Project File Report

GUELPH LINE (REGIONAL ROAD 1) AT HARVESTER ROAD INTERSECTION IMPROVEMENTS

MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

SCHEDULE 'B' STUDY

Prepared for Halton Region
by IBI Group
November 2020

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ACRONYMS AND ABBREVIATIONS

PFR	Project File Report
EA	Environmental Assessment
ROP	Region Official Plan
TMP	Transportation Master Plan
HOV	High Occupancy Vehicle
ATMP	Active Transportation Master Plan
QEW	Queen Elizabeth Way
MTO	Ministry of Transportation, Ontario
SSR	South Service Road
TMC	Turning Movement Count
ATR	Automatic Traffic Recorder
HCM	Highway Capacity Manual
MECP	Ministry of Environment, Conservation and Parks
MNRF	Ministry of Natural Resources and Forestry
NHIC	Natural Heritage Information Centre
CH	Conservation Halton
ROW	Right of Way
TAC	Technical Agency Committee

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LID	Low Impact Development
AODA	Accessibility for Ontarians with Disabilities Act
V/C	Volume to Capacity Ratio
LOS	Level of Service

LANE CONFIGURATIONS

WBL / WBR	Westbound Left / Westbound Right
WBT / WBTR	Westbound Through / Westbound Shared Through and Right
EBL / EBR	Eastbound Left / Eastbound Right
EBT / EBTR	Eastbound Through / Eastbound Shared Through and Right
NBL / NBR	Northbound Left / Northbound Right
NBT / NBTR	Northbound Through / Northbound Shared Through and Right
SBL / SBR	Southbound Left / Southbound Right
SBT / SBTR	Southbound Through / Southbound Shared Through and Right

1 Introduction

1.1 Background and Study Purpose

There are existing capacity constraints at the intersection of Guelph Line at Harvester Road/ Queensway Drive and localized infrastructure improvements will be necessary to improve existing operating conditions. As such, the Region has completed a Municipal Class Environmental Assessment Study for intersection improvements at Guelph Line and Harvester Road/Queensway Drive. To address existing localized capacity constraints at this intersection, this study considered a wide range of alternatives. The impact of the various alternatives on social, cultural, economic and natural environments has been evaluated and assessed during the Study. Long-term, broader infrastructure requirements in this area will be considered through a separate study.

This study was conducted in accordance with the planning and design process for 'Schedule B' projects as outlined in the Municipal Class Environmental Assessment document (external link) (October 2000, as amended 2007, 2011 & 2015), which is an approved process under the Ontario Environmental Assessment Act.

This Project File Report (PFR) documents the Municipal Class Environmental Assessment (MCEA) planning process that was undertaken for the improvements to the Guelph Line (Regional Road 1) and Harvester Road intersection.

Exhibit 1-1: Study Area

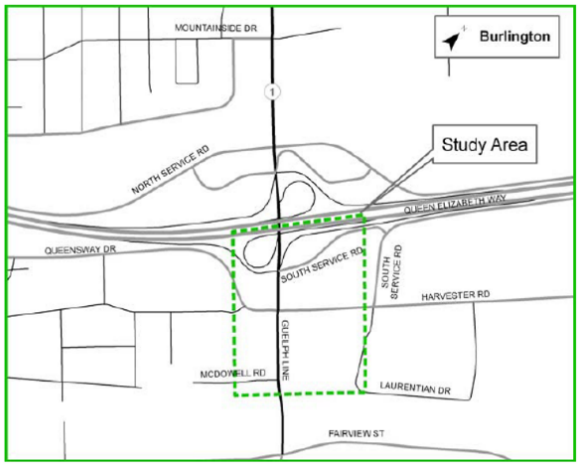


Exhibit 1-1 illustrates the Guelph Line - Harvester Road Intersection Study Area.

1.2 Study Context

1.2.1 Halton Region Official Plan (2016)

The Halton Region Official Plan (2016) guides land use planning and helps Regional Council and staff make decisions regarding Halton's growth and development. Regional Official Plan Amendment No. 38 (ROPA 38) was adopted by Regional Council on December 16, 2009 and approved by the Ministry of Municipal Affairs and Housing with modifications on November 24, 2011.

The Regional Official Plan classifies Guelph Line as a Major Arterial roadway from Harvester Road northerly through the study area. The function of a Major Arterial is to:

- Serve mainly inter-regional and regional travel demands;
- May serve an Intensification Corridor;
- Accommodate all truck traffic;
- Accommodate higher order transit services and high occupancy vehicle lanes;

- Connect Urban Areas in different municipalities;
- Carry high volumes of traffic;
- Distribute traffic to and from Provincial Freeways and Highways; and
- Accommodate active transportation.

1.2.2 Halton Region Transportation Master Plan 2031 (2011)

The Halton Region Transportation Master Plan (TMP) - The Road to Change (2011) was established in order to develop a sustainable, cohesive transportation plan that considers all modes of transportation. The TMP identifies existing problems and opportunities and evaluates solutions to optimize the transportation system throughout the Region to the year 2031.

1.2.3 Halton Region Active Transportation Master Plan (2015)

The Halton Region Active Transportation Master Plan (ATMP; 2015), outlines a plan for developing a regional network of infrastructure that supports active transportation, with a focus on cycling and walking.

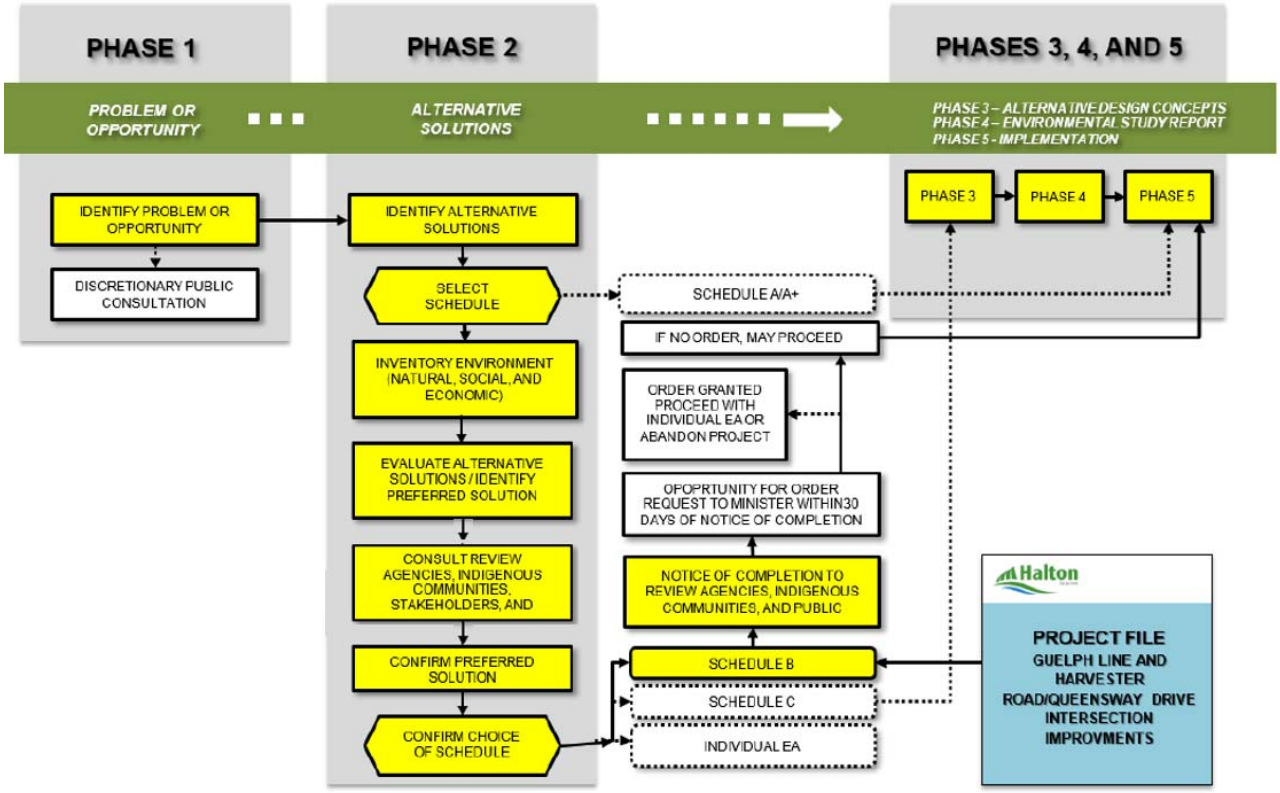
An efficient way to implement cycling and walking facilities is to construct them as part of an overall road construction projects. Therefore, consideration should be included in as part of any longer term major road construction projects along Guelph Line as an opportunity to implement the active transportation network, including through QEW interchange.

1.3 Municipal Class Environmental Assessment Process

The Municipal Class Environmental Assessment process (October 2000, as amended 2007, 2011 & 2015) is a five-phase planning procedure under the *Ontario Environmental Assessment Act*, which applies to public infrastructure projects. Projects undertaken through this planning process are classified as one of four "Schedule" types in accordance with their degree of anticipated environmental impact and magnitude. Key features of the Class EA process, as well as a detailed outline of the process are shown in **Exhibit 1-2.**

- Phase 1: Identify the problem or opportunity.
- Phase 2: Identify alternative solutions, evaluate and select preferred solution.
- Phase 3: Identify alternative design concepts, evaluate and select the preferred design concept.
- Phase 4: Document the rationale, planning, design and consultation process in an Environmental Study Report and place it on public record.
- Phase 5: Project implementation, complete contract drawings and tender documents and proceed to construction and operation of the project.

Exhibit 1-2: Municipal Class EA Process



The current study is being conducted in accordance with the planning and design process for a 'Schedule B' project. A Schedule 'B' Class EA generally includes roadway projects where the improvements being considered are straightforward and detailed technical investigations and analyses will not be needed to arrive at the preferred solution. For example: "reconstruction or widening where the reconstructed road or other linear paved facilities (e.g. HOV lanes will not be for the same purpose, use, capacity or at the same location (e.g. additional motor vehicle lanes, continuous centre turn lane)", and where the expected cost is anticipated not to exceed $2.4 million to construct.

Formal planning of Schedule B projects ends at the conclusion of Phase 2, at which time a Project File is prepared documenting the planning process followed through Phases 1 and 2, and a Notice of Completion is issued, allowing the public at least a 30 calendar day period during which documentation may be reviewed and input received.

1.4 Comments and Request for Order for Higher Level of Study

Interested persons may provide written comments to Halton Region for a response using the following contact information:

Ann Larkin, P.Eng.
Supervisor – Transportation Planning
1151 Bronte Road
Oakville, ON L6M 3L1
ann.larkin@halton.ca

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

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

The request should be sent in writing by mail or by email to:

Minister of the Environment, Conservation and Parks
Ministry of Environment, Conservation and Parks
777 Bay Street, 5th Floor
Toronto ON M7A 2J3
minister.mecp@ontario.ca

and

Director, Environmental Assessment Branch
Ministry of Environment, Conservation and Parks
135 St. Clair Ave. W, 1st Floor
Toronto ON, M4V 1P5
EABDirector@ontario.ca

Requests should also be sent to Halton Region by mail or by email:

Ann Larkin, P.Eng.
Supervisor – Transportation Planning
1151 Bronte Road
Oakville, ON L6M 3L1
ann.larkin@halton.ca

1.5 Study Team

The study is being carried out under the direction of the Project Team, which is comprised of staff from departments across the Region of Halton.

IBI Group is the lead consulting firm, including specialists in transportation planning, traffic analysis, road safety, active transportation, public consultation, roadway design, stormwater management and drainage, and utilities. In completing this study, IBI Group teamed with the following environmental specialty firms:

- Dougan and Associates: natural heritage resource assessment; and
- AMICK Consultants Limited: archaeology and cultural heritage resource assessment.

2 Problem and Opportunity Statement

2.1 Objective and Methodology

There are existing capacity constraints at the intersection of Guelph Line and Harvester Road and this study is to identify localized intersection improvements to address the existing problem.

The primary objective of this study is to identify localized intersection improvements to increase capacity and improve operating conditions. Potential improvements, may include, but are not limited to:

- New turning lanes;
- Pavement marking and signing modifications;
- Localized improvements to existing active transportation infrastructure; and
- Traffic signal control upgrades.

To determine the preferred operational solution, an interim 2023-year horizon was assessed, as well as a 2031 horizon for comparison purposes.

3 Existing Conditions

3.1 Land Use

In the Halton Region's Official Plan, lands adjacent to the Guelph Line – Harvester Road intersection are designated as lands within the Urban, Employment Area. In the City of Burlington Official Plan, the majority of these lands are further designated as Business Corridor which incorporates a broad range of office, industrial, hotel, retail, service commercial and recreation uses.

The Regional Municipality of Halton's Environmentally Sensitive Areas Report (2005), the study site is not designated as or adjacent to an Environmentally Sensitive Area (ESA), nor are any identified or evaluated wetlands in the in vicinity of study site. Furthermore, the study area does not contain any significant wetlands, coastal wetlands, woodlands, valley lands, or Areas of Natural and Scientific Interest. The only significant woodland in the vicinity of study area is located north of the QEW and east of Guelph Line, and fits criteria 4 as it is within 50m of the headwaters of Roseland Creek. This woodland is not within the estimated limits of disturbance for this project and thus no impacts are anticipated to its features or functions.

3.2 Natural Environment

A Natural Heritage Report included in ***Appendix C*** provides an analysis of the ecological features and functions of the study area and identification of the natural heritage constraints that are present.

3.2.1 Vegetation Community

The study area has been highly altered from its natural state and the natural heritage features that are present are cultural in nature, having been created and/or maintained by human-generated forces. The vegetation communities found were dominated by non-native species, and those native species found were ones which are capable of colonizing disturbed landscapes and competing with the non-native species found.

Overall, the background review and field investigation found constraints to the proposed undertaking within this study area which can be worked around through conscientious

A field survey undertaken by Dougan and Associates as part of this study recorded a total of 7 community polygons representing 3 ELC vegetation community types within the 30.7 ha area surveyed. A total of 62 species were found, 28 (46 %) of which are native to Ontario and 33 (54 %) are introduced. One additional plant was identified to genus level only due to being observed and/or collected at a stage of maturity in which it was not possible to identify them to species level.

No species of federal or provincial significance were identified. Also, no regionally or locally significant species were observed within communities immediately adjacent to the intersection (i.e. north-west and south west quadrants). With that said, the following uncommon or rare species were observed adjacent to the study area:

- *Sandbar Willow (Salix exigua):* One regionally uncommon species in the Regional Municipality was observed in the Cultural Thicket along Roseland Creek corridor.
- *White Spruce (Picea glauca):* One regionally uncommon species in the Regional Municipality of Halton was observed in the Cultural Meadow between South Service Road Link & QEW Ramps, east of Guelph Line. All White Spruce observed had recently been planted along with a number of other trees along the north side of the South Service Road Link.
- *Virginia Creeper (Parthenocissus quinquefolia):* One regionally rare species was found at two locations, including the Cultural Thicket along Roseland Creek corridor, and Cultural Meadow & Cultural Woodland within the QEW N-E inner loop, west of Guelph Line. However, it was noted that the plants found have alternatively been Thicket Creeper (Parthenocissus quinquefolia var. quinquefolia), a common species.

The vegetation communities found on in the study area pose low to medium constraints to any roadway improvements. None of the vegetation community types which were found are designated as significant; further to this no natural vegetation community types were found, only Cultural Meadow, Cultural Thicket, and Cultural Woodland

3.2.2 Tree Inventory

A total of 101 trees were identified and tagged during the field investigation. A total of 22 species of tree were tagged and evaluated. The most abundant species was Siberian Elm (Ulmus pumila), with 16 found, followed closely by Austrian Pine (Pinus nigra), with 15 found. Of the trees tagged, 9 species are native to Halton Region and 13 are non-native, for a total of 29 native and 72 non-native individual trees.

The majority of the trees (51) are between 25 – 45 cm DBH, with 34 trees between 10 – 20 cm DBH and 13 trees 50 cm DBH or greater. Of these trees, 4 are greater than 100 cm DBH. The largest tree tagged was a 120 cm DBH Siberian Elm (Ulmus pumila) in the cloverleaf east of Guelph Line and south of the QEW.

The majority of trees assessed in the study area are of medium health, structure, and preservation priority. In total, 10 trees were defined as "High" preservation priority based on size, species, structure, and health. Efforts should be made to protect and preserve the high preservation priority trees that were found on the study site, including tree protection fencing to be installed 1.0m outside the trees' driplines and left in place throughout the construction process.

3.2.3 Aquatic Community

The study area is located adjacent to the regulatory floodplain of Roseland Creek and Conservation Halton regulates all work taking place which may affect watercourses, wetlands, and the regulated floodplain of these features. The creek itself is underground from north of the QEW to south of Harvester Road and therefore unlikely to be fish habitat.

The Roseland Creek corridor is a medium constraint, as it surrounds the only aquatic feature on the study area and provides some linear cover for wildlife. However, this corridor is low quality habitat due to an abundance of non-native species, the channelization of the Creek and hardening of the Creek bed, and the fragmented nature of the corridor. This corridor should be protected from development, and if any work must occur within or adjacent to it the work should include enhancements to the creek's structure and/or the diversity of the surrounding vegetation.

3.3 Cultural Environment

3.3.1 Stage 1 Archaeological Assessment

AMICK Consultants Limited completed a *Stage 1 Archaeological Assessment* for lands potentially affected by the proposed undertaking. A copy of the report is provided in ***Appendix E.***

Background research indicates the study area has potential for archaeological resources of Native origins based on proximity to a source of potable water in the past, as well as the potential for archaeological resources of Euro-Canadian origins based on proximity to a historic roadway and historic buildings.

As such, a visual inspection of the study area was undertaken in keeping with the archaeological fieldwork standards and guidelines, including weather and lighting conditions. The inspection revealed that the areas of disturbed paved roadways, steep slopes, and concrete sidewalks, had no archaeological potential and therefore required no further archaeological assessment. However, it was determined that the grass covered areas potentially impacted by the proposed undertaking, except those areas of steep slope, will require a Stage 2 Archaeological Assessment in the form of high intensity test pit survey at a 5m interval between transects.

3.3.2 Built Heritage Assessment

The cultural heritage evaluation of the proposed undertaking was conducted by AMICK Consultants Limited in order to identify cultural heritage resources including built heritage resources and cultural heritage landscapes. A copy of the Cultural Heritage Resource Assessment is provided in ***Appendix D.***

A large field stone residence, located in the north-west quadrant of Guelph Line – Queensway Drive / Harvester Road intersection. This structure is known historically as "Locust Lodge". It was built in 1838 and is designated under the Ontario Heritage Act (By-Law 85-1993) and is listed in the Directory of Heritage Properties in Burlington maintained by Heritage Burlington.

3.3.3 Existing Drainage Condition

The Roseland Creek watershed within the study area has a mixed land use, consisting of residential, employment, open areas, commercial and recreational uses. Drainage of the area is facilitated by a major/minor storm system that consists of both open creek reaches and enclosed/overland drainage systems. The open channel system extends from north of

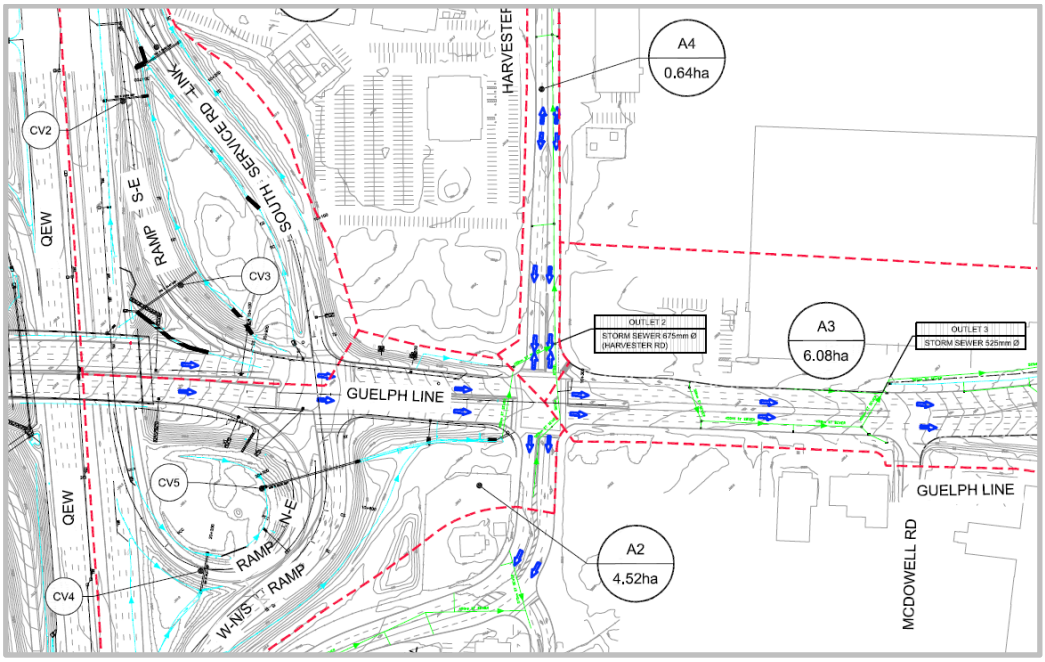
the Queen Elizabeth Highway (QEW), south of Harvester Road and north of Fairview Street and east of Guelph Line to Lake Ontario. The enclosed sections are from the QEW to Harvester Road, CN rail tracks/ Fairview Street to east of Guelph Line at Glencrest Road.

There is no watercourse/creek within the project limits; however storm runoff from the study area ultimately discharges to Roseland Creek. Roseland Creek drains into Lake Ontario. The location of Roseland Creek illustrated in the adjacent map.

The general slope of Guelph Line, within the project limits, is from north to south, with a low point at the CN rail crossing. The road section is fitted with curb and gutter and catch basin inlets that direct drainage to storm sewers. Roadway drainage at the interchange runs off the road surface and drains into existing ditches running along ramps, Queensway Drive and South Service Road (SSR). Corrugated steel pipe (CSP) culverts of approximately 800 mm diameter and varying lengths convey stormwater under ramps, South Service Road and Queensway Drive with eventual discharge to either QEW drainage system or Harvester Road storm sewer.

Exhibit 3-1 illustrates location of culverts, ditches and storm sewers, including associated drainage areas. A detailed assessment of the existing drainage infrastructure is include in the Stormwater Management - Existing Condition Report provided in ***Appendix F.***

Exhibit 3-1: Existing Drainage Plan



The following summarizes the existing drainage and stormwater management conditions that have been investigated in support of Guelph Line EA:

- Five (5) CSP culverts currently existing within the interchange areas south of the QEW. Runoff from S-E quadrant is directed to a 1200 mm diameter QEW storm sewer discharging to Roseland Creek Culvert under QEW. Runoff from S-W quadrant is collected by a 450 mm diameter storm pipe under Guelph Line and discharges to Harvester Road storm sewer;
- The diameter of storm sewers under Guelph Line range from approximately 450mm to 525mm diameters;

- Physical condition of storm sewers is not known and need to be established either by existing/future CCTV/Video inspection report (if available with the City) to determine its structural condition.
- The existing minor system capacity was confirmed and it could be concluded that the existing storm sewers have enough capacities to convey 5-year event flows.
- The major system, in excess of those captured by the minor system, is conveyed overland on Guelph Line. Depth of flooding at the CN Rail sag is to be determined during a 100-yr storm event to ensure that all flow depths on the roads will remain less than 0.3 above the gutter.
- The existing ditches at the interchange will continue to provide stormwater treatments to interchange runoff.
- Existing culverts at the interchange are approximately 800 mm diameter in size. MTO Drainage Design Standards dictates a minimum culvert size of 800 mm must be applicable to all new culverts.

3.4 Utilities

Existing utility information was secured from individual utility companies during the study. A summary of existing utilities is provided below:

- Burlington Hydro (overhead) located along Harvester Road and Guelph Line.
- Hydro Substation located on south side of Harvester Road, mid-way between Guelph Line and Laurentian Drive.
- Hydro One Networks does not have any facilities within the defined project limits.
- Enbridge Gas has infrastructure along Guelph Line and a high pressure gas main feed on Harvester Road just east of the intersection at Guelph Line.
- Cogeco aerial plant along the south side of Harvester Road and both aerial and underground plant along the west side of Guelph Line.
- Bell Canada has existing communication plant within the study area.
- Telus has existing fibre cable on Fairview crossing Guelph Line and connection onto the CN Rail at Guelph Line north of Fairview.
- Allstream has underground route on the west side of Guelph Line (from Harvester Road to Fairview Street) and along Harvester Road on the north side of the street.
- Watermain, Storm and Sanitary services along both Guelph Line and Harvester Road (including 600mm Concrete Pressure Pipe along Guelph Line south of QEW)
- Washburn Second Feed (Feedermain along the east side of Guelph Line, crossing under QEW).

4 Traffic and Transportation

4.1 Existing Road Network

The following provides a description of the corridor network:

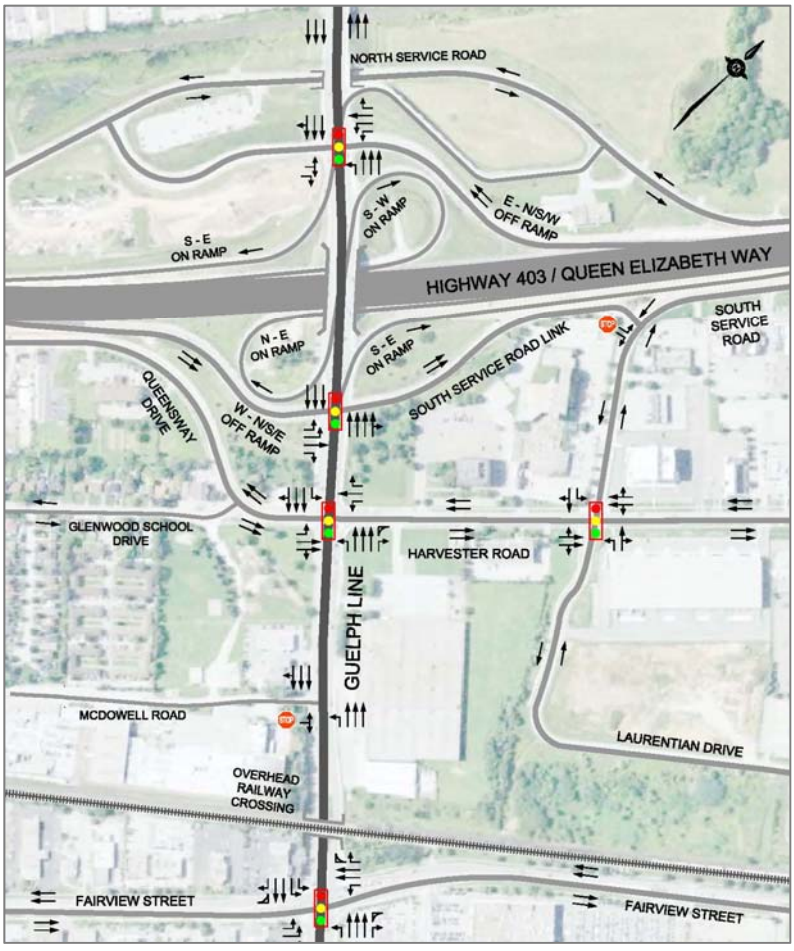
Guelph Line (Regional Road 1) is a north-south major arterial road north of Harvester Road under the jurisdiction of Halton Region. Within the study limits, it is a six-lane urban roadway posted at 60 km/hr. Sidewalks are provided along both sides of Guelph Line. There are current no cycling facilities along the corridor, within the study limits.

Harvester Road / Queensway Drive is an east-west minor arterial road under the jurisdiction of the City of Burlington (60 km/h posted speed). It intersects Guelph Line as a signalized intersection. To the west of Guelph Line, Queensway Drive is generally a two-lane urban roadway with on-road cycling facilities provided through mixture of designated bike lanes and wide traffic lanes with sharrow pavement markings. East of Guelph Line, Harvester Road exists as a four-lane urban roadway with a posted speed limit of 60 km/h.

South Service Road is an east-west collector road under the jurisdiction of the City of Burlington (50 km/h posted speed), which runs parallel to 403/QEW. It intersects Harvester Road approximately 300 metres east of Guelph Line. The **South Service Road Link** is a one-way (eastbound only), two lane road which intersects Guelph Line opposite the 403/QEW eastbound off-ramp and connects to the South Service Road approximately 350m further east.

McDowell Road is a two-lane (private) road on the west side of Guelph Line (posted at 20km/h). It intersects Guelph Line as an unsignalized, stop-controlled intersection that serves as an access road for an industrial development (a gravel road connection to Queensway Park and Glen School Drive is currently in place through private lands).

Exhibit 4-1: Existing Road Network



Existing lane configurations are illustrated in **Exhibit 4-1.**

4.2 Multi-Modal Transportation

4.2.1 Burlington Transit

Burlington transit operates a total of seven bus routes within the study area. Bus Transit services along Guelph Line include Burlington Transit Routes 3, 6, 52, and 302. Burlington Transit Route 81 passes through the study area, however only travels along Guelph Line between Queensway Drive and North Service Road. Harvester Road and Queensway Drive are serviced by Route 50 and 80 in the east west direction. **Exhibits 4-2** and **4-3** present the transit peak period headways and the transit route map, respectively.

Exhibit 4-2: Peak Period Headways of Existing Transit Services

ROUTE	WEEKDAY PEAK HEADYWAY (MINUTES)		
	AM	PM	OTHER
3 - Guelph Downtown	30	30	-
6 - Headon	30	30	-
50 - Burlington South	-	-	60*
52 - Burlington Northwest	-	-	60*
80 - Harvester	30	30	-
81 - North Service	30	30	-
302 - Tansley Woods	-	-	60**

Note: * - denotes late night service only
** - denotes mid-day service only

Exhibit 4-3: Burlington Transit Route Map (March 2019)

4.2.2 Pedestrian and Cycling Facilities

Within the study area, pedestrian sidewalks are present on:

- Both sides of Guelph Line, Harvester Road and Fairview Street;
- The south side of Queensway Drive;

- The east side of South Service Road; and
- The west side of Laurentian Drive.

The signalized intersections including the off-ramps have crosswalks equipped with pedestrian push-buttons. No dedicated cycling facilities exist within the study area.

4.3 Traffic Operations

This section summarizes the analysis of existing and future traffic operations based on a 2023 (5-year) horizon, as well as a 2031 horizon for comparison purposes, and identifies potential interim solutions to improve existing operating conditions at the Guelph Line – Harvester Road intersection.

Photo: Illustrates p.m. peak westbound queues along Harvester Road approaching Guelph Line

4.3.1 Traffic Volumes

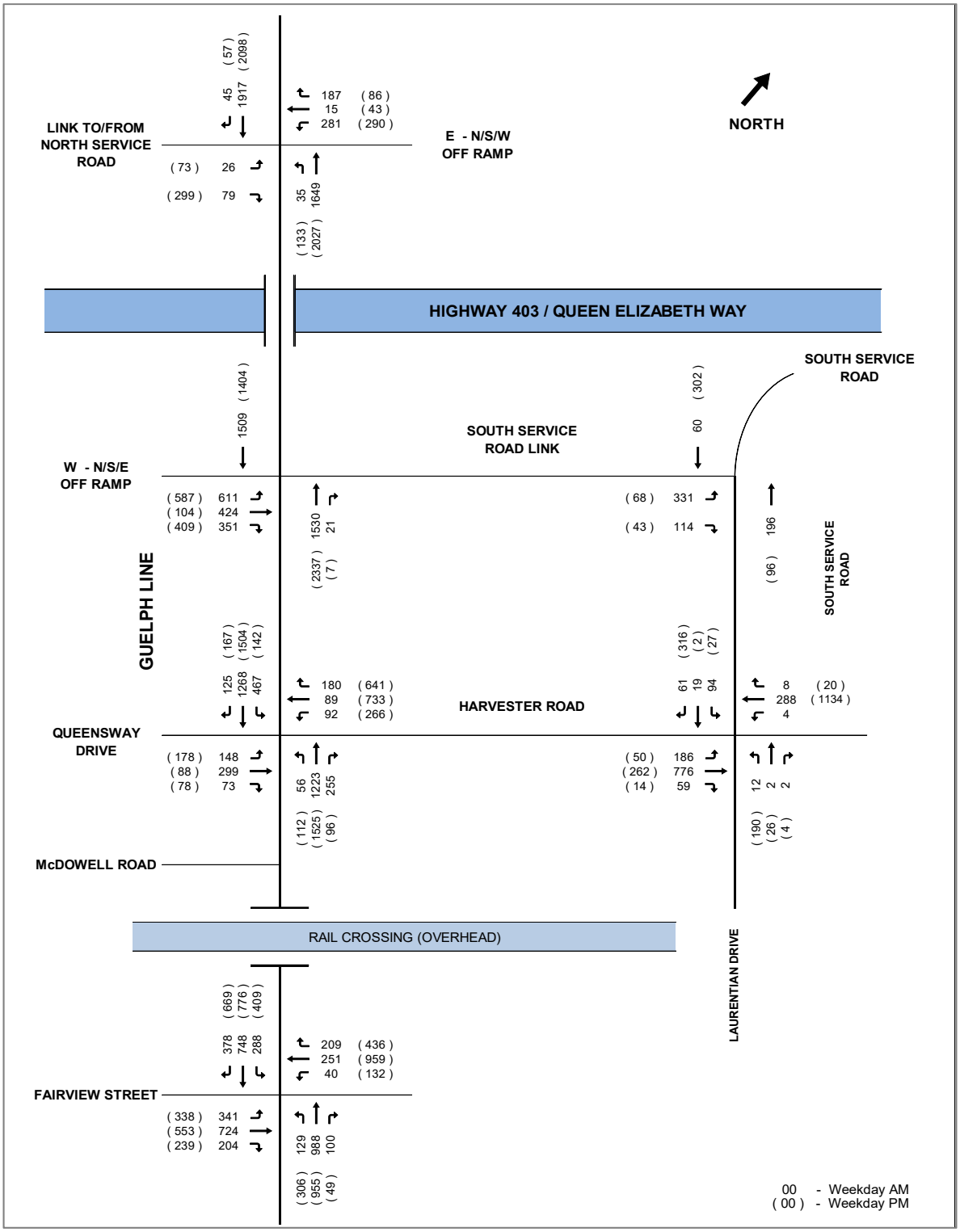
Turning movement counts (TMCs) for the intersections within the study area were provided by the Region of Halton and Ministry of Transportation (MTO).

Based on the TMC and ATR data, traffic volumes along Guelph Line are highest during the weekday PM peak hour.

To resolve inconsistencies in volumes between intersections along Guelph Line (largely due to seasonal fluctuations or variations between count periods), minor adjustments were made to balance 2018 volumes between intersections. Details regarding existing TMCs adjustments are provided in the Traffic and Transportation Assessment included ***Appendix B.***

A summary of the existing balanced traffic volumes is shown in **Exhibit 4-4**.

Exhibit 4-4: Existing Traffic – 2018 (Base Year Traffic – Balanced)



4.3.2 Existing Traffic Operations (2018)

Traffic analysis was conducted for the weekday a.m. and p.m. peak hours to assess intersection operations. A summary of intersection performances under existing conditions is provided in **Exhibit 4-5.**

Operational concerns or deficiencies noted in the studied horizon years are identified and addressed through recommendations on potential mitigation measures and/or operational improvements.

Exhibit 4-5: Synchro: Intersection LOS Analysis, Existing Conditions (2018)

	INTERSECTION	LOS	V/C	DELAY (SEC)	CRITICAL MOVEMENT (V/C ≥0.85)
AM PEAK	**Guelph Line & North Service Road Link / E–N/S/E Off-Ramp ***	C	0.73	20.1	-
	Guelph Line & South Service Road Link / W–N/S/E Off-Ramp	B	0.61	15.6	-
	Guelph Line & Harvester Road / Queensway Drive	C	0.77	32.8	NBT (V/C = 0.88) SBL (V/C = 0.86, QL ≥ 158 m) **
PM PEAK	**Guelph Line & North Service Road/ E–N/S/E Off-Ramp ***	E	0.98	74.1	**EBR (V/C = 1.0)** **SBTR (V/C = 1.16)**
	Guelph Line & South Service Road Link / W–N/S/E Off-Ramp	B	0.70	14.2	EBR (V/C = 0.85, QL ≥ 136 m) **
	Guelph Line & Harvester Road / Queensway Drive	E	1.04	74.3	NBT (V/C = 0.86) SBTR (V/C = 0.91) **WBT (V/C = 1.26)** **WBR (V/C = 1.17)** EBL (V/C = 0.89, QL ≥ 69 m) **

* Guelph Line & North Service Road Link / E–N/S/E Off-Ramp included for information purposes only

** Movement v/c ≥ 0.85, remains below critical threshold for exclusive turn lane (v/c ≥ 0.95) but 95th percentile queue reaches or exceeds available storage.

Based on the existing condition analysis, the p.m. peak is generally more critical than the a.m. peak. The study intersections are currently operating as follows:

- Guelph Line & Harvester Road / Queensway Drive operates at LOS C in the a.m. peak hour. The northbound through (NBT) movement operates at v/c = 0.88 and the southbound left (SBL) turn movement operates at v/c = 0.86. During this period, SBL queues (95th percentile) exceed available storage and extend to/beyond the upstream intersection.
- Guelph Line & Harvester Road / Queensway Drive operates at LOS E (V/C = 1.04) in the p.m. peak hour. The heavy northbound and southbound movements along Guelph Line limit the green time available for the heavy westbound through (WBT) and westbound right (WBR) movements along Harvester Road, which operate over capacity at v/c = 1.26 and v/c = 1.17 respectively. As a result, queues on Harvester Road frequently extend from the Guelph Line intersection to/beyond the South Service Road/ Laurentian Road intersection. The heavy westbound demands exceed the single lane capacity available at the intersection, and limit gap opportunities for the opposing eastbound left (EBL) turn during permitted phasing.

- Guelph Line & South Service Road Link / W-N/S/E Off-ramp operates well during both peak periods. In the p.m. peak, the heavy eastbound right (EBR) turn movement operates at v/c = 0.85 and EBR queues extend the length of the right turn lane. Field observations confirm that despite existing signing on the right shoulder of the QEW W-N/S/E Off-ramp advising drivers destined to Harvester Road to continue straight through the intersection, a significant number of vehicles turn right onto Guelph Line and weave across the southbound lanes to access the southbound left turn at Harvester Road.

In response to public comments that the South Service Road Link was being underutilized as a connection to the South Service Road, and that improvements to increase driver awareness may help in relieving the heavy southbound left demands at Guelph Line at Harvester Road, a review of available signing along the QEW Ramp W-N/S/E and an Origin-Destination (license-plate survey) study was conducted. The findings are outlined in the Traffic and Transportation Assessment in ***Appendix B*** and were incorporated into the development and analysis of design alternatives.

4.3.3 Collision Analysis

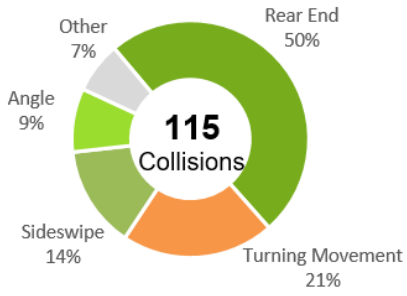
The data was provided by Halton Region and reflects the most recent collisions under the five-year study period (2013-2017).

Guelph Line at Harvester Road

There were a total of 115 reported collisions that occurred at Guelph Line at Harvester Road for the five-year period. **Exhibit 4-6** presents the collision distributions by initial impact type for this intersection. The most prominent collision types were rear-end (50%), followed by turning (21%), sideswipe (14%), angle (9%) and other collisions (7%).

Exhibit 4-6: Guelph Line at Harvester Road - Collisions (2013-2017)

COLLISION TYPE	FREQUENCY
Rear End	57
Turning	24
Sideswipe	16
Angle	10
Other	8



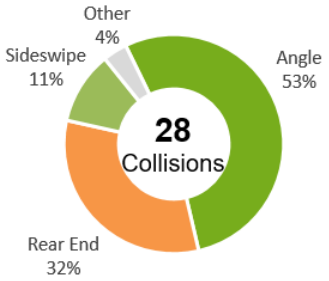
The hourly collision distribution follows a typical commuter pattern, with higher collisions during the a.m. and p.m. peak hours. The collision data show a slightly earlier p.m. peak period which makes sense given the commuters making their way to the QEW.

Guelph Line at South Service Road Link

There were a total of 28 reported collisions that occurred at Guelph Line at South Service Road Link. This intersection serves as the off-ramp for QEW on the west and as a link connection to various developments to the east. **Exhibit 4-7** shows the collision distributions by initial impact type for this intersection. The most common impact type was angle collisions (53%) followed by rear-end (32%), sideswipe (11%), and other collisions (4%).

Exhibit 4-7: Guelph Line at South Service Road Link – Collisions (2013-2017)

COLLISION TYPE	FREQUENCY
Angle	15
Rear End	9
Sideswipe	3
Other	1



4.3.4 Summary of Existing Traffic Conditions

The intersection of Guelph Line and Harvester Road operates over capacity (LOS E, overall V/C = 1.04) during the p.m. peak; and although operating below capacity during the a.m. peak operation still occasionally results in back-ups along Guelph Line.

During the a.m. peak hour, the heavy southbound through and left volumes often exceed the intersection spacing (95 m) available between Harvester Road and the upstream intersection (i.e. Guelph Line & QEW Eastbound Off-Ramp / SSR-Link). Given the existing single SBL lane configuration, this space is only able to accommodate 50th percentile of the through and left turn queue lengths during this period.

During the p.m. peak hour, the northbound and southbound movements on Guelph Line also operate above capacity and contribute to excessive queuing along Guelph Line and Harvester Road. The most critical movements during this period are the westbound through and right turn movements along Harvester Road, both of which exceed capacity and commonly result in queues extending to/beyond the upstream intersection (i.e. Harvester Road & South Service Road / Laurentian Drive).

Given the above, there is a need to undertake intersection improvements to accommodate existing traffic demands. These are independent of any improvements required to accommodate local development which will be addressed through the "QEW Prosperity Corridor Block Planning Process and Implementation Study" which is expected to provide guidance on longer term solutions for future growth of the area.

4.4 Future Traffic Conditions

To establish future background growth projections for 2023 and 2031, historical growth along the corridor was considered. Based on a review of corridor volumes, as reflected in **Exhibit 4-8** and further illustrated in **Exhibit 4-9**, there has been little to no change in volumes since year 2011, suggesting that growth in the study area over the last 5-6 years has been relatively stable.

As a result, a 0.5% per year (compounded) growth rate was considered appropriate and uniformly applied to turning all movements at all intersections within the study area, with the exception of the QEW Off-ramps (Ramp W-N/S/E & Ramp E-N/S/W) where a background growth rate of 2.0% per year (compounded) was applied to existing volumes to establish projects for years 2023 and 2031, as advised by MTO.

The estimated future background traffic volumes for the years 2023 and 2031 are shown in **Exhibit 4-10** and **Exhibit 4-11** respectively.

Exhibit 4-8: Historic Traffic Counts along Guelph Line, 2011 – 2017

LOCATION	COUNT DATE	TWO- WAY VOLUMES				85TH PERCENTILE SPEED
		24 HR	AM PEAK HR	PM PEAK HR	8 HR	
Section 1	7-Sep-17	40,480	2,362	3,310	21,855	58
Section 2	30-Nov-17	40,022	2,417	2,900	21,431	66
Section 1	21-Apr-15	41,238	2,351	3,604	22,921	63
Section 2	21-Apr-15	36,635	2,380	2,870	20,424	70
Section 1	18-Apr-13	42,709	2,252	3,688	23,442	65
Section 2	18-Apr-13	39,110	2,354	3,054	21,451	67
Section 1	15-Apr-11	40,783	2,098	3,578	22,179	60
Section 2	15-Apr-11	39,660	2,300	2,968	21,282	69

Notes: Section 1: Guelph Line - Harvester Road to SSR Link (ATR Count Station 100100)
Section 2: Guelph Line - Fairview Street to McDowell Road (ATR Count Station 100099)
Posted Speed = 60km/h

Exhibit 4-9: Historic Traffic Counts along Guelph Line, 2011 – 2017 (Two-Way)

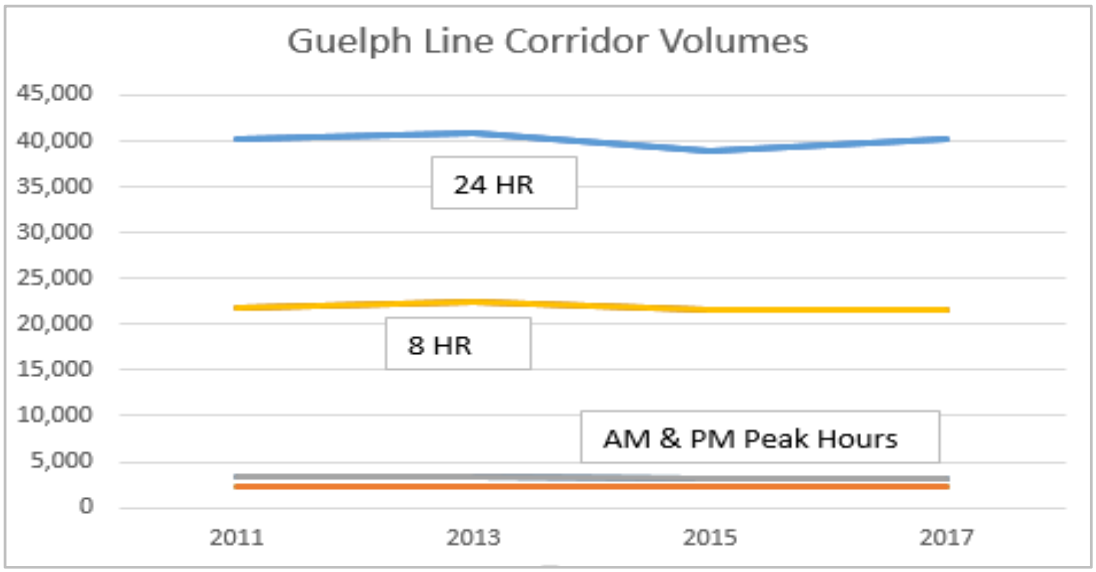


Exhibit 4-10: Future Background Traffic – Horizon Year 2023

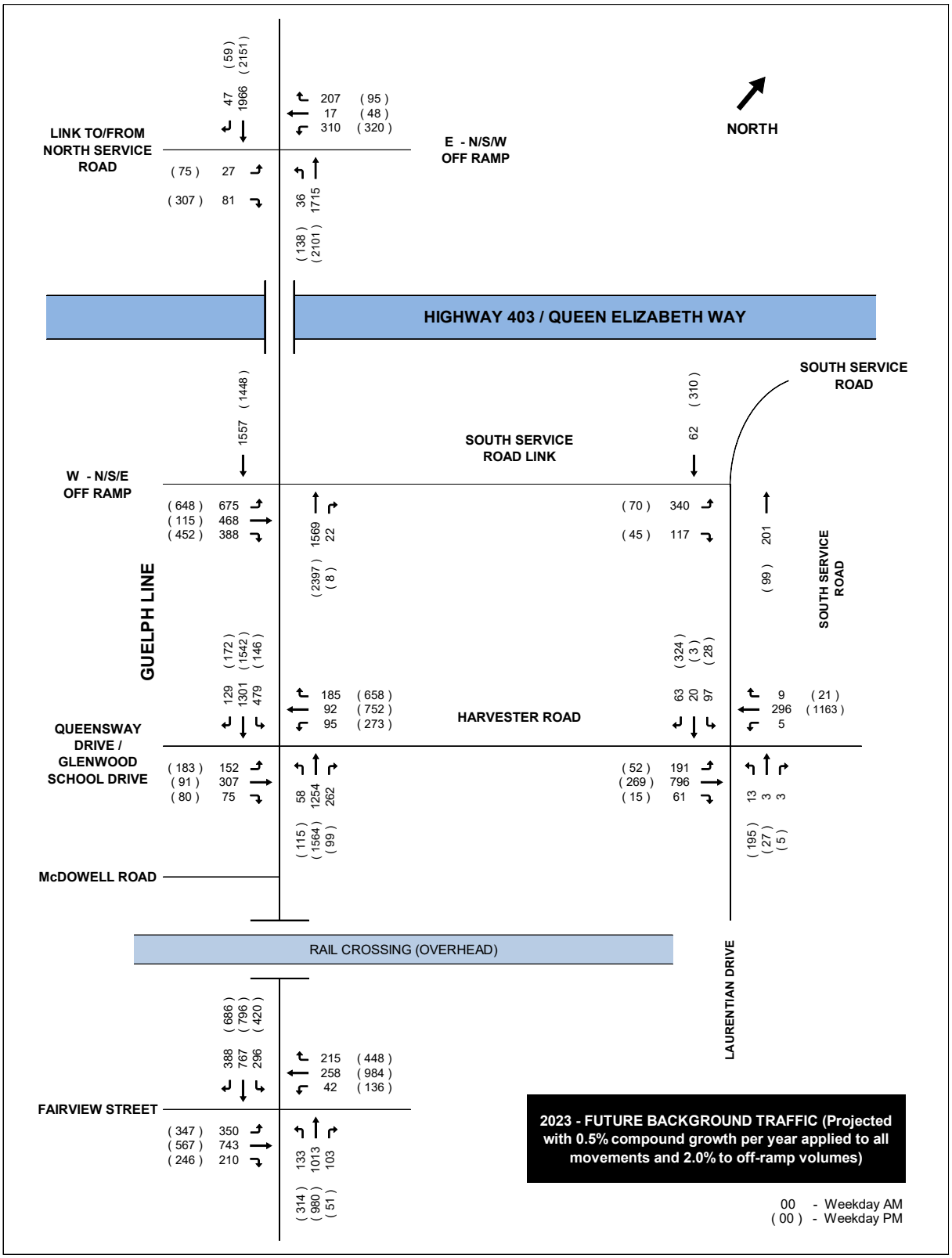
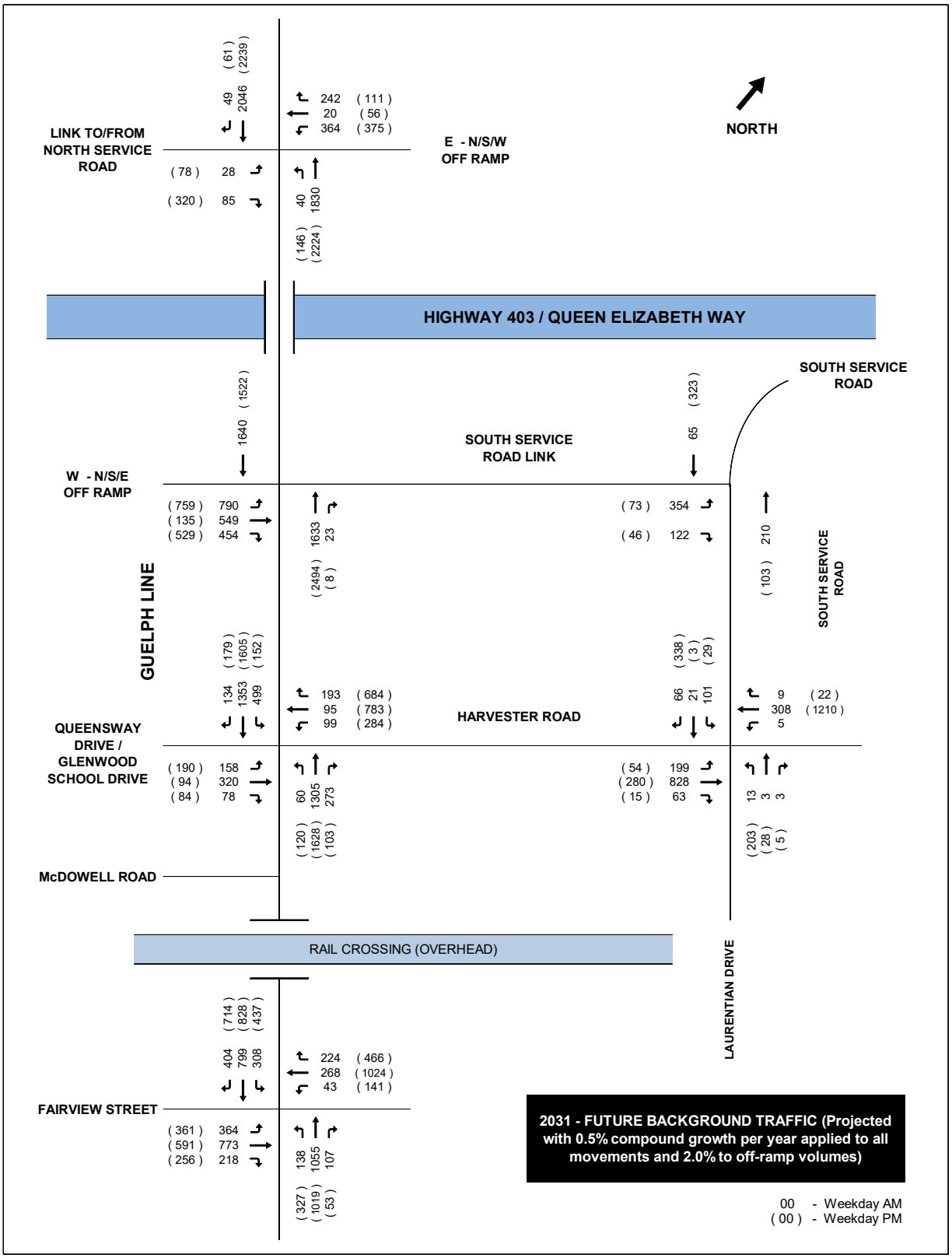


Exhibit 4-11: Future Background Traffic – Horizon Year 2031



4.5 Future Background Operations

Based on the estimated background traffic volumes for year 2023 and 2031 horizons (illustrated in **Exhibits 4-10** and **4-11**), the study intersections are expected to operate as follows:

Year 2023

- Guelph Line & Harvester Road / Queensway Drive intersection is expected to operate at LOS C (v/c = 0.79) in the a.m. peak hour. There continues to be heavy NBT and SBL opposing movements, which compete for available green time. These movements remain below capacity, however 95th percentile SBL queues are expected to continue to exceed the available left turn lane length and extend to/beyond the South Service Road Link / W-N/S/E Off-Ramp.
- During the p.m. peak hour, the Guelph Line & Harvester Road / Queensway Drive intersection is expected to operate at LOS E (v/c = 1.07). The overall traffic demands are higher and the WBT and WBR movements along Harvester Road operate over capacity, with 95th percentile queues extending past the South Service Road.
- Guelph Line & South Service Road Link / W-N/S/E Off-Ramp is expected to operate well during both peak periods (i.e. LOS B, v/c = 0.65 during the a.m. peak; and LOS B, v/c = 0.75 during the p.m. peak hour). In the p.m. peak, the heavy eastbound right (EBR) turn movement operates at v/c = 0.91 and 95th percentile queues are expected to reach/exceed the length of the existing right turn lane.

A summary of the intersection performances for the future background condition (2023 and 2031) is shown in **Exhibit 4-12** and **4-13.**

Exhibit 4-12: Synchro: Intersection LOS Analysis, Future Background Conditions (2023)

	INTERSECTION	LOS	V/C	DELAY (SEC)	CRITICAL MOVEMENT (V/C ≥0.85)
AM PEAK	**Guelph Line & North Service Road Link / E–N/S/E Off-Ramp ***	C	0.75	23.3	--
	Guelph Line & South Service Road Link / W–N/S/E Off-ramp	B	0.65	17.0	--
	Guelph Line & Harvester Road / Queensway Drive	C	0.79	34.3	NBT (V/C = 0.90) SBL (V/C = 0.89, QL ≥ 166 m) **
PM PEAK	**Guelph Line & North Service Road Link / E–N/S/E Off-Ramp ***	F	1.01	82.7	**EBR (V/C = 1.03)** NBT (V/C = 0.85) **SBTR (V/C = 1.21)**
	Guelph Line & South Service Road Link / W–N/S/E Off-ramp	B	0.75	15.6	EBR (V/C = 0.91, QL ≥ 161 m) **
	Guelph Line & Harvester Road / Queensway Drive	E	1.07	79.1	NBT (V/C = 0.88) SBTR (V/C = 0.93) **WBT (V/C = 1.29)** **WBR (V/C = 1.21)** EBL (V/C = 0.92, QL ≥ 72 m) **

* Guelph Line & North Service Road Link / E–N/S/E Off-Ramp included for information purposes only

** Movement v/c ≥ 0.85, remains below critical threshold for exclusive turn lane (v/c ≥ 0.95) but 95th percentile queue exceeds available storage.

Year 2031

- By year 2031, traffic operations at the Guelph Line & Harvester Road / Queensway Drive intersection will slightly worsen and the intersection is expected to operate at LOS D (v/c = 0.82) in the a.m. peak hour and LOS F (v/c = 1.11) in the p.m. peak hour. Overall intersection delays are expected to increase by 5-10%. Other than the WBT and WBR movements during the p.m. peak hour, all movements will remain below capacity.
- Guelph Line & South Service Road Link / W-N/S/E Off-Ramp is expected to continue to operate at LOS B (v/c = 0.72 and 0.82 during the a.m. and p.m. peak hours respectively).

Exhibit 4-13: Synchro: Intersection LOS Analysis, Future Background Conditions (2031)

	INTERSECTION	LOS	V/C	DELAY (SEC)	CRITICAL MOVEMENT (V/C ≥0.85)
AM PEAK	**Guelph Line & North Service Road Link / E–N/S/E Off-Ramp ***	C	0.80	27.9	--
	Guelph Line & South Service Road Link / W–N/S/E Off-Ramp	B	0.72	19.3	--
	Guelph Line & Harvester Road / Queensway Drive	D	0.82	35.8	NBT (V/C = 0.93) SBL (V/C = 0.94, QL ≥ 179 m) **
PM PEAK	**Guelph Line & North Service Road Link / E–N/S/E Off-Ramp ***	F	1.07	96.3	**EBR (V/C = 1.07)** NBT (V/C = 0.91) **SBTR (V/C = 1.28)**
	Guelph Line & South Service Road Link / W–N/S/E Off-Ramp	B	0.82	20.2	**EBR (V/C = 1.04, QL ≥ 204 m)**
	Guelph Line & Harvester Road / Queensway Drive	F	1.11	87.3	NBT (V/C = 0.92) SBTR (V/C = 0.97) **WBT (V/C = 1.34)** **WBR (V/C = 1.27)** EBL (V/C = 0.95, QL ≥ 76 m)

* Guelph Line & North Service Road Link / E–N/S/E Off-Ramp included for information purposes only

** Movement v/c ≥ 0.85, remains below critical threshold for exclusive turn lane (v/c ≥ 0.95) but 95th percentile queue exceeds available storage.

The results of the traffic analysis confirm that roadway improvements will be required to accommodate background growth and provide improved traffic operations at the intersection of Guelph Line and Harvester Road/Queensway Drive within the 2023 (5 year) horizon.

5 Alternative Planning Solutions

5.1 Alternative Planning Solutions

There are existing capacity constraints at the intersection of Guelph Line and Harvester Road/Queensway Drive and localized improvements will be necessary to improve the operation of the intersection. Alternative planning solutions are different ways to solve the problem which is being addressed at part of this study (as outlined in Sections 2.1 and 4.3.4). The alternative planning solutions evaluated for this MCEA study are summarized below.

Do Nothing

As required by the MCEA process, the Do Nothing option was considered and evaluated against the other options. This alternative was considered to provide a baseline upon which other alternatives were evaluated. It does not include improvements or consideration for measures to address identified problems or opportunities.

Limit Development

This alternative proposes land use changes that limit adjacent development on lands within the City of Burlington, to reduce future growth and demands at the intersection. It does not address the existing need for improvements to accommodate existing traffic demands.

Transportation Demand Management Measures

Transportation Demand Management (TDM) initiatives would help to alleviate some of the impacts of traffic congestion by encouraging carpooling and/or a shift in travel outside peak periods/work at home. TDM initiatives may help to reduce vehicle demand, while forming an important element in the Region's overall transportation plan, however are not considered a standalone solution for the Guelph Line and Harvester Road/Queensway Drive intersection.

Improved Transit and Active Transportation

This alternative proposes initiatives to support transit and provide facilities for active transportation use to accommodate pedestrians and cyclists. Although this alternative will help to alleviate some of the impacts of traffic congestion by encouraging a shift in the mode of travel (e.g., shift to transit, bike lanes, etc.) these measures are not considered a standalone solution for the Guelph Line – Harvester Road intersection.

Improvements to Other Roadways

This alternative solution considered diversion of traffic that is currently using Guelph Line or Harvester Road to other parallel corridors. Shifting travel from Guelph Line to adjacent corridors is expected to involve widening roadways in and around the immediate area, and potential increase out of the way. Since there is limited excess capacity available to accommodate the diverted traffic without creating additional operational and roadway deficiencies on these adjacent corridors, it is not considered a standalone solution for the Guelph Line and Harvester Road/Queensway Drive intersection.

Intersection and Operational Improvements

This alternative includes minor geometric improvements to the Guelph Line and Harvester Road/Queensway Drive intersection to resolve existing operational/traffic safety needs. It also includes other tools (e.g., traffic signal and signing modifications) to improve traffic operations and help to improve traffic flow at the intersection.

5.2 Evaluation Criteria

The following evaluation criteria were used in the screening of alternative solutions and evaluation of operational solutions:

- ***Socio-Economic Environment*** – having regard for residents and businesses impacts, including driveways/access and property requirements;
- ***Cultural Heritage*** – having regard for protecting historical/archaeological remains and built heritage and cultural landscape features;
- ***Natural Environment*** – having regard for protecting the natural and physical components of the environment including natural and/or environmentally sensitive areas;
- ***Transportation*** – having regard for level of traffic service, operations, travel delay, traffic safety, and emergency response time; Technical / Engineering – having regard for utility relocations, drainage and storm water management requirements, and constructability;
- ***Cost*** – having regard for all costs associated with alternatives, including construction, maintenance, property, etc.

The evaluation criteria were applied using a reasoned argument that enabled the identification of the most reasonable operational solution that offered the greatest improvement to the existing intersection operations.

5.3 Preferred Planning Solution

The Preferred Planning Solution to improve the existing capacity at the intersection of Guelph Line and Harvester Road/Queensway Drive, is to implement intersection and operational improvements as part of this MCEA study. This alternative best addresses the primary objective of the study, while providing the least amount of environmental impacts. Refer to **Exhibit 5-1** Evaluation of Alternatives Solutions.

Additional opportunities to promote Transportation Demand Management (TDM) measures, transit and active transportation (walking, cycling) initiatives in support of the Region's vision, as well as road network improvements are best addressed as an element within the overall transportation improvement strategy for Halton Region and City of Burlington.

Exhibit 5-1: Evaluation of Alternative Solutions

Alternative	Evaluation Criteria Assessment	Recommendation
Do Nothing	• Does not address existing problem at intersection. • No impacts to existing conditions.	• Carried forward for comparison purposes only.
Limit Development	• Future development to be addressed through separate study. • No impacts to existing conditions.	• Not carried forward.
Travel Demand Management Measures	• On its own, does not address the problem at intersection. • Part of the overall transportation strategy • No impacts to existing conditions.	• Carried forward as part of overall transportation strategy.
Improved Transit Service and Active Transportation	• On its own, does not address the problem at intersection. • Part of overall transportation strategy • No impacts to existing conditions.	• Carried forward as part of overall transportation strategy.
Improvements to Other Roadways	• On its own, does not address the problem at intersection. • Part of overall transportation strategy. • Impacts to existing conditions addressed through separate study.	• Carried forward as part of overall transportation strategy.
Intersection & Operational Improvements	• Addresses existing problem at intersection. • Minimal impacts to existing conditions, to be mitigated through detailed design.	• Carried forward as overall solution for this Municipal Class EA Study.

6 Development of the Operational Solutions

6.1 Identification of Operational Solutions

The transportation analysis documented in Section 4 (Traffic and Transportation) and recommendations of Section 5 (Alternative Planning Solutions) support the need for intersection improvements to improve traffic operations at the intersection of Guelph Line and Harvester Road/Queensway Drive. A range of operational solutions were considered for localized intersection improvements, including one or more of the following elements:

To address AM peak demands:

- Dual southbound left-turn lane at Harvester Road
- Add southbound left-turn lane at South Service Road Link (SSR Link)

To address PM peak demands:

- Dual westbound right-turn lane on Harvester Road
- Additional westbound through lane on Harvester Road

Using the above noted elements, the following five Alternative Operational Solutions were developed to improve existing traffic operations (refer to **Exhibit 6-1**):

- **Alternative I** – Provide a dual SBL at Harvester Road and add a WBT on Harvester Road;
- **Alternative II** – Add a SBL at the SSR Link and a WBT on Harvester Road;
- **Alternative III** – Add a SBL at the SSR Link and a SBL and WBT at Harvester Road;
- **Alternative IV** – Add both a dual SBL and add WBT and second (dual) WBR at Harvester Road; and
- **Alternative V** – Add WBT on Harvester Road;

These alternatives are illustrated in detail in **Exhibits 6-2** to **6-6**.

Exhibit 6-1: Description of Alternative Operational Solutions

SCENARIO	HARVESTER ROAD / GUELPH LINE INTERSECTION			GUELPH LINE /SOUTH SERVICE ROAD LINK
	DUAL SBL	DUAL WBR	WBT	NEW SBL
Alternative I	√	-	√	-
Alternative II	-	-	√	√
Alternative III	√	-	√	√
Alternative IV	√	√	√	-
Alternative V	-	-	√	-

Exhibit 6-2: Alternative I

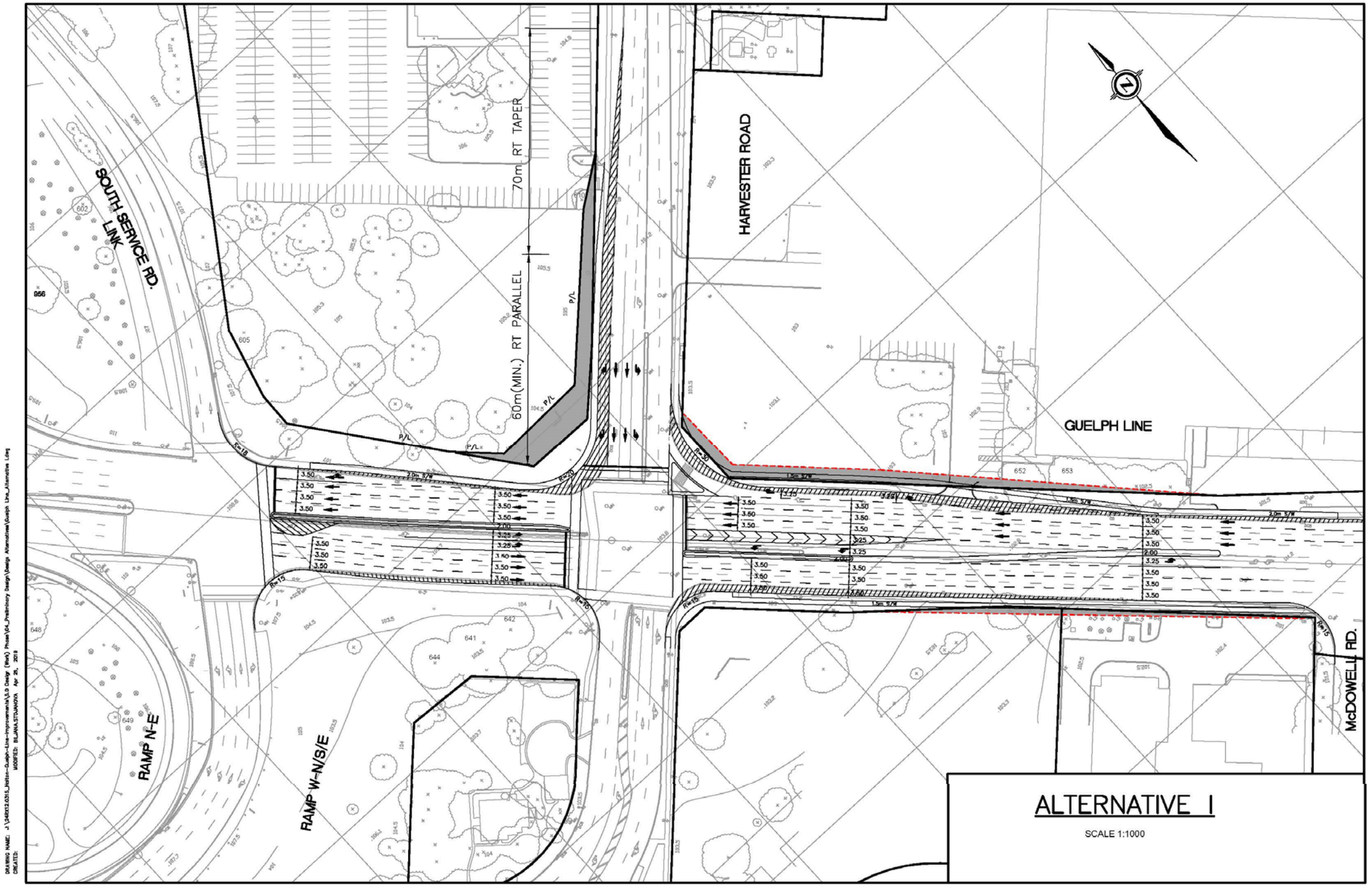


Exhibit 6-3: Alternative II

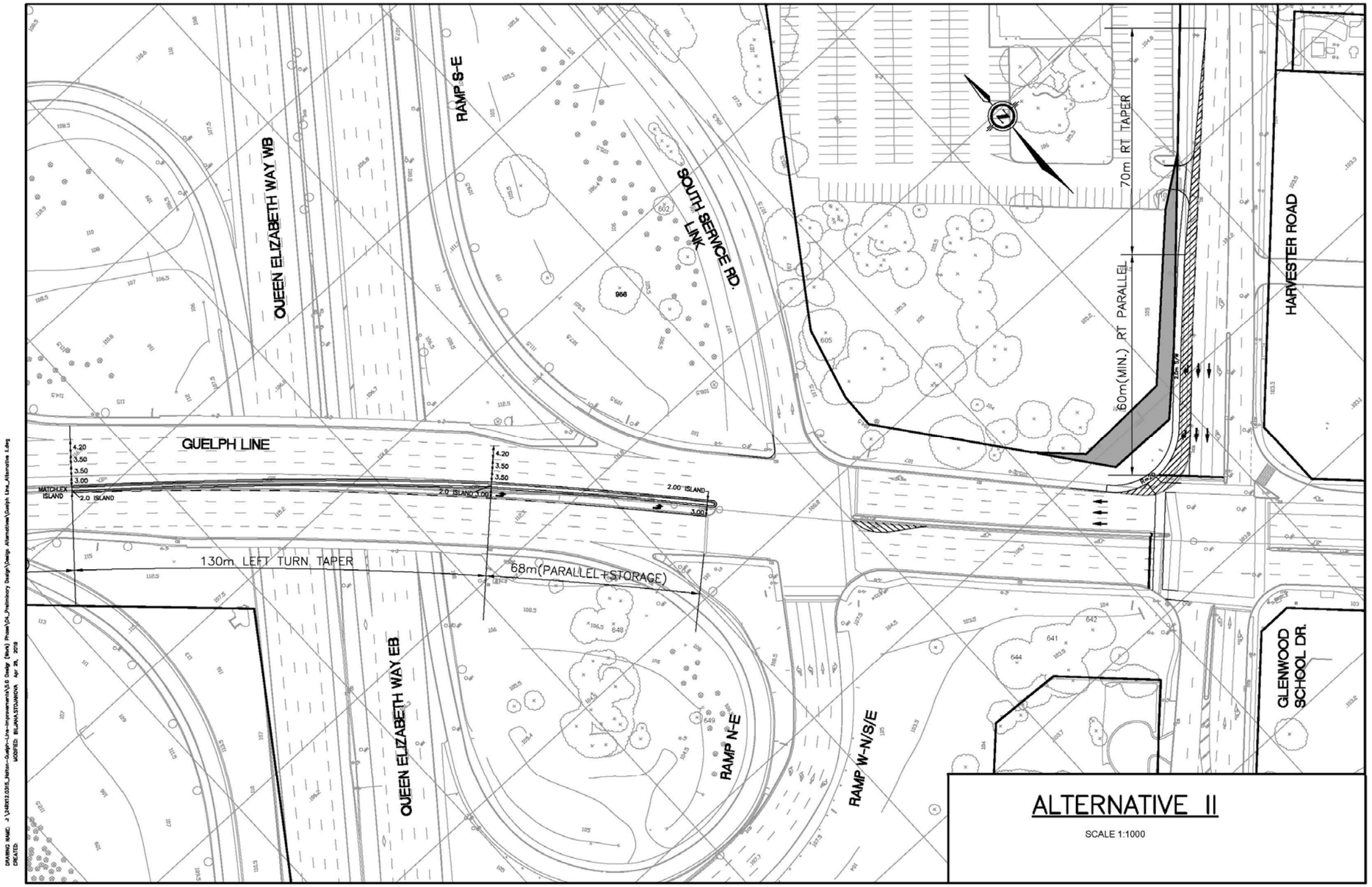


Exhibit 6-4: Alternative III

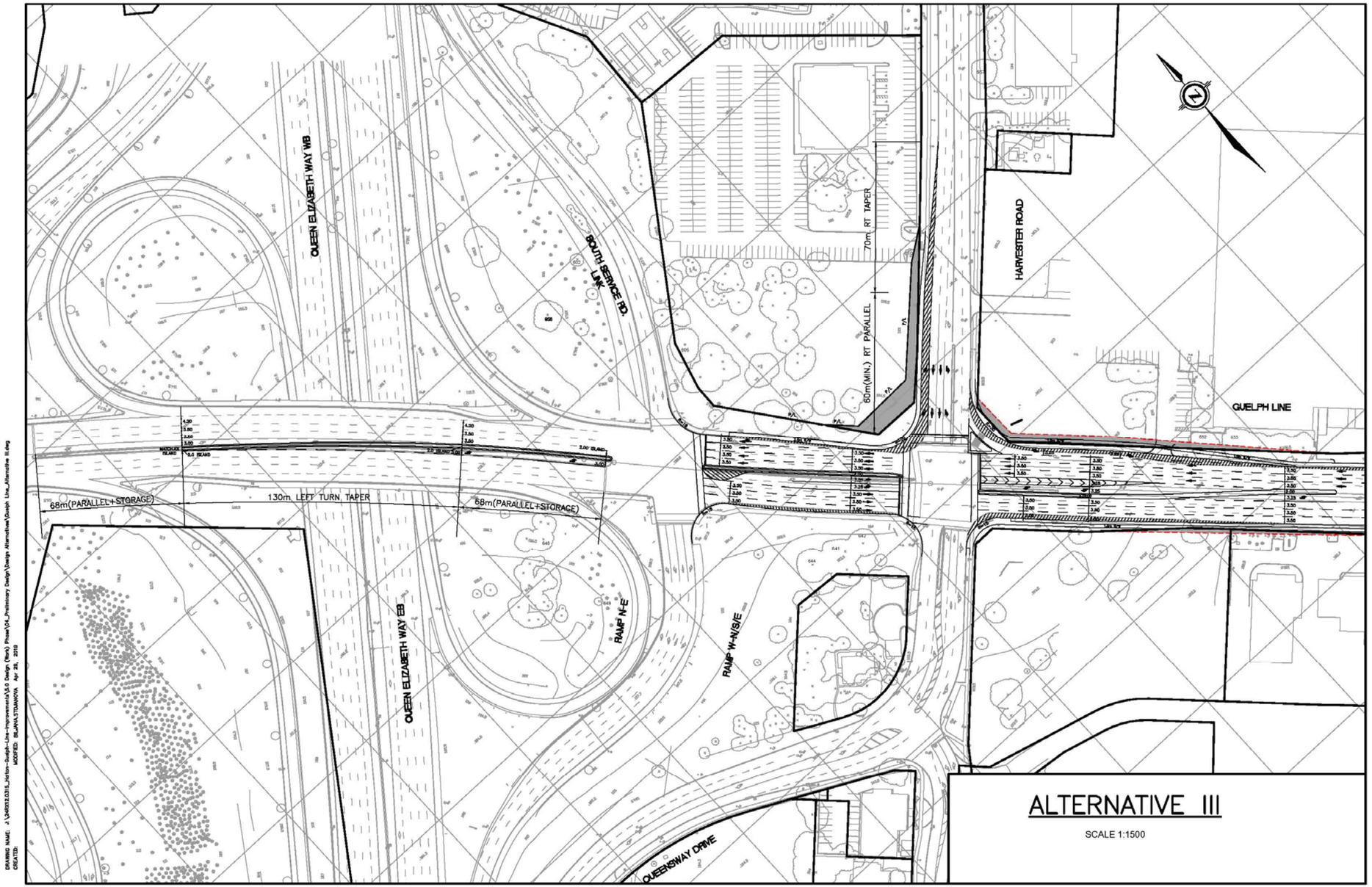


Exhibit 6-5: Alternative IV

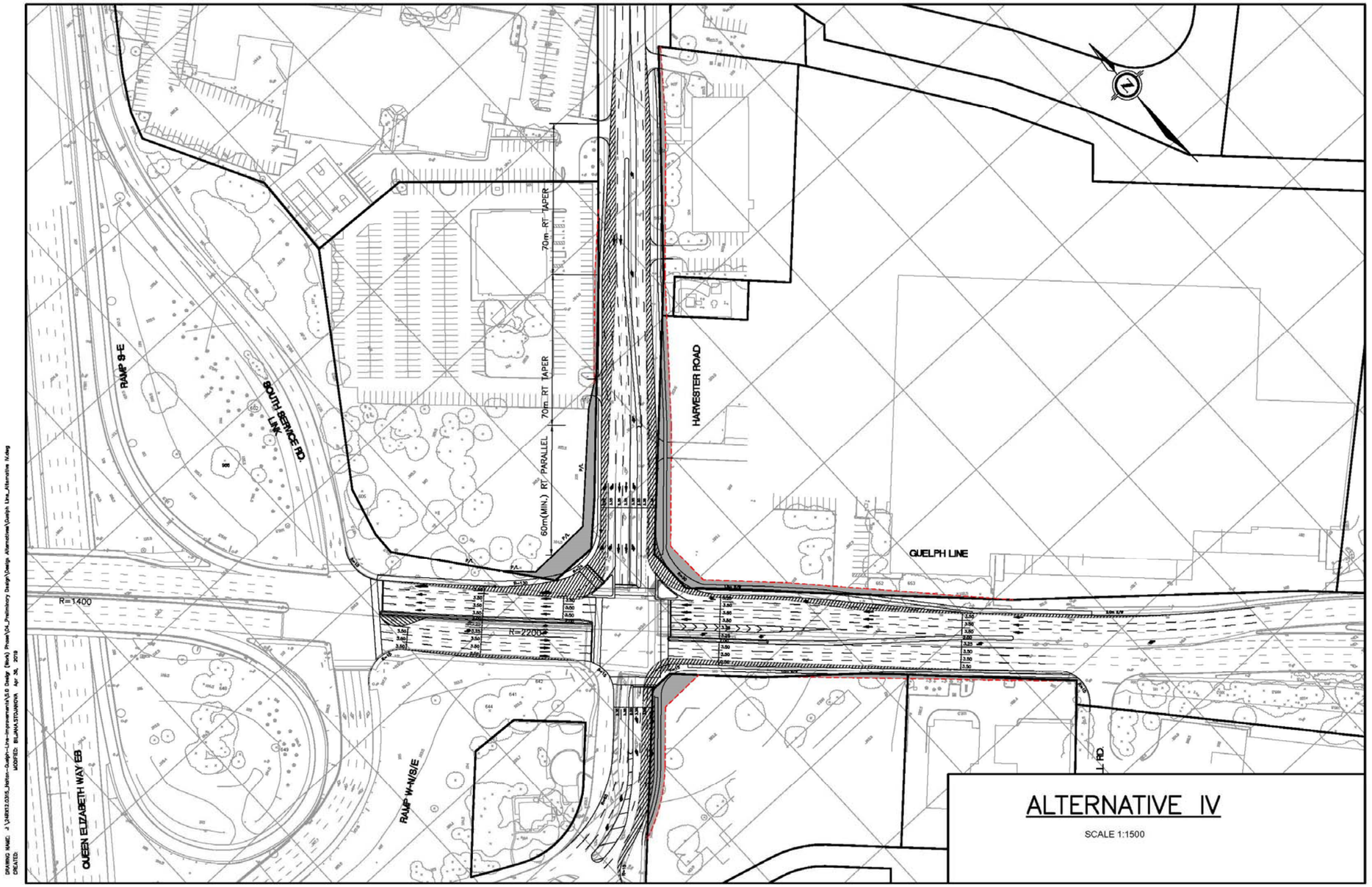
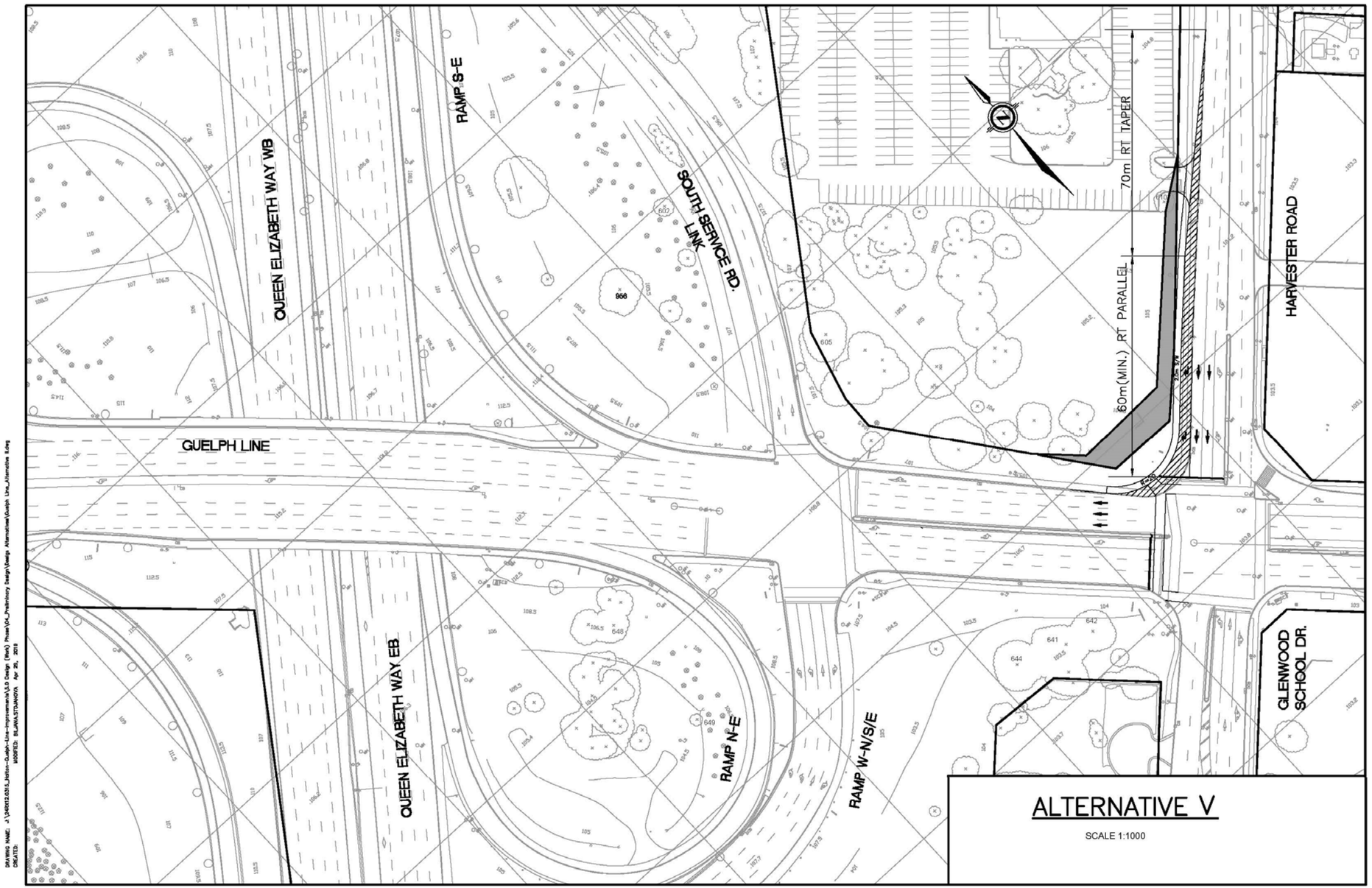


Exhibit 6-6: Alternative V



6.2 Assessment of Alternatives

A detailed traffic operations review was undertaken for the Alternatives and is documented in the Traffic Report in ***Appendix B*****.** A summary is provided below.

- **Alternatives I, II, III, and V** will all improve overall intersection operations during the p.m. peak period. The addition of the WBT lane will significantly improve operations at the intersection (improving from LOS E to LOS D and reducing the overall intersection V/C ratio from 1.07 to between 0.98 and 0.94). As a result of the improvements, queue lengths on the westbound approach will be reduced, improving access to the WBR lane. The WBR (single) will operate under permissive phasing with protected overlap.
- **Alternative I** has several key movements operating at/over capacity during PM peak hour. The introduction of second SBL will provide additional storage and accommodate left turn queues (i.e. QL > 75 m per lane), however dual the SBL is more restrictive from a signal phasing perspective and less desirable during PM and off-peak periods. Furthermore, the dual left alternative would be more appropriately assessed through the QEW Prosperity Corridor Block Planning Process and Implementation Study (i.e. potential options currently being considered include eliminating left turn lanes at adjacent municipal intersections to the interchange). During the AM peak hour, SBL queues (95th percentile) at Harvester Road will exceed storage available and on occasion extend to/beyond the upstream intersection (i.e. up to 70m beyond the intersection by 2023. For these reasons, **Alternative I is undesirable.**
- **Alternative II** has all movements operating at/under capacity during 2023 conditions. Alternative II provides for a new SBL at the Ramp W-N/S/E (SSR Link) and therefore will reduce the SBL storage demands between the Harvester Road and Ramp W-N/S/E intersections. However, there are constructability concerns related to constraints to the left turn lane width across the QEW structure (3.0m width) and potential impacts to the longitudinal expansion joint on the bridge. For these reasons, **Alternative II is undesirable.**
- **Alternative III** combines the improvements of Alternatives I and II and results in the largest improvement to operations during the a.m. peak hour with all movements operating at/under capacity during 2023 conditions. However, there are constructability concerns related to constraints to the left turn lane width across the QEW structure (3.0m width) and potential impacts to the longitudinal expansion joint on the bridge. For these reasons, **Alternative III is undesirable.**
- **Alternative IV** will operate at LOS D and V/C ratio 0.85 during the p.m. peak period. This alternative provides additional westbound capacity with additional through lane and dedicated (dual) WBR; however the dual WBR is restrictive from a signal phasing and pedestrian crossing perspective. A WBR also introduces potential weaving concerns on Guelph Line. This alternative requires that the EBL at Harvester Road be restricted to protect phase only and the pedestrian crossing be eliminated from the north side of the Guelph Line and Harvester Road/Queensway intersection. For the above reasons, **Alternative IV is undesirable**.
- **Alternative V** has all movements operating at/under capacity near during 2023 conditions, with westbound right turn operating at capacity during the PM peak hour. Alternative V maintains a single SBL at Harvester Road with protected permissive phasing (operates at v/c = 0.85 during AM peak hour). Proposed signal timing

phasing changes will also improve traffic flow at the intersection. Alternative V allows for improved traffic operations at the intersection while avoiding constructability issues associated with Alternative II and Alternative III. **For the above reasons, Alternative V is a desirable operational solution.**

6.3 Preferred Operational Solution

Based on an evaluation of the Alternatives, **Alternative V** was selected as the preferred operational solution to improve capacity at the intersection of Guelph Line and Harvester Road/Queensway Drive.

- The proposed changes will significantly improve operations during the p.m. peak and ensure all movements operate at or below capacity (improving from LOS E to LOS D and reducing the overall intersection V/C ratio from 1.07 to 0.94). Queue lengths on the westbound approach will also be reduced;
- A single westbound right turn lane which can operate under permissive phasing with (protected) overlap. The westbound through and right turn movements are expected to operate at v/c = 0.90 and v/c = 1.00 respectively during the p.m. peak.
- Desirable from pedestrian accessibility perspective, as it maintains the pedestrian crossing on the north side of the Guelph Line and Harvester Road/Queensway Drive intersection;
- Proposed improvements can be accommodated within the existing right-of-way along Guelph Line and minimizes property requirements along Harvester Road. There are no proposed property requirements on Queensway Drive.

Although operating under capacity, the heavy southbound left turn movements along Guelph Line will continue to be critical (95th percentile queue lengths exceeding available storage length). Therefore, in addition to the above, it is recommended signal timing at the Guelph Line and Harvester Road/Queensway intersection be further reviewed and, if possible, adjusted to increase SBL green time and minimize the queue between intersections.

- For example: Add 10 sec (+18 protected – 8 sec permissive) during AM peak hour by making the following adjustments:
  - Exclude NBL protected phase during AM peak (apply permissive phasing only).
  - Reduce vehicle green time for opposing EB/WB phase from 8 sec (min) to 5 sec (min); no change to amber and red times
  - Reduce pedestrian 'Walk' time from 8 &12 sec (min) to 5 sec (min); no change to 16 sec 'Don't Walk', amber and red times

With these modifications, the 95th percentile SBL queue is expected to be maintained between intersections in the short-term (i.e. 2023).

Exhibit 6-7: Alternative V - Traffic Operations Summary (2023)

	INTERSECTION	LOS	V/C	DELAY (SEC)	CRITICAL MOVEMENT (V/C ≥0.85)
2023 BACKGROUND CONDITIONS (DO NOTHING)					
AM PEAK	**Guelph Line & North Service Road Link / E–N/S/E Off-Ramp ***	C	0.75	22.1	--
	Guelph Line & South Service Road Link / W–N/S/E Off-Ramp	B	0.65	16.8	--
	Guelph Line & Harvester Road / Queensway Drive	C	0.79	34.1	NBT (V/C = 0.90) SBL (V/C = 0.89, QL ≥ 166 m)
PM PEAK	**Guelph Line & North Service Road Link / E–N/S/E Off-Ramp ***	F	1.01	82.7	**EBR (V/C = 1.03)** NBT (V/C = 0.85) **SBTR (V/C = 1.21)**
	Guelph Line & South Service Road Link / W–N/S/E Off-Ramp	B	0.75	15.6	EBR (V/C = 0.91, QL ≥ 161 m)
	Guelph Line & Harvester Road / Queensway Drive	E	1.07	79.1	NBT (V/C = 0.88) SBTR (V/C = 0.93) **WBT (V/C = 1.29)** **WBR (V/C = 1.21)** EBL (V/C = 0.92, QL ≥ 72 m) **
RECOMMENDED DESIGN ALTERNATIVE V					
AM PEAK	**Guelph Line & North Service Road Link / E–N/S/E Off-Ramp ***	C	*0.75*	*22.9*	--
	Guelph Line & South Service Road Link / W–N/S/E Off-Ramp	B	0.65	19.2	-
	Guelph Line & Harvester Road / Queensway Drive	C	*0.84*	*24.2*	*SBL (V/C = 0.94, QL = 92 m)*
PM PEAK	**Guelph Line & North Service Road Link / E–N/S/E Off-Ramp ***	F	1.01	81.4	**EBR (V/C = 1.03)** NBT (V/C = 0.85) **SBTR (V/C = 1.21)**
	Guelph Line & South Service Road Link / W–N/S/E Off-Ramp	B	0.67	14.0	-
	Guelph Line & Harvester Road / Queensway Drive	D	0.94	49.6	NBT (V/C = 0.86) **WBT (V/C = 0.90)** **WBR (V/C = 1.00)** EBL (V/C = 0.98)

* Guelph Line & North Service Road Link / E–N/S/E Off-Ramp included for information purposes only

7 Recommended Operational Solution

7.1 Major Features of the Preliminary Design

Alternative V largely addresses the primary objective of the study which is provide immediate (i.e. 5 year) localized improvements to address existing operational constraints at the Guelph Line and Harvester Road/Queensway Drive intersection, by providing additional capacity for the WBT and WBR movements. All movements are proposed to operate at/below capacity based on 2023 background traffic demands.

Implementing **Alternative V**, will include the following:

- A new WBT at the Guelph Line and Harvester Road intersection (storage length and tapers provided as per the TAC design standards based on the design speed of the roadway at the intersection approach)
- Signal improvements / optimization, including:
  - Adding WBR (Green Arrow) overlap phase at the Guelph Line / Harvester Road intersection (to operate in conjunction with the Opposing SBL/NBL and/or SB Advance phases during the p.m. peak hour).
  - Reduce minimum vehicle green times for opposing EB/WB phases and pedestrian 'Walk' times at the Guelph Line / Harvester Road intersection (if possible).

Conceptual Illustration of Proposed Intersection Improvements

To help capture traffic which originates from the Ramp E-N/S/E and is destined to the South Service Road, but does so via Harvester (estimated 5% of SBL) it is recommended that signage modifications be provided along the Ramp W-N/S/E to enhance driver awareness of the eastbound through movement as a connection to the South Service Road.

Photo 1: Ground mounted signage for South Service Road is located on the left side of the Ramp W-N/S/E, approximately 45m in advance of intersection
Photo 2: Ground mounted signage for Harvester Road is located on the right side of the Ramp W-N/S/E, approximately 60m in advance in advance of intersection
Photo 3: Ground mounted signage for South Service Road is located in the SE quadrant of the Ramp W-N/S/E and Guelph Line intersection

In this regard consider:

- Relocating the existing Sign 1, located on the left side of the Ramp W-N/S/E approaching Guelph Line from 45m to 150m in advance of intersection.
- Provide an additional guide to the South Service Road on the right side of Ramp W-N/S/E approaching Guelph Line and relocate Sign 2 from 60m to 90m in advance of intersection.
- Continue regular maintenance of vegetation around Sign 3, located in the SE quadrant of the Ramp W-N/S/E and Guelph Line intersection, to ensure that sign is always visible.

The above noted measures are subject to consultation and approval by the Ministry of Transportation.

7.2 Stormwater Management and Drainage

The proposed improvements will increase the pavement area however; the quantity of runoff from the proposed widening will not result in a significant increase in runoff, and as such, specific techniques to reduce the quantity and rate of runoff are not warranted. This is due to the fact that the peak flows generated from the upstream rural catchments are much greater than the peak flows generated from smaller roadway paved areas, which occur earlier. Due to this lagging effect a small increase in the peak flow generated by the roadway does not result in an appreciable increase in the peak flow of the overall hydrograph. With that said, a detailed hydraulic assessment is to be completed during detail design to confirm the capacity of the existing conveyance system. Furthermore, Low Impact Development (LID) measures should be considered, where possible, to promote infiltration.

The proposed improvements will not alter the interchange ramps at the QEW - Guelph Line interchange and therefore will not affect the existing culverts at this interchange location. The interchange geometry presently has a rural cross-section and existing water quality control measures by means of grassed ditches/swales will be maintained.

7.3 Utilities

The following utilities are expected to be directly impacted and will require relocation to accommodate the proposed road works: Burlington Hydro, Enbridge Gas, Cogeco Cable, Bell Canada, and Allstream (MTS). Confirmation of the exact location, size and depth of these utilities, as well as the proposed relocation plans will be completed during detail design. At this time, no logistical issues are expected to be with the required relocations.

7.4 Traffic Signals and Illumination

Modifications will be required to traffic signals at the Guelph Line and Harvester Road/Queensway Drive intersection to accommodate minor widening (including sidewalk boulevard treatments) and grading. These signals are to be designed based on Accessibility for Ontarians with Disabilities Act (AODA) standards & guidelines (including auditable pedestrian signals).

Illumination currently in place (via luminaires on hydro poles along the north side of the roadway) is to be replaced and updated.

7.5 Property Access and Requirements

The proposed road design maintains all commercial accesses without restrictions.

To accommodate the proposed road widening and associated improvements additional right-of-way will be required from the property the north-east quadrant of the intersection (i.e. approximately 3.5 m of additional frontage and intersection daylighting triangle).

7.6 Preliminary Capital Cost Estimate

It is expected that the roadway and intersection reconstruction costs will total approximately $0.8 M (million), excluding property and utility relocation costs.

8 Public, Agency and Stakeholder Consultation

Public, agency, and stakeholder consultation is a key feature of the MCEA planning and design process. Through an effective consultation program, Halton Region was able to generate meaningful dialogue between the Project Team and the technical agencies, stakeholders and the public, resulting in an exchange of ideas and the broadening of the information base leading to better decision making.

8.1 Notice of Study Commencement

A Notice of Study Commencement for the Guelph Line – Harvester Road Class Environmental Assessment (EA) was issued on October 12, 2012.

Federal, Provincial and Municipal Agencies, Indigenous Communities, Utilities, and Stakeholders with potential interest in the project were notified of this MCEA process. A notification letter including a copy of the Notice of Study Commencement and a response request sheet inviting participation in the MCEA was mailed to agencies and utilities, Indigenous Communities, and stakeholders via Canada Post in October 2012. A complete mailing list and template of the letters and response request sheet can be found in ***Appendix A1.***

Federal, Provincial, Municipal and Local Agencies

In response to the Notice of Study Commencement and during the course of the study the following comments were received from agencies (detailed comments are provided in ***Appendix A1***).

Exhibit 8-1: Summary of Comments from Agencies

CONTACT	COMMENTS RECEIVED
Ministry of Aboriginal Affairs (MAA)	• Advises that the project appears to be located in an area where First Nations may have existing or asserted rights or claims. They are: Six Nations of the Grand River Territory, Mississaugas of the New Credit First Nation and Haudenosaunee Confederacy. • No further interest
Ministry of Natural Resources & Forestry	• Advises MNRF has no concerns with the proposed undertaking and their involvement is not required.
Ministry of Transportation (MTO)	• Would like direct involvement and be part of the Technical Agencies Committee. A section of Guelph Line within the study area is under MTO jurisdiction. Any proposed works within the MTO portion must be reviewed and approved by the MTO. MTO encroachment permits will be required prior to construction.
Niagara Escarpment Commission(NEC)	• No need for further contact. The area of study is outside of the Niagara Escarpment Development Control Area
City of Burlington	• Would like to be on the Technical Agencies Committee. Corridor improvements should evaluate potential for transit priority measures.
Halton Regional Police	• Would like to be kept informed.

Halton Region EMS	• Would like to be kept informed of the study.
Halton Catholic District School Board	• Would like to be kept informed.

8.1.2 Indigenous Communities

As part of the Notice of Study Commencement, potentially interested Ingenious Communities were contacted directly by Halton Region and encouraged to provide relevant comments related to the study, and pertaining to areas of Aboriginal uses and/or activities.

In response to the Notice of Study Commencement the following comments were received:

- Ministry of Aboriginal Affairs - identified Six Nations of the Grand River Territory, Mississaugas of the New Credit First Nation and Haudenosaunee Confederacy as potentially having interest in the study (subsequently confirmed to be part of the original mailing list).
- Curve Lake First Nation - indicated that the project is situated within the Traditional Territory of Curve Lake First Nation, within the Williams Territory and strongly suggested notification be sent to the First Nations Claims Coordinator of the Williams Treaty Territory. It was also noted that they were not aware of any issues that would cause concern with respect to their Traditional, Aboriginal and Treaty rights.

In response to these comments, it was confirmed that Grand River Territory, Mississaugas of the New Credit First Nation and Haudenosaunee Confederacy were included as part of the original Study Notification mailing. Also, a follow-up notification was sent to the First Nations Claims Coordinator (Karry Sandy-Mackenzie) of the Williams Treaty Territory.

8.2 Technical Agencies

To effectively consult with agencies with approvals and/or a direct interest in the project, provincial, regional and municipal levels of government, conservation authorities and utilities were requested as to whether they wanted to participate on a Technical Agency Committee (TAC). Interest was received from the Ministry of Transportation and City of Burlington.

8.2.1 Ministry of Transportation

Given the close proximity of the Guelph Line and Harvester Road intersection to MTO's Controlled Access Highway limits immediately to the north, the Ministry of Transportation was a key agency having approving authority for many of the improvements being considered as part of this study. An introductory meeting was held at the outset of the study to review the EA process, and discuss the types of improvement alternatives to be considered.

A number of meetings were held with MTO staff during the course of the study to discuss the findings of the traffic analysis and the range of alternatives being considered as part of the study.

Halton Region staff met with MTO on December 13, 2018, April 29, 2019, and July 29, 2019 to review alternative solutions and findings of the traffic analysis (refer to Minutes of Meeting in ***Appendix A2***).

8.2.2 City of Burlington

The City of Burlington was engaged in the study from the outset and participated in the development and review of alternatives. Halton Region staff met with City of Burlington

staff on October 25, 2019 to review findings of the study and seek input regarding the development and evaluation of alternatives and the selected of technically preferred operational solution (refer to Minutes of Meeting in ***Appendix A2***).

8.2.3 Technical Agency Committee Engagement

A comprehensive Project Information Package (as provided in ***Appendix A2***) was distributed by e-mail on November 26th, 2019 to members of the Technical Advisory Committee and Utilities, as listed below.

Technical Advisory Committee (TAC)

- Ministry of Transportation
- City of Burlington
- Conservation Halton

Utilities

- Trans-Northern Pipelines Inc.
- Inter Provincial Pipeline Ltd.
- Hydro One Networks Inc.
- Rogers Cable Communications Inc.
- Allstream MTS (Zayo Canada Inc.)
- Bell Canada
- Burlington Hydro Inc.
- Cogeco Cable
- Enbridge Pipelines Inc.
- Telus Communications

8.3 On-Line Public Engagement

During Phase 2 of the EA process, an On-Line Public Engagement was arranged between December 5th -19th, 2019 (14 days) to update agencies and the public regarding the study and seek input regarding the following:

- Study Overview, including updated study objective, problem and opportunity;
- Inventory of the natural, social and economic environments;
- Identified and evaluated alternative solutions to the problem;
- Preferred Solution; and
- Next Steps

Display boards were provided on the Region's web site for review and comment beginning December 5, 2019. A copy of the display boards is provided in ***Appendix A3***. Interested parties were encouraged to submit comments by December 19th, 2019.

The Notice of On-Line Public Engagement was published in the Burlington Post on November 21, 2019 and November 28, 2019, and posted on Halton Region's website.

A copy of the Notice of Online Public Engagement was distributed by e-mail to the following Indigenous Relations Agencies and Communities, and via Canada Post to the remaining Provincial, Municipality and Local Agencies on November 22, 2019. A complete mailing list is provided in ***Appendix A3***.

Property owners adjacent to the study area were also mailed a copy of the notice of On-Line Public Engagement via Canada Post on November 25th, 2019. In total, 125 notices were sent out to property owners.

In response to the information presented, the following eight (8) comments were received on-line from interested parties:

- The preferred solution sounds like a great improvement. There is a single sign indicating that the right lane is a right-turn-only lane, but that is routinely ignored, which backs up traffic.
- Roundabout.
- Bike lanes in both north south directions would be great.
- I think there should be changes at this intersection. There is way too many accidents at Harvester Rd and Guelph Line. The promised changes should happen and this will make traffic flow better.
- I agree with the preferred solution that addition of westbound through lane and traffic signal upgrades will improve traffic flow in the area.
- Is there room to change the intersection completely to a traffic circle? It seems like a logical solution to keep the traffic flowing.
- This has been needed for a long time, a turning lane and improved signals.
- Signal timing/phasing upgrades - I think extending the green light for southbound traffic making a left hand turn should be something that is done both in the morning and at evening peak hours.

Seven (7) other comments were received on-line from residents mentioning that they had received a notice and would like to be kept informed of the study.

In addition to the above, four (4) e-mails were received in response to the Project Information Package distributed to TAC members and Utilities:

- Conservation Halton - indicated that they had no concerns with the proposed improvements, noting that while a portion of the study area contains the regulatory floodplain and 7.5 metre hazard allowance associated with Roseland Creek, the development associated with the preferred strategy (e.g. additional westbound through lane on Harvester Road) is outside of this regulated area by approximately 50 metres. Further, the amount of additional paved surface area associated with the new through lane is minimal and would not likely pose significant stormwater management concerns from Conservation Halton's perspective.
- Hydro One Networks – confirmed no facilities in the area
- Enbridge - provided a mark-up of services
- City of Burlington – Confirmed the City's support for the recommended alternative and requested that comments provided during the project meeting between Halton and City of Burlington on October 29th, 2019 be included in the Project File (included in ***Appendix A2***).

8.4 Notice of Study Completion

A copy of the Notice of Completion is provided in ***Appendix A4.*** This notice serves as the second mandatory contact with the public and review agencies and reflects completion of the planning process.

9 Environmental Impacts, Mitigation Measures, and Commitments

Impact assessments were completed to identify the potential effects of the recommended design on the natural and cultural environment. Where required, mitigation measures are proposed to minimize potential negative impacts and result in a net benefit to the environment.

9.1 Natural Environment

The following section identifies the potential impacts of the proposed improvements on the natural heritage features within the study area. Mitigation measures to help minimize potential negative impacts are proposed.

9.1.1 Sediment and Erosion

The soil within the study area is susceptible to erosion and may be disturbed by construction activities. During construction, suspended soil particles and eroded materials could impact vegetation, wildlife habitat and surface water. Increased runoff may also promote downstream erosion which would affect water quality with sediments. Contamination from other sources, like spills from equipment during the construction phase, also have the potential to affect surface water.

9.1.2 Vegetation and Wildlife

There are a number of high priority trees within the study that should be retained to preserve vegetation structure in the study area. With that said, these trees are not expected to be affected by the proposed road widening and construction activities.

9.1.3 Stormwater Management

While a portion of the study area contains the regulatory floodplain and 7.5 metre hazard allowance associated with Roseland Creek, the development associated with the preferred strategy (e.g. additional westbound through lane on Harvester Road) is outside of this regulated area by approximately 50 metres.

The amount of additional paved surface area associated with the new through lane is minimal and is not expected to pose significant stormwater management concerns.

9.1.4 Mitigation Measures

Mitigation of impacts to the study site will include minimizing siltation and encroachment during construction, protection of the significant natural feature along Roseland Creek, preservation of large trees, and timing construction to be sensitive to breeding birds:

- Isolating work areas. Silt fence should be installed along the limits of construction to minimize siltation and encroachment during construction;
- Re-planting exposed areas as quickly as possible post-construction;
- All construction equipment is to be stored in designated areas outside of the driplines of trees to remain; these areas are to be clearly defined prior to construction start-up;

- Refueling, maintenance and washing activities site away to prevent the entry of harmful substances into the watercourses within the study area;
- Reporting all spills that could potentially cause damage to the environment to the Spills Action Centre of the MECP. In the event of a spill, containment and clean-up should be completed quickly and effectively;
- If any soils are identified during construction to have been environmentally impacted, these soils are to be separately stockpiled and analyzed to determine the appropriate measures for handling and disposal;
- Disturbance of the existing vegetation along Roseland Creek should be avoided in order to maintain habitat and shading functions;
- High priority trees to be retained should be protected using tree protection fencing throughout the construction process. This fencing should be located a minimum of 1.0m outside the trees' driplines;
- Clearing of vegetation within the site as part of site preparation should be conducted in the late fall or winter months (September – March) so as not to coincide with the breeding seasons of birds; and
- If construction occurs in the spring, summer, or early fall (March – September), nest sweeps of the site should be conducted prior to construction to ensure that unusually early or late nesting is not taking place, or that dependent young, even though fully fledged, are not in the area and unable to disperse. If breeding birds are found, construction must be delayed until all young have fledged.

If these recommendations are followed, impacts to the existing natural environment resources of the site will be minimized.

9.2 Socio-Economic

9.2.1 Property

The proposed improvements to the Guelph Line-Harvester Road intersection will have minimal impact on the residents and businesses within the study area. To minimize any potential impacts, the following mitigation will be incorporated into the design and implementation phases of this project.

- Appropriate construction practices will be applied to minimize noise and dust during construction;
- Negotiation with affected property owner to purchase required property at fair-market value; and
- Appropriate communication with landowners will also occur during construction to ensure they are aware of construction timing and potential construction related disruption such as driveway access impacts.
- In order to accommodate the proposed roadway widening and related improvements, additional right-of-way will be required from the property in the north-east quadrant of the intersection. Property requirements will be reviewed and confirmed in detail design.

9.2.2 Noise

Local residents and businesses may experience an increase in noise during construction. However, contractors will be required to abide by municipal noise bylaws and carry out activities in a manner that minimizes noise levels.

To minimize disruption to noise sensitive receives adjacent to the site, sound emissions from all construction equipment are to comply with MECP Guideline NPC-115 "Sound Levels from Construction Equipment". An exemption will be obtained from the City of Burlington if nighttime work or work on Sunday is required.

9.2.3 Air Quality

Generation of dust, fumes, and odours may be created during construction by machinery working in the vicinity of the Guelph Line – Harvester Road intersection. These fumes may degrade air quality in the immediate vicinity of the site. In order to limit the amount of dust released during construction, the following mitigation measures will be implemented, as outlined in contract specifications:

- Watering to limit dust emissions from surfaces;
- Covering of excavated materials or fill materials stored on site; and
- Street cleaning to limit tracking of materials.

Odour and fume impacts will be minimized by ensuring that pollution devises on the equipment are operational and properly maintained as per the contact specifications.

9.3 Cultural Environment

9.3.1 Archaeology

Portions of the study area are considered to retain archaeological potential. Lands directly impacted by the proposed road widening will require a Stage 2 archaeological assessment by test-pit survey at five-metre intervals prior to any land disturbance by the project.

9.3.2 Built Heritage

The proposed undertaking will have no direct impact on the heritage structure or larger yard area defining the potential heritage complex (historically as "Locust Lodge") located in the north-west quadrant of the Guelph Line – Harvester Road intersection.

Given the above, no property specific heritage impact assessment is required. If future work requires an expansion of the study area then a qualified heritage consultant will be contacted in order to confirm the impacts of the proposed work on potential heritage resources.

9.4 Transportation

9.4.1 Traffic Management and Control

Traffic impacts and neighbourhood disruption will be minimized during construction. Whenever possible, construction activities will be timed so as to not interfere with peak hour traffic and minimize obstruction of through traffic lanes adjacent to the site.

A detailed traffic management plan that provides work zones, roadway lane closure extents, and times will be prepared. The traffic management plan will be reviewed by the local road

authority's (Halton Region, City of Burlington, and MTO) to ensure that all traffic disruptions are minimized and congestion is within manageable and tolerable levels.

9.5 Summary of Mitigation Measures and Commitments

Exhibit 9-1 is a comprehensive table of the mitigation measures and commitments to future work. All commitments to future work should be reviewed during detail design and prior to project construction to confirm that the list of commitments is comprehensive.

Exhibit 9-1: Summary of Impacts, Mitigation Measures and Commitments

ISSUE/ CONCERN	MITIGATION MEASURES/ COMMITMENT TO CARRY FORWARD
Erosion and Sediment	• Develop an Erosion and Sediment Control plan. Best management practices will be implemented during construction, including silt fencing and/or barriers along all construction areas adjacent to natural areas. • All sediment and erosion controls will be monitored regularly and properly maintained, as required. Controls are to be removed only after soils have been stabilized and adequately protected, or until cover is re-established. • Implement best management/construction practices and control of all construction operations to reduce the potential for spills or other materials/equipment from entering the watercourses/pond within the study area. • Develop an excess materials management strategy in accordance with MECP "Management of Excess Soil – A Guide for Best Management Practices" (2014).
Vegetation	• Minimize removal of vegetation and re-stabilize and re-vegetate disturbed areas to pre-construction conditions. • Vegetation clearing and removal activities will be undertaken outside breeding bird period to avoid direct impacts to wildlife. An ecologist will confirm that nests are no longer active, if encountered during clearing. • Establish tree protection zones and install protective materials prior to construction to prevent damage including, but not limited to, root destruction and soil compaction. • Compensation for the removal of trees within the study area should be in accordance with the requirements of the Conservation Halton Landscaping and Tree Protection Guidelines (2010)
Wildlife	• Works to be completed in accordance with the Migratory Birds Conservation Act, Endangered Species Act, and other applicable legislations.
Property Requirements	• Where additional right-of-way is required, property will be acquired through negotiations and/or expropriation, as necessary
Noise	• During construction, the contractor is to abide by the municipal noise control by-laws. The contractor will be required to keep idling of construction equipment to a minimum and maintain equipment in good working order to reduce noise from construction activities.
Air Quality	• Dust suppressant measures will be used and disturbed areas will be revegetated to mitigate potential impacts. Dust-generating activities will be minimized during conditions of high wind.

ISSUE/ CONCERN	MITIGATION MEASURES/ COMMITMENT TO CARRY FORWARD
Archaeology	• Stage 2 Archaeological Assessments will be undertaken in advance of any activities that have the potential to disturb archaeological resources. Relevant Indigenous communities will be informed of Archaeological Assessment findings.
Built Heritage	• Improvements are not expected to impact to heritage features and /or cultural landscapes. Should future work require an expansion of the study area then a qualified cultural heritage consultant will be contacted in order to confirm the impacts of the proposed work on potential cultural heritage resources.
Traffic	• Prepare a detailed traffic management plan that provides work zones, roadway lane closure extents, and times.

9.6 Monitoring

Recommended monitoring for this project includes compliance monitoring of permit conditions, and monitoring the performance of mitigation measures. This includes:

- Monitoring the effectiveness of sediment and erosion control;
- Monitoring the success and growth of new plantings and trees that have been planted or relocated as part of road construction; and
- Construction monitoring to ensure implementation and adherence to permit conditions.

9.7 Permits and Approvals

Approvals under the Canadian Environmental Assessment Act are not required for the proposed works. Upon Completion of Stage II Archeological Assessment, obtain clearance from Ministry of Tourism & Culture that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeology Reports referred to in Section 65.1 of the Ontario Heritage Act.

The need for the following permits will be confirmed during detail design and obtained as necessary:

- Obtain a Highway Corridor Management Encroachment Permit from MTO
- Obtain permits and approvals for works in regulated areas from Conservation Halton under O. Reg. 162/06.
- Obtain Environmental Compliance Approvals (ECA) from MECP for new/relocated sewers and stormwater management outfalls, sewer use for discharge of dewatering effluent (compliant with Section 53 of the Ontario Water Resources Act and relevant MECP guidelines),as appropriate. Should potable water lines be relocated, ECA will be sought from MECP prior to relocation.

Additional permits and approvals may be required due to changes in existing conditions or to relevant policies.

APPENDICIES