could result in damage to rail line connections and or minor changes to track alignment. Major earthquakes may displace or damage rail lines or other infrastructure associated with the project (e.g., overpass bridges, retaining walls). However, the potential for major earthquakes in the project area is low and any effects resulting from earthquakes would be expected to be temporary in nature. Therefore, no mitigation other than normal rail line maintenance would occur as a result of the low potential for earthquakes.

5.5 Cumulative Effects Assessment (CEA)

This section provides an assessment of the cumulative effects of the proposed West Toronto Grade Separation project in combination with other projects and activities. Cumulative effects are those incremental effects caused by the proposed project when added to, or combined with the effects that are caused by other projects or activities occurring within the same spatial and/or temporal boundaries.

There are three steps to the cumulative effects assessment:

1. Identifying other projects or activities that could potentially interact with the residual effects from the proposed project.
2. Determining if the proposed project will have an effect on a VEC;
3. For each interaction with a VEC, determining the overall cumulative effect and its significance in terms of:
    - Similar effects from other projects and activities that might contribute to those caused by the proposed project;
    - The time over which these potential interactions coincide; and
    - The geographic area in which the effects occur.

5.5.1 Identification of Other Projects to be Considered in the CEA

Past, existing or future projects that have the potential to act cumulatively with the effects of the West Toronto Grade Separation project are listed in Table 5.1 and Table 5.2. Projects have been listed in these tables if there is potential for some level of interaction with the proposed project, regardless of whether their effects are likely to be significant.

As a first step in identifying other projects and activities that could interact with the West Toronto Grade Separation, consideration was given to other projects that are part of the GO Transit Rail Improvement Program (GO TRIP). These other GO TRIP projects are listed below in Table 5.1. The GO TRIP program is a major infrastructure program funded by the Canada Strategic Infrastructure Fund, the Province of Ontario and stakeholder Municipalities. Figure 5.1 shows the current projects under the GO TRIP program.

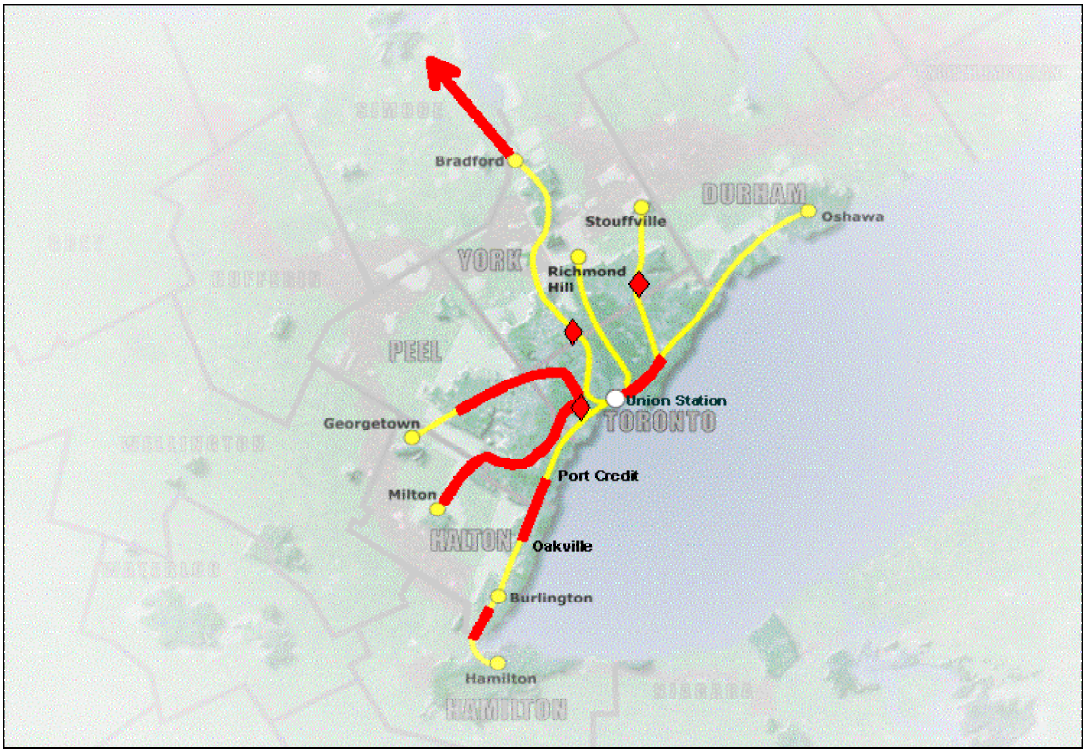
TABLE 5.1
IDENTIFICATION OF GO TRIP PROJECTS

Projects or Activities	Description
Certain Planned Projects or Activities (GO TRIP)	
Georgetown Corridor - Georgetown North	• Construct additional tracks on CN heavy freight Halton S/D between Winston Churchill Blvd. to Halwest Junction and further to Woodbine East, to improve GO's on-time performance and allow GO to increase train frequency through Brampton, including layover facilities in the Mt. Pleasant Station vicinity. Georgetown North is currently in the EA/preliminary design stage.
Milton Corridor – Kipling Station to Milton Station	• To increase service to Mississauga and Milton, GO will construct a new layover facility near Milton Station with lead track to accommodate up to eight 12-car train consists and upgrade the Milton, Meadowvale, Streetsville, Erindale, Cooksville, Dixie and Kipling Stations to ccommodate 12-car trains and provide disabled access.
Bradford Corridor - Bradford - Barrie Extension	• Construct improvements to the existing rail line between Bradford and Barrie to allow for GO service extension to Barrie and construct a new rail station and a new layover facility within the City of Barrie.
Bradford Corridor - Snider Diamond	• Construct a rail-rail grade separation of the York S/D freight rail corridor from the Newmarket S/D passenger and freight rail corridor to remove the conflict with CN freight trains and allow GO to increase the frequency of train service. The Preferred Alternative is to carry the single-track north-south Newmarket S/D (Bradford Corridor) over the double-track east-west CN York S/D freight corridor (structure design for two tracks).

Projects or Activities	Description
Reasonable Foreseeable Projects or Activities GO Transit – Union Station Corridor	
Union Station Rail Corridor Improvements	• GO Transit proposes to improve rail infrastructure in the Union Station Rail Corridor in downtown Toronto. Project includes new signal system, track improvement plan and new passenger platform.
GO Transit Don Yard Expansion	• GO Transit proposes to expand and improve the Don Yard Storage Facility in the Union Station Rail Corridor. Project consists of removal of old tracks, installation of new tracks to allow trains to enter and exit at both ends of the yard, new staff/maintenance building, electrical substation and road improvements.
Proposed Projects or Activities (GO TRIP)	
Georgetown Corridor - Georgetown Express Transportation Link	• This project is currently undergoing an Individual Environmental Assessment. It is unknown at this time the extent and / or make up of this project. **

** Although the expansion of the Georgetown/West corridor and the introduction of a rail link between Union Station and Pearson Airport could result in additional train movements through the corridor, the terms of reference for the Individual Environmental Assessment for that project has not yet been drafted. As the IEA will need to consider a range of alternatives, including alternatives to rail services along the Georgetown Corridor, it is not practical to estimate future rail traffic at this time. It is anticipated that this process could take approximately two years.

Figure 5.1 Current GO TRIP Projects



- A number of other past/existing, proposed and reasonably foreseeable projects that could potentially interact with the West Toronto Grade Separation are identified in Table 5.2.

TABLE 5.2
IDENTIFICATION OF OTHER PROJECTS

Project	Description
Past or Existing Projects and Activities	
Ongoing Operation	• The rail corridors in the study area will continue to be used by GO Transit, VIA Rail, CN and CPR for the movement of commuters, travellers and freight. CN currently maintains the Weston S/D corridor and its associated rail infrastructure through a variety of maintenance programs. These activities will continue throughout the construction and operation of the project.
Reasonable Foreseeable Projects or Activities	
City of Toronto - St. Clair Avenue Streetcar Network Upgrades	• The Toronto Transit Commission (TTC) is planning to upgrade the streetcar network in the study area by constructing full time exclusive streetcar lanes on St. Clair Avenue from Yonge Street to Gunns Road in order to improve service on the 512 St. Clair streetcar route. • This project is currently on HOLD and is not expected to take place in the same time frame as the West Toronto Diamond Project.
Recreational Path	• The City of Toronto has purchased land in the vicinity of Cariboo Avenue for a recreational path.
City of Toronto - Elimination of Dufferin Street Jog at Queen Street West	• The City of Toronto is planning to eliminate the discontinuous alignment of Dufferin Street at Queen Street West. The project will require a new underpass about 70 metres long under the existing CN Weston S/D rail corridor that will enable Dufferin Street to be realigned. The project is located 4 km south of the West Toronto Diamond and is scheduled for construction in 2007

5.5.2 Identification of Effects to Be Considered in the CEA

The first objective of the CEA is to determine if the proposed project will have an effect on a VEC. Sections 5.1 and 5.2 of this Screening identified and discussed the effects of the project. The CEA builds on the results of the effects assessment and considers those direct effects of the proposed project that were assessed to have a likely direct effect on a VEC.

The following table indicates that all of the residual effects are related to construction activities and not operational activities. This is due, largely, to the fact that the project does not provide for an increase in the number of GO

trains, but is designed to increase the safety, convenience and reliability of the existing GO service.

TABLE 5.3
DIRECT EFFECTS OF THE WEST TORONTO GRADE SEPERATION AND RELEVANT VEC'S

Environmental Component	VEC's	Indicator/Receptors	Direct Effect on VEC
Air	Local air quality conditions	• NO_x, CO, O_3, fine particulate matter	• Temporary increases in concentrations of indicators during construction due to dust and vehicle emissions;
Surface Water	Surface water quality and quantity	• Water quantity and quality from stormwater pond	• Increased imperviousness on-site but potential long-term improvement due to stormwater retention pond
Groundwater	Groundwater quality and quantity	• Ground water quality and local ground water levels	• Short-term removal during construction, some minor loss anticipated during operation. Potential impact on quality due to spills
Soils	Soil quality	• Soil quality parameters	• Potential removal of impacted soil during construction. Some potential for impact due to spills
Socioeconomic conditions	Use and enjoyment of property	• Noise • Vibration	• Slight increase in noise during construction. Minor Long term improvement due to grade separation
	Vehicular traffic	• Traffic delays	• Short-term closures of Old Weston Road during construction. Long-term improvement following grade separation.

5.5.3 Determination of Cumulative Effects

Table 5.3 identified the direct effects of the construction and operation of the proposed West Toronto Diamond Grade Separation project on each VEC. Therefore, the potential cumulative effects from other projects and activities identified in Tables 5.1 and 5.2 on these VECs were evaluated.

After reviewing the temporal and spatial overlap between the West Toronto Diamond Grade Separation project and those projects listed in Tables 5.1 and 5.2, those current and future projects that are likely to occur during the same time and in the same geographic area as the West Toronto Diamond Grade Separation project will be carried forward for assessment.

Two projects/ongoing activities will be carried forward for evaluation based on their potential for both temporal and spatial overlap. These included

- Georgetown North Rail Corridor Expansion
- Ongoing rail line maintenance

The proposed expansion of the Georgetown/Weston Rail Corridor and the introduction of an Express Transportation Link between Union Station and Pearson Airport is currently undergoing an Individual Environmental Assessment, which will take approximately two years. Although this project may result in additional train movements through the corridor, the extent of this cannot be determined at this time. In addition, the West Toronto Diamond project is not expected to have residual environmental effects on air quality or noise from the operations phase. As such, this project is not being carried forward in the cumulative effects assessment.

5.5.4 Cumulative Effects Assessment

The following Valued Ecosystem Components (VEC) have been identified for this project with respect to cumulative effects and have been evaluated in this section:

- Air Quality
- Surface Water
- Groundwater
- Soils
- Noise/Vibration
- Traffic

Air Quality

The West Toronto Diamond Grade Separation project will result in a short-term, localized, minor increase in air emissions (e.g. fine particulate matter, NO_x, CO, O_3) during construction, particularly due to the use of heavy equipment. The other projects are sufficiently separated temporally or spatially that there will not be any cumulative impact.

Surface Water

The new Georgetown corridor rail tracks will generally have a pervious surface that permits percolation of rainwater to recharge groundwater resources and supplement surface water discharge. The only exception will be the depressed rail tracks through the West Toronto Diamond that will be constructed on an impervious concrete base slab. Therefore, the cumulative effects of the Georgetown Corridor and the grade separation on surface water is anticipated to be a minor decrease in surface water infiltration due to a small increase in impervious surfaces. However, the effects would be localized and minor in magnitude, with no impact on watershed stream flows.

With the completion of the Georgetown Corridor and the grade separation, there will be an increase in the number of tracks in the project area. The cumulative effect of these two projects could increase the potential for surface water contamination from creosote, the compound used to treat railway ties. This potential cumulative effect can be mitigated by the use of Best Management Practices in the maintenance and operation of the tracks. A minor cumulative increase in local creosote-related soils contaminants may occur, although impacts on surface water quality conditions are expected to be very minor in nature.

Groundwater

The issues that affect surface water also affect groundwater resources. With a slight increase in the impervious area due to the construction of an impervious track base through the West Toronto Diamond grade separation, there may be a decrease in groundwater recharge to the local groundwater regime, which would be considered a minor cumulative effect.

Contamination of the groundwater system by creosote from railway ties is not considered a significant cumulative effect, as there is no use of potable groundwater in the area of the projects. Municipal water is supplied to all users in the area of the project. Further, Best Management Practices will be in place to mitigate the potential for accidental spills.

Soils

As discussed previously, the completion of the Georgetown Corridor and the grade separation will increase the number of tracks and railway facilities in the study area. Like surface water and groundwater resources, there may be an increased risk of soil contamination from creosote from railway ties due to this increase in rail lines. This is considered a minor cumulative effect as Best Management Practices will be followed in order to prevent and mitigate contamination.

Due to the nature of railway operations there is the potential for spills and soil contamination along railway corridors. With the completion of the Georgetown corridor and the grade separation, there will be increased rail traffic and the potential for increased soil contamination from spills. This cumulative effect can be mitigated with the use of Best Management Practices for railway operation.

Noise / Vibration

There may be some overlap when the City of Toronto St. Clair Avenue Streetcar Network Upgrades commence construction. This project is currently on hold, and based on the current schedule is unlikely to overlap. Compliance with local noise by-laws and provincial noise emission standards for construction equipment will ensure that cumulative effects are minor.

With the completion of the Georgetown North Rail Corridor Expansion, there will be an increase in the rail traffic through the study area. The grade separation will, however, decrease the noise and vibration, as the train traffic will be below ground. Therefore there will not be any operational or long-term cumulative effects related to noise and vibration.

Traffic

The grade separation works will necessitate 2; three-week closures of Old Weston Road at the crossing. These closures will be short term and temporary in nature.

5.6 Assessment of Significance

The assessment of the significance of residual effects is required, as residual effects have been identified. Only likely residual adverse effects are advanced for an assessment of significance: those effects determined through the assessment to be positive are not considered further. The method for assessing significance is identified below.

Each likely residual adverse effect was assessed using the following criteria:

Magnitude: the size or degree of the impact compared against baseline conditions;
Extent: the area over, or throughout which the effects will occur;
Timing: the time period for which the effect will last; and,
Frequency: the rate of reoccurrence of the effect (or conditions causing the effect).

Measurement levels are based on professional judgment and previous experience on similar projects. Each residual effect has been assessed according to each significance assessment criterion and assigned an effect level (low, moderate, high) that reflects the degree of effect that could reasonably be expected. With consideration for the individual criterion levels in an overall context, a professional judgment has been used to determine the significance of the residual effect.

Residual adverse effects have been categorized as follows:

Minor Adverse Effect (not significant) - The residual effect is minor and/or has been effectively mitigated through the recommended mitigation.

Significant Adverse Effect - The residual effect is significant and further or effective mitigation is considered not possible.

As a fundamental principle, a residual effect would always be significantly adverse if it was of high magnitude, high extent and high duration. The generic effects assessment criteria and the measurement basis and levels for each are described in the Table 5.4.

TABLE 5.4
RESIDUAL EFFECTS SIGNIFICANCE CRITERIA AND LEVELS

Effects Criteria	Effects Level Definition		
	Low	**Moderate**	**High**
Magnitude (of effect)	Effect is evident only at or nominally above baseline (existing) conditions.	Effect exceeds baseline (existing) conditions, however is less than regulatory criteria or published guideline values.	Effect exceeds regulatory criteria or published guideline values.
	Low	**Moderate**	**High**
Extent (of effect)	Effect is limited to the project vicinity.	Effect extends beyond the immediate project vicinity.	Effect extends into the regional area.
	Low	**Moderate**	**High**
Timing (of effect)	Effect is evident only during construction activities.	Effect is evident during the first few years of the operational period.	Effect extends through the operational period.
	Low	**Moderate**	**High**
Frequency (of conditions causing effect)	Conditions or phenomena causing the effect to occur very infrequently; or are effectively a one-time event. (< once per month).	Conditions or phenomena causing the effect to occur at regular although infrequent intervals. (< once per week).	Conditions or phenomena causing the effect to occur at regular and frequent intervals. (> once per day).

Table 5.5 illustrates the assessment of significance for the identified likely residual adverse effects.

TABLE 5.5
ASSESSMENT OF SIGNIFICANCE OF RESIDUAL ADVERSE EFFECTS

Resource	Residual Effects	Magnitude	Extent	Timing	Frequency	Significance
Air Quality	Dust and airborne contaminant emission during construction	Moderate	Moderate	Low	Moderate	Not Significant
Surface Water	Impairment of water quality during construction	Low	Moderate	Low	Moderate	Not Significant
Groundwater	Removal of groundwater during construction	Moderate	Low	Low	Moderate	Not Significant
	Potential impairment in groundwater quality during construction	Low	Low	Low	Low	Not Significant
Soils	Potential for impairment in soil quality during construction	Low - Moderate	Low	Low	Low	Not Significant
	Impacts due to use of creosoted ties	Low	Low	Moderate	High	Not Significant
Vegetation and Wetlands	Loss of wildlife and habitat due to site clearing during construction and maintenance	Moderate	Low	Low	Low	Not Significant
Wildlife/habitat	Disruption during construction and maintenance	Low	Low	Low	Low	Not Significant
	Loss of habitat	Low	Low	Low	Low	Not Significant
Traffic and Transportation	Disruption of traffic on Old Weston Road	Moderate	Moderate	Low	Moderate	Not Significant
Utilities	Disruption during construction	Low	Moderate	Low	Low	Not Significant
Noise and Vibration	Increase during construction	Moderate	Moderate	Low	High	Not Significant
Safety	Safety concerns due to construction	Low	Low	Low	High	Not Significant

5.7 Environmental Effects Summary Checklist

Table 5.6 provides a summary of the predicted environmental effects of the proposed West Toronto Diamond Grade Separation project.

TABLE 5.6
ENVIRONMENTAL EFFECTS CHECKLIST

Environmental Component	Potential Project Effects						Residual Effects	
	Potential Adverse Effect?			Can Be It Be Mitigated?			Is it Significant?	
	Yes	*No*	*Uncertain*	*Yes*	*No*	*Uncertain*	*Yes*	*No*
Air Quality	X			X				X
Surface Water	X			X				X
Groundwater	X			X				X
Soils	X			X				X
Vegetation	X			X				X
Wildlife	X			X				X
Fish and Fish Habitat		X						
Species of Special Concern		X						
Official Plan and Land Use[1]		X						
Traffic and Transportation[1]	X			X				X
Utilities	X			X				X
Noise/Vibration	X			X				X
Safety [1]	X			X				X
Heritage[1]**/Archaeology**		X						
Other Factors								
Accidents and Malfunctions	X			X				X
Effects of Environment on the Project	X			X				X
Cumulative Effects								
Air Quality	X			X				X
Surface Water	X			X				X
Groundwater	X			X				X
Soils	X			X				X
Noise	X			X				X
Traffic	X			X				X

1. *The indirect effects on these Environmental Components resulting from a project impact on the environment must be considered. Direct effects on these Environmental Components may also be considered at the discretion of the RA.*

Mitigation measures required as result of the environmental assessment are summarized in Table 5.7.

Table 5.7 Mitigation Table

Project Component / Activity	Environmental Components Potentially Affected	Proposed Mitigation
• Site preparation • Grading and earthworks • Track and bridge construction • Heavy equipment use • Operations and Maintenance	Air Quality	Constraints and provisions that mitigate the potential for an increase in airborne dust due to construction activities include: • Implementation of a sediment and erosion control plan, dust suppression (watering or chemical application using non-chloride based compounds), road sweeping, minimize traffic over disturbed soils • Avoid site preparation, excavation and construction during extremely windy conditions and, dry conditions • Stabilize exposed soils or stockpiles to prevent wind erosion • Cover and contain fine particulate during transportation to and from the site, install tarpaulins over stockpiles and dump trucks as required • Implement site rehabilitation measures post-construction to limit the potential for wind-generated erosion from the site Constraints and provisions that mitigate the potential for an increase in airborne contaminants (e.g., CO, O_3, NO_x, particulate matter) due to construction and long-term maintenance machinery emissions include: • Use of well maintained machinery equipped with manufacturer installed emissions control equipment with monitoring throughout the construction period. • Minimize machinery idling times as per City of Toronto By-law • Minimize vehicle/equipment idling during maintenance
• Clearing, grading and earthworks • Regular site maintenance	Vegetation and Wetlands Wildlife	• Limit the amount of clearing and disturbance required and protect residual vegetation from disturbance during construction. • Re-grade, replant and landscape with native plant species as required to meet or exceed existing conditions. • Clearing of vegetation must take place outside the main bird breeding season in spring and early summer. If clearing is required in this time period, nest surveys will be conducted by a qualified avian biologist. If nests are found, appropriate mitigation (e.g., setbacks and buffers; cessation of cutting during the breeding season) will be implemented as appropriate to prevent incidental take of migratory birds or their nests. • Site restoration using native vegetation species in disturbed areas will be conducted to partially offset

Project Component / Activity	Environmental Components Potentially Affected	Proposed Mitigation
		permanent loss of habitat due to expansion of the developed portion of the corridor • Long-term vegetation clearing as part of a vegetation management program along the rail corridor should not be conducted during the main spring and early summer bird nesting season.
• Grading and earthworks • Track and bridge construction • Regular track operation and maintenance	Soils	Constraints and provisions that mitigate the potential for soil contamination include: • Initial sampling of soils beneath the tracks to provide base data regarding the potential for encountering impacted soils during excavation • Visual inspection and sampling of soils as required; testing as per standards of the Environmental Protection Act. • No significant impact during operation of the corridor; reduced potential for impact due to elimination of train idling
• Grading and earthworks • Track and bridge construction • Operation and maintenance	Surface Water Quality and Quantity	Go Transit requires their contractors to comply with standard contract constraints and provisions to mitigate the potential for impairment of surface water quality. These include: • Placement of silt fence barrier and rock flow check dams to trap suspended sediment in runoff from the construction site • Directing de-watering discharge from groundwater dewatering operations through filtering bags or settling ponds prior to release into sewer system in order to meet Sewer use by-laws • Strict directions to have machine refuelling and on-site machinery maintenance away from surface water sources, drainage routes or other sensitive areas • Minimize the duration soils are left exposed • Clearing, grubbing and stripping must be conducted immediately prior to commencing work in those areas to minimize the duration soils are left exposed. Stabilization of disturbed areas should occur as soon as possible after works have been completed. • Prevent long-term exposure of potentially contamination soils such that contaminants are not mobilized due to entrainment in surface water flow • Excess fuels, lubricants and other potentially contaminating materials must be removed from the site and disposed of in an approved manner. • Work must be suspended during periods of heavy rainfall • Prepare an Environmental Protection Plan for use during construction to specify protocols to be implemented in the event of accidental spills. Fuel or oil spills must be immediately contained and clean-ups will adhere to Ministry of Environment protocol. Regulatory agencies are to be notified immediately of any spills that occur.

Project Component / Activity	Environmental Components Potentially Affected	Proposed Mitigation
		• Slopes that are cleared or modified during construction must be stabilized and sown to cover crop • Geotextile cloth and silt fencing must be used to minimize off-site runoff; straw bails will be placed in defined drainage channels. • Permanent measures include riprap in any areas where erosion is expected and all ditches and fill slopes seeded and mulched. • The use of BMP's in the installation, long-term use and decommissioning of creosote rail ties • All construction Contractors to develop and implement Plans for Environmental Management and Quality Assurance to demonstrate actions to ensure compliance with contract constraints and provisions and to respond to emergency situations • Construction activities are monitored by an on-site Environmental Specialist to ensure that the Contractor's Plans and the contract constraints and provisions are adhered to and to recommend remedial action in the event of an emergency or unforeseen situation. • Sediment and erosion control management plan, storm water management plan and contaminated sediment management plan to be implemented by contractor to minimize / eliminate offsite movement of sediment and contaminated materials • A storm water management pond to be constructed on-site will improve storm water quality (i.e., lower suspended solids) prior to discharge to the sewer system and minimize peak flow increases to local sewer systems.
• Dewatering during construction activities • Equipment use • Operations and Maintenance •	Groundwater quality and quantity	• Groundwater collected during the dewatering phase of subway construction must be analyzed to determine chemical composition. Based on previous sampling, groundwater may be disposed of in the combined sewer network in accordance with the City of Toronto Sanitary Sewer Use By-Law. • If groundwater is found to be too contaminated for input to the sewer system, it will require collection and off-site disposal at a suitable designated location. • The above provisions for protection of surface water will also mitigate the potential for groundwater contamination • Prevention/minimization of groundwater loss through subway structure to minimize impacts on local ground water table levels during and following construction.
• Grading and earthworks • Track and bridge construction	Socio-economic Conditions	• There will not be any loss of existing land use • Strip topsoil in the area of construction. After construction is completed, replace topsoil. Use barriers to prevent sediment transport.

Project Component / Activity	Environmental Components Potentially Affected	Proposed Mitigation
		• Ensure access to all businesses is maintained during construction
• Grading and earthworks • Material haulage • Road underpass bridge construction	Transportation	• Co-ordinate construction access routes with the City of Toronto Transportation Department • Designate construction routes to be mainly on collector and arterial road and keep off unsuitable (i.e. residential) roads. • Advanced warning of closures of Old Weston Road. Limit closure of Old Weston Road to two periods, each three weeks in duration. Avoid road closures during times that St. Clair Avenue West in the vicinity of Old Weston Road is partially closed due to Streetcar Network Upgrade Project. • Provision of adequate rail diversion, as per CN and CPR rail requirements during the construction period to minimize temporary impacts on rail use.
• General construction works • Operations and maintenance	Safety	• Follow Ministry of Labour Occupational Health and Safety regulations for construction sites • Implement signage/speed restrictions to minimize hazards.
• Track Operation	Aesthetics	• Implementation of construction site best management practices with respect to site condition (e.g., timely removal of waste and other construction debris) to minimize aesthetic impacts during construction • Landscaping and site restoration after construction complete. • Landscaping measures to reduce long-term impacts of illumination on adjacent residents
• Track excavation, grading, earthworks	Utilities	• Utilities relocated and reconstructed in accordance with City of Toronto requirements including timing of disruption restrictions (i.e., temporary utility disruption during low-demand periods).
• Grading and earthworks • Track and bridge construction • Operations and maintenance	Noise and vibration	• Construction to occur in accordance with local noise by-law (i.e., between the hours of 7 am and 7 pm) to minimize impacts on adjacent residences, businesses and institutions. • Construction equipment to conform with MOE noise emissions standards. • Equipment to be well maintained and equipped with manufacturer installed noise control devices to minimize impacts. No night work to occur.

6 Consultation

6.1 Public Participation under Subsection 18(3)

Is public participation deemed necessary under Subsection 18(3): Yes [] Not applicable [X]

Public consultation was completed as a component of the provincial Class EA process. For a detailed description of the public consultation process, please refer to the *GO Transit – West Toronto Rail/Rail Grade Separation Environmental Study Report.* March 2005. Acres International Limited.

Scope of factors posted on the CEAR:	Yes []	Not applicable [X]
Notice of public input posted on the CEAR:	Yes [X]	Not applicable [ ]

6.2 Consultation with the Public

As part of the Provincial EA process, the public and local businesses were notified of the project through a Notice of Study Commencement, which was combined with an invitation to attend a Public Information Centre (PIC). This notice was published in *The Toronto Star* on September 14th and 18th, 2004, in *Metro* on September 15th and 17th, 2004, and in the *Bloor West Villager* on September 17th, 2004. In addition 490 notices were hand delivered to businesses and homes that are within the study area, and GO Transit e-mailed information to riders of the Georgetown GO train.

The Public Information Centre (PIC) was held at St. Josaphat School at 55 Pelham Street, in the study area. At the PIC, information was provided on the need for the grade separation, on the evaluation of the concept alternatives, and on the preliminary design of the selected alternative. A brief description of the project was also handed out at the meeting, together with an aerial photo of the area showing the layout of the preferred concept.

A total of 43 people signed the attendance sheet and three of the people provided written responses on the comment sheets. Another nine people stated (by e-mail or phone) that they would not be able to attend the PIC and were sent their own information package.

The three written comments received at the PIC are summarized below:

- Concern that construction traffic on Old Weston Road, north of Junction Road would make an already bad traffic situation worse for pedestrians. (This issue will be addressed by defining acceptable routes for construction traffic along non-residential roads, e.g. Junction Road.)

- Support for the project in its proposed form, citing reduced noise levels and elimination of the Old Weston Road at-grade crossing of the CN tracks as benefits

- A request that the existing grade separation at Bloor Street should be revised so that Bloor Street passes over the tracks rather than under. (This issue is beyond the scope of this undertaking.)

6.3 Consultation with Aboriginal Peoples

Aboriginal consultation was considered but not undertaken as there are no First Nation communities within the study area that would be impacted by this project nor were there any lands involved that are currently subject to First Nations land claims. Therefore, aboriginal consultation was determined to be not applicable for this project.

6.4 Consultation with Other Federal Departments and Agencies

As part of the EA process, the Canadian Environmental Assessment Agency, Environment Canada, Transport Canada, the Canadian Transportation Agency and Health Canada were all contacted through direct letter mailings of a package including the Notice of Study Commencement, a Project Brief, a study area map and an Expression of Interest form, as part of the provincial EA.

As part of the federal environmental assessment process, federal agencies were provided with a copy of the Project Description. Environment Canada, Health Canada and Canadian Transportation Agency indicated that they had expert or specialist advice to contribute to the assessment and their comments have been integrated into this report.

6.5 Consultation with Other Jurisdictions

No consultation was required, or undertaken with another jurisdiction

6.6 Consultation with Others

Both CN and CPR have participated in the review of this screening report. They have reviewed and agreed with the mitigation measures that are identified in this report and will cooperate with GO Transit to ensure that they are implemented.

7 References

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8 CEAA Determination

On the basis on this screening, the Department has determined, in accordance with subsection 20(1) of the Act, that the impact of this project on the environment is as follows ***(check one only):***

[X] The project is not likely to cause significant adverse environmental effects: the project can proceed with application of the mitigation measures specified in this report.

[ ] The project is likely to cause significant adverse environmental effects that cannot be justified. The project does not proceed.

[ ] Refer the project to the Minister of the Environment for referral to a mediator or a review panel because:

- [ ] of uncertainty as to whether the project is likely to cause significant adverse environmental effects;
- [ ] the project is likely to cause significant adverse environmental effects; and
- [ ] of public concern.

9 Follow-Up Program & Monitoring

Is a follow-up program considered appropriate for this project? Yes [ ] No [X]

The proponent implements a comprehensive construction administration and monitoring program to ensure compliance with the terms and conditions of the environmental assessment study and the required mitigation measures. The administration and monitoring operations are documented and can be made available for review, negating the need for a follow-up program.

Follow-up program posted on the CEAR	Yes [ ]		Not applicable [X]
Other FA will participate in the follow-up program:	Yes [ ]	No [ ]	Not applicable [X]

Monitoring to be implemented for this project	Yes [X]	No [ ]
Other FA will assist in mitigation measures	Yes [ ]	No [X]

The proponent implements a comprehensive construction monitoring program to ensure compliance with the terms and conditions of the environmental mitigation measures. Environmental Specialists conduct the monitoring of environmental mitigation measures negating the need for Other FA assistance. Copies of the ES monitoring reports will be provided to Transport Canada.

In addition, the proponent undertakes to provide, when completed, the contractor haul routes as discussed with the City, and the diversion track layouts when developed, noting any additional impacts, which may result, based on these.

10 Sign-Off

Screening report or how to obtain a copy posted on the CEAR: [ ]
Decision posted on the CEAR: [ ]

Obtain all relevant sign-offs for the screening report.

1. Environmental Screening Report prepared by:	Date:
Title:	Acres International Limited Kay Ashwood, Environmental Assessment Coordinator
The above has completed this environmental screening report to the best of her/his ability or knowledge.	
2. Environmental Screening accepted by:	Date:
Title:	Greg Ashbee, P. Eng., Senior Project Engineer GO Transit
The above has read and understood this environmental screening report and accepts responsibility for ensuring the implementation of mitigation measures or for ensuring the design and implementation of follow-up programs, if any, identified in this report.	
3. Environmental Screening report recommended by:	Date
Title:	
The above has reviewed the environmental screening report and agrees that it meets the requirements of the Canadian Environmental Assessment Act. The Responsible Authority will ensure the implementation of the mitigation measures identified in this report.	
4. Environmental Screening report approved by:	Date
Title:	
The above has reviewed the environmental screening report and agrees that it meets the requirements of the Canadian Environmental Assessment Act. The Responsible Authority will ensure the implementation of the mitigation measures identified in this report.	
5. Environmental Screening report approved by:	Date
Title:	
The above has reviewed the environmental screening report and agrees that it meets the requirements of the Canadian Environmental Assessment Act. The Responsible Authority will ensure the implementation of the mitigation measures identified in this report.	

10 Sign-Off

Screening report or how to obtain a copy posted on the CEAR: [✓]
Decision posted on the CEAR: [✓]

Obtain all relevant sign-offs for the screening report.

1. Environmental Screening Report prepared by: K. Blanc, Date: Nov. 22/05

Title: Acres International Limited
Kay Ashwood, Environmental Assessment Coordinator

The above has completed this environmental screening report to the best of her/his ability or knowledge.

2. Environmental Screening accepted by: J Greg Ashbee Date: 23 NOV/05

Title: Greg Ashbee, P. Eng., Senior Project Engineer
GO Transit

The above has read and understood this environmental screening report and accepts responsibility for ensuring the implementation of mitigation measures or for ensuring the design and implementation of follow-up programs, if any, identified in this report.

3. Environmental Screening report recommended by: Date Nov. 24/05

Title: Environmental Assessment Project Manager, Transport Canada

The above has reviewed the environmental screening report and agrees that it meets the requirements of the Canadian Environmental Assessment Act. The Responsible Authority will ensure the implementation of the mitigation measures identified in this report.

4. Environmental Screening report approved by: Date Nov. 24/05

Title: Senior Director, Highways & Borders, Transport Canada

The above has reviewed the environmental screening report and agrees that it meets the requirements of the Canadian Environmental Assessment Act. The Responsible Authority will ensure the implementation of the mitigation measures identified in this report.

5. Environmental Screening report approved by: Date NOV 24/05

Title: EIA Analyst, Infrastructure Canada

The above has reviewed the environmental screening report and agrees that it meets the requirements of the Canadian Environmental Assessment Act. The Responsible Authority will ensure the implementation of the mitigation measures identified in this report.