HIGHWAY 6 (HANLON EXPRESSWAY) IMPROVEMENTS

From 0.5 kilometres south of Maltby Road to the Speed River

City of Guelph

GWP 3002-05-00

June 2009

West Region
Planning & Design Section
Ministry of Transportation Ontario

Transportation Environmental Study Report

PUBLIC RECORD
ONTARIO MINISTRY OF TRANSPORTATION
HIGHWAY 6 (HANLON EXPRESSWAY) IMPROVEMENTS
FROM 0.5 KILOMETRES SOUTH OF MALTBY ROAD TO THE SPEED RIVER (GWP 3002-05-00)
TRANSPORTATION ENVIRONMENTAL STUDY REPORT

Copies of this document have been sent to the following office of the Ministry of the Environment to be placed in the public record:

Ministry of the Environment
West Central Region
119 King Street West, 12th Floor
Hamilton ON L8P 4Y7

This Transportation Environmental Study Report is available for review during regular business hours at the following locations:

Ministry of the Environment West Central Region 119 King Street W, 12th Fl Hamilton ON	**Government Information Centre** 1 Stone Rd. W Main Floor Guelph ON	**City of Guelph** Office of the Clerk 1 Carden Street Guelph ON	**County of Wellington** Clerk's Department 74 Woolwich Street Guelph ON
Ministry of Transportation First Floor Lobby 659 Exeter Road London ON	**Guelph Public Library** Scottsdale Centre Branch 650 Scottsdale Drive Guelph ON	**Guelph YMCA** Service Desk 130 Woodland Glen Drive Guelph ON	**Township of Puslinch** Office of the Clerk 7404 Wellington Road 34 Guelph ON

CLASS EA PROCESS AND ENVIRONMENTAL DOCUMENTATION

This project is being carried out in accordance with the requirements of the Class Environmental Assessment (EA) for Provincial Transportation Facilities, a process that has been accepted and approved under Ontario's Environmental Assessment Act, as described in Section 1.0 of this report.

Other required aspects of the Class EA process and environmental documentation are contained in the *Class Environmental Assessment for Provincial Transportation Facilities* (2000). Readers interested in these matters are encouraged to refer to that document. The consultant project manager or environmental planner are also available to discuss this information and may be contacted as follows:

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TRANSPORTATION ENVIRONMENTAL STUDY REPORT (TESR)

Highway 6 (Hanlon Expressway) Improvements
From 0.5 kilometres south of Maltby Road to the Speed River
GWP 3002-05-00

Class Environmental Assessment for Provincial Transportation Facilities "Group B" Project

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June 2009

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Executive Summary

The Ministry of Transportation (MTO) retained Stantec Consulting Ltd. (Stantec) to carry out a Planning and Preliminary Design study to upgrade Highway 6 (Hanlon Expressway) from 0.5 kilometres south of Maltby Road to the Speed River to a freeway with access restricted to interchange locations only (GWP 3002-05-00). The study is in the City of Guelph, Township of Puslinch, and Wellington County. The City of Guelph is a partner with MTO on this study.

The study included developing and assessing access alternatives for Highway 6 including Maltby Road (discussed in this report at the 'South Section'), Clair Road and Laird Road (discussed in this report as the 'Central Section') and Kortright Road/Downey Road, Stone Road, and College Avenue (discussed in this report as the 'North Section').

The study was carried out in accordance with the requirements of the Ministry of Transportation's *Class Environmental Assessment (Class EA) for Provincial Transportation Facilities* (2000). Environmental documentation within the Class EA process is required to describe the environmentally significant aspects of planning, design, construction and operation of specific types of projects. This project falls within the scope of a Group "B" project.

The study included a comprehensive consultation program including four Public Information Centres and a Community Workshop. Public input was received at each of four Public Information Centres, through the Community Workshop, community meetings, individual meetings with property owners, and continuously during the study through correspondence and emails to the project website.

When required, the project team held additional meetings with City of Guelph Staff and Council, County of Wellington, Township of Puslinch, Municipal/Emergency services, MNR/GRCA, the Kortright Hills Community Association (KHCA), West Hanlon Neighbourhood Group (WHNG), and Old Colony Trail residents.

In advance of the study, the MTO carried out a transportation needs assessment to identify the transportation problems and opportunities, evaluate and select reasonable alternatives, develop potential transportation study objectives, and initiate the study process. This assessment is discussed in detail in Section 4.0.

The study area is located at the westerly limit of the City of Guelph and is constrained by geological features, parks, rural, residential and commercial/industrial development. Environmental and cultural features that were addressed during the study included fisheries and aquatic resources, terrestrial resources, contamination, archaeology, stormwater management, noise, air quality, socio-economics, built heritage, and drainage.

Social factors that were of particular significance to this study included property impacts, access to the municipal road network, out-of-way travel, additional traffic on municipal roads, noise, air quality, and pedestrian and cycling access.

The project team developed and evaluated access alternatives by dividing Highway 6 into three sections – south, central, and north. The south section, from 0.5 kilometres south of Maltby Road is predominantly rural in land use; the central section, from north of Maltby Road to north of Laird Road is predominantly commercial in land use; and the north section, from north of Laird Road to the Speed River, is predominantly residential in land use.

During the study, additional interchange and access alternatives were developed to address concerns identified by local residents and the City of Guelph.

The Recommended Plan for Highway 6 (Hanlon Expressway) includes the closure of all highway at-grade intersections; the replacement of these intersections with interchanges at Laird Road, Downey Road/Kortright Road (partial interchange oriented to the south), and Stone Road; a grade-separated crossing of the highway at College Avenue; a new municipal road on the west side of Highway 6 between Woodland Glen Drive and the interchange at Stone Road; and minor realignments of local roads. The Recommended Plan is illustrated on

Exhibit 1: Recommended Plan

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The Recommended Plan includes a Parclo A4 interchange configuration at Laird Road, a partial diamond interchange orientated south of Downey Road/Kortright Road, and a Parclo A2 interchange configuration at Stone Road and was selected based on the results of the analysis and evaluation and on input received from the consultation process. The Recommended Plan provides the following benefits:

Traffic Operations & Safety

- Closure of the intersections at Maltby Road, Clair Road/Phelan Road, Laird Road, Kortright Road/ Downey Road, Stone Road and College Avenue
- A Parclo A-4 interchange at Laird Road
- A grade-separated crossing and partial interchange at Kortright Road/Downey Road (ramps to and from the south)
- A grade-separated crossing and full interchange (Parclo A/Diamond) at Stone Road
- A grade-separated crossing at College Avenue
- Signalized intersections at all of the interchange ramps terminals
- Full illumination of the highway and interchanges from Kortright Road/Downey Road to Wellington Street
- Partial illumination of the Laird Road interchange
- Eliminates closely spaced intersections by combining the ramp to Highway 6 with the Downey Road/ Woodland Glen Drive intersection

Access

- Full access at Laird Road
- Partial access to and from the south at Kortright Road/Downey Road
- Full access at Stone Road
- A two-way service road on the west side of Highway 6 between Stone Road and Woodland Glen Drive to improve local access

Natural Environment

- A tight diamond ramp from Highway 6 northbound to Kortright Road to minimize impacts to John Gamble Park

Social Environment

- Future noise barriers (i.e. wall or berm) east and west of Highway 6 between Kortright Road/ Downey Road and College Avenue
- A partial diamond interchange on the east side of the Stone Road interchange to improve pedestrian and cyclist comfort levels at the interchange
- Bike lanes and pedestrian sidewalks at Laird Road, Kortright Road/Downey Road, Stone Road and College Avenue
- Minor trail relocations at the proposed grade separations at Kortright Road/Downey Road, Stone Road, and College Avenue

Applied Environment

- Relocation of Union Gas facility at Stone Road
- Utility Relocations

The Recommended Plan avoids impacts to the significant environmental features identified in the study area, including the Hanlon Creek Provincially Significant Wetland (PSW) and addresses concerns identified from the public and the City, Township and County during the study regarding:

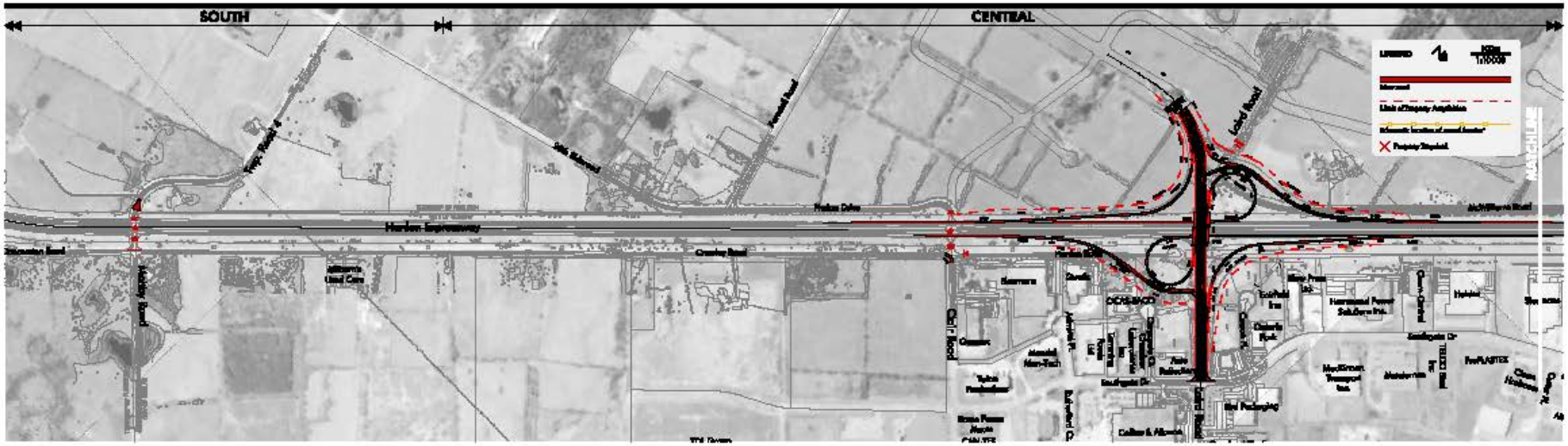
- Additional traffic on local roads
- The size and scale of the Stone Road interchange
- Access at Downey Road/Kortright Road
- Highway 6 design speed and posted speed
- Pedestrian and cyclist connectivity across and along the Hanlon Expressway
- John Gamble Park
- Noise impacts
- Hanlon Creek floodplain

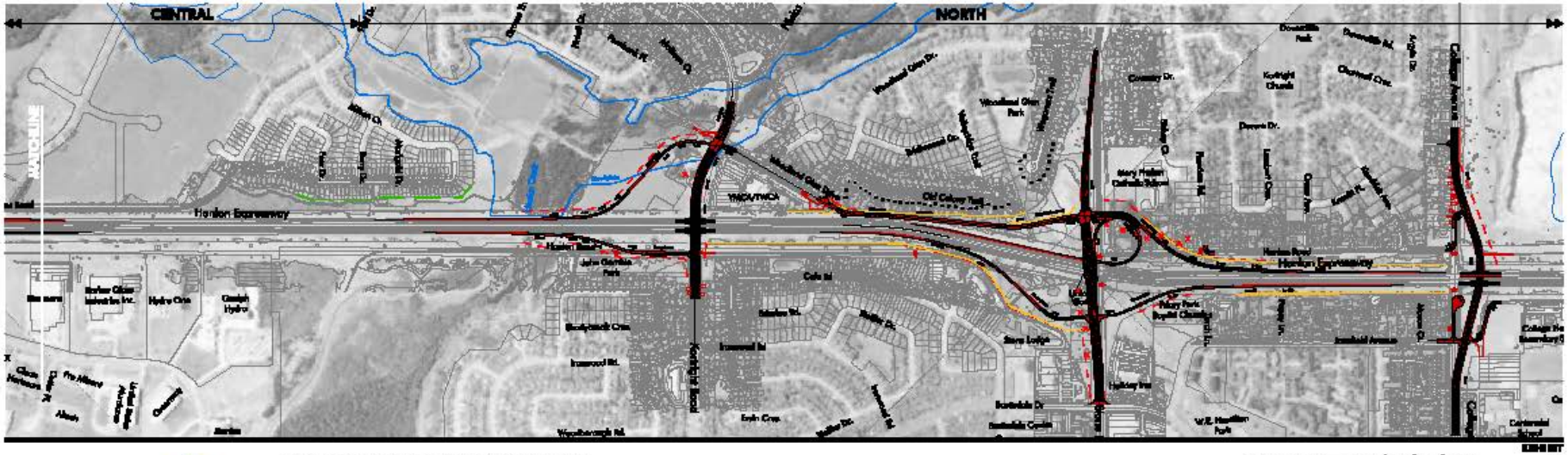
The Recommended Plan includes noise barriers east and west of Highway 6, between Kortright Road/Downey Road and College Avenue.

A Citizens Liaison Committee will be formed at the start of the detail design stage and will be consulted regarding:

- Minor alignment shifts to the Service Road between Woodland Glen Drive and Stone Road
- Vegetation removal, tree transplantation, and landscape plans
- Aesthetics, location, and landscape treatment for proposed sound barriers

This *Transportation Environmental Study Report* (TESR) is being submitted for a 60-day public review period in accordance with the requirements of the *Class Environmental Assessment for Provincial Transportation Facilities* (2000).





Ontario

Stantec

HIGHWAY 6 (HANLON EXPRESSWAY)

Maltby Road to the Speed River

Ont# 2015-00-00

Recommended Plan

Additional details provided at the end of the report.

SHEET 1

1.0 Overview of the Undertaking

This planning and preliminary design study was initiated by the Ministry of Transportation (MTO) in 2007 to develop a Preliminary Design Plan to upgrade Highway 6 (Hanlon Expressway) from south of Maltby Road to the Speed River to a freeway with access restricted to interchange locations only.

Stantec Consulting Ltd. was retained by MTO to carry out the study under GWP 3002-05-00, which included developing and assessing access alternatives for Highway 6 including Maltby Road (discussed in this report as the 'South Section), Clair Road and Laird Road (discussed in this report as the 'Central Section') and Kortright Road/Downey Road, Stone Road, and College Avenue (discussed in this report as the 'North Section').

The study area is shown in Exhibit 2.

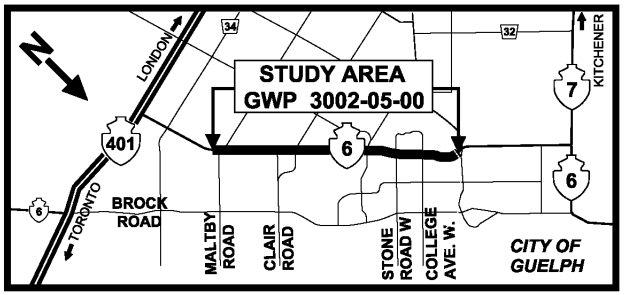


Exhibit 2: Study Area

1.1 Background

1.1.1 Project History

The following is a chronological history of the development of this section of Highway 6 (Hanlon Expressway) as it relates to this current study:

- 1969—The Ministry of Transportation (then Department of Highways) completed a Functional Planning Study for the Hanlon Expressway from Clair Road northerly to Woodlawn Road. This study concluded that the Expressway would serve as a major north-south link connecting Highway 401 to Highway 7.
- 1972—The Hanlon Expressway was constructed to relieve traffic on Guelph's arterial road system, including Gordon Street. The new roadway relocated the section of Provincial Highway 6 from the Gordon Street/ Brock Road corridor that is central to Guelph to a new alignment near the westerly limits of the City. The roadway was constructed with a wide right-of-way to accommodate future highway expansion.
- 1973 – The Ministry of Transportation (then Ministry of Transportation and Communications) published a report entitled *Feasibility Study Conversion of the Hanlon Expressway to Freeway Standards*. The report confirmed the feasibility of interchange alternatives and grade-separations along the Hanlon Expressway and identified conceptual interchange configurations.
- 1974 – The City of Guelph carried out a study called *Protecting the Option for future Interchanges and Grade-Separations in the Hanlon Corridor*. This study indicated that in the future, an interchange would be required at Stone Road and that a grade separation would be required at College Avenue. The improvements were identified as required by 1985 and recommended that property in the vicinity of the proposed interchanges or grade-separations be protected.
- 2004—A *Traffic Operations Study* was carried out for Highway 6 (Hanlon Expressway) to assess existing and future traffic operations at the existing at-grade intersections. The *Traffic Operations Study* identified many intersections with poor operations and confirmed a future need to upgrade the at-grade intersections to a system of grade-separations (i.e. fly-overs) and interchanges.

1.1.2 Adjacent Studies

Highway 6 is an important part of the provincial highway network and will function as a provincial transportation link between Highway 401 and the new Highway 7 from Guelph to Kitchener.

1.1.2.1 Highway 6 Freelton to Guelph

The *Highway 6 Freelton to Guelph Environmental Assessment and Preliminary Design Study* was completed in 1995 and updated in 1997. The study included a 16.9 kilometre section of Highway 6, including the southern section of the Hanlon Expressway from Highway 401 to south of Maltby Road. The final Recommended Plan for the south section of Highway 6 includes a mid-block interchange between Wellington Road 34 and Maltby Road, and an underpass at Wellington Road 34. On January 22, 2009, the Environmental Assessment was approved, subject to a number of conditions.

1.1.2.2 Highway 7 Kitchener to Guelph

The *Highway 7 Kitchener to Guelph Environmental Assessment and Preliminary Design Study* was completed in 1997 and updated in 2004. The study addressed deficiencies and existing/future traffic demand along the Highway 7 corridor between Kitchener and Guelph and recommended a new Highway 7 alignment north of (and parallel to) the existing highway. The new facility would be a four-lane divided controlled access freeway and is planned to connect to the Hanlon Expressway at Woodlawn Road. The Environmental Assessment was approved on March 21, 2007.

1.1.2.3 GTA West Corridor Environmental Assessment Study

The Ministry of Transportation initiated the Greater Toronto Area (GTA) West Corridor study in 2006 to proactively plan for future infrastructure needs by examining long-term (to 2031) transportation problems and opportunities and

considering alternative solutions to provide better linkages between Urban Growth Centres in the GTA West Corridor Preliminary Study Area, including Downtown Guelph, Downtown Milton, Brampton City Centre and Vaughan Corporate Centre as identified in the Growth Plan. The GTA West Corridor EA Study is being undertaken as an *Individual Environmental Assessment* in accordance with the *Ontario Environmental Assessment Act*. A Terms of Reference for the study was approved by the Minister of the Environment in 2008.

The study is based on future growth areas identified in the *Growth Plan for the Greater Golden Horseshoe* (2006) and is currently (March 2009) in the process of identifying transportation problems and opportunities in the study area. Additional information on this study is available at www.gta-west.com.

1.1.3 Local Context

1.1.3.1 City of Guelph Official Plan

The City of Guelph's *Official Plan* (2001) provides direction for land use and transportation planning, development, and management within the City limits. With regards to the Hanlon Expressway, Schedule 9B, the *Recommended Road Plan* in the current Official Plan identifies the following long-term roadway connections or improvements:

- College Avenue Extension / Kortright Interchange Alternatives
- Stone Road – Full Interchange
- College Avenue – Partial Interchange
- Laird Road – Full Interchange
- Closure of Clair Road, Phelan Road and Forestell Road/Maltby Drive

The City has initiated an update of the *Official Plan* that is expected to be completed in 2009. The purpose of the update is primarily to integrate the requirements of the Ontario *Growth Plan*.

1.1.3.2 Guelph Wellington Transportation Study

The *Guelph Wellington Transportation Study* (GWTS, 2005) was carried out by the City of Guelph and County of Wellington to assess long-term (to 2021) transportation needs in the Guelph-Wellington area. The study developed future travel demand and traffic forecasts and confirmed that Highway 6 (the Hanlon Expressway) plays a significant role in the future vision for the transportation network. The GWTS identified the need for the consideration of a full interchange at Kortright Road/Downey Road and at Stone Road, that there is limited potential to increase the capacity of the existing at-grade intersections, an interchange at Laird Road, and the consideration for additional interchanges between Maltby Road and Highway 401.

The GWTS indicates that the at-grade intersections should be upgraded to a system of interchanges and grade separations by 2013.

1.1.3.3 Development History

When the Hanlon Expressway was constructed, there was no development south of Stone Road, on the west side of the highway. Residential and commercial development began in the late 1970's and the City constructed Kortright Road, Scottsdale Road and Ironwood Road to accommodate development. East of the highway, the College Heights area began developing in the late 1960's. Over the next 40 years residential development continued with the construction of the Woodland Glen and Kortright Hills subdivisions in the 1980's and 1990's. The City extended College Avenue and Stone Road, constructed Woodland Glen Drive, and realigned Downey Road to accommodate the developments on the west side of the highway. Residential development is concentrated from north of Kortright Road to the Speed River. A chronology of residential development along this section of Highway 6 is in Table 1. Development south of Laird Road has been primarily rural in nature.

Commercial and industrial development has been concentrated in the Hanlon Business Park, located along Laird Road, east of Highway 6. There is no remaining developable land in the Hanlon Business Park. Commercial/industrial capacity will be increased with the planned development of the Southgate Industrial Lands (located east of Highway 6 between Clair Road and Maltby Road) and the Hanlon Creek Business Park (along Laird Road, west of Highway 6).

Construction of the YMCA was completed in 1992.

Table 1: Residential Development History – North Section

College-Stone Area	
University Village Phase I (Carnaby, College, Flanders, Lambert)	December 1967
University Village Phase II (College, Conroy)	December 1967
Kendrick Heights (Argyle, Chartwell, College, Crane, Devere, Dovercliffe, Kendrick, Knevitt, Picadilly)	August 1968
Centennial Heights (College, Skye, Vanier)	September 1968
Parkview Estates (College, Dovercliffe)	February 1974
Woodland Glen Area	
Phase I (Wagoner's Trail)	December 1981
Phase II (Kingswood Gate, Woodland Glen)	September 1983
Phase III (Bridlewood, Valleyridge)	August 1984
Phase IV (Old Colony, Valleyridge)	July 1985
(Trillium, Woodland Glen)	December 1989
Downey Road Area	
Kortright Subdivision Phase I (Fernbank, Hazelwood, Mollison)	August 1986
Phase II (Foxwood, Mulberry, Niska, Tanager)	October 1986
Phase III (Downey, Grouse, Hunters, Pheasant Run, Pintail, Ptarmigan, Quail)	May 1988
Phase IV (Pintail)	June 1988
Phase V (Hazelwood)	July 1989
Phase VI (Bates, Mallard, Pheasant Run, Ptarmigan, Tanager, Trendell)	November 1992
Phase VII (Merganser, Pheasant Run, Sandpiper, Waxwing)	May 1994
Kortright IV Subdivision Phase I (Hazelwood, Teal)	September 2000

1.1.4 Provincial Context

The provincial *Growth Plan* includes general transportation policies that require that municipalities and the Province provide for the safety of the system users, provides for maximizing and making the most efficient use of existing facilities and identifies a direct relationship between the design and capacity of a transportation network.

1.1.4.1 Places to Grow

The Province's Places to Grow *Growth Plan for the Greater Golden Horseshoe* (2006) identifies a strategy for where and how regional centres will continue to grow up to 2031.

The City of Guelph has been identified as a growth node in Places to Grow. In 2008 the City of Guelph identified growth projections in accordance with the requirements of the Growth Plan. The City is planning for a growth rate of approximately 1.5 %, a population target of 169,000 people to the year 2031, and the need for approximately an additional 31,000 jobs over the next 25 years. City of Guelph growth policies are being developed in support of the above provincial initiatives.

Provincial highway access is currently provided to the City of Guelph's "growth node" via Highway 6 (the Hanlon Expressway), Highway 401, and Highway 7. The Ministry of Transportation is working to provide for the efficient movement of people and goods between growth nodes and the international border within the context of the Growth Plan. This requires long-term infrastructure planning to accommodate the 2031 growth projections outlined in the Growth Plan.

1.1.4.2 Southern Highways Program (2008-2012)

Of overall guidance to this study and others in Southern Ontario is the Ministry of Transportation's *Southern Highways Program (2008-2012)* (SHP). This report outlines construction programs, future directions, and commitments to improving transportation in Southern Ontario.

The SHP also identifies a provincial goal for 'sustainable transportation system…that recognizes and supports our current needs while balancing social, economic and environmental considerations.'

Improvements to the Hanlon Expressway are identified in the SOHP in the 'Planning for the Future' section that identifies projects in planning stages to support growth and economic activities, improve traffic flow and enhance safety in southern Ontario.

1.2 Purpose of Study

The purpose of this study is to develop a Preliminary Design Plan to upgrade Highway 6 (Hanlon Expressway) from south of Maltby Road to the Speed River to a freeway with access restricted to interchange locations only. The removal of the existing at-grade intersections and traffic signals will significantly improve safety and operations on the Hanlon Expressway.

1.3 Purpose of the Transportation Environmental Study Report

The purpose of this report is to describe the project; input received from the public, external ministries, agencies and municipalities; and the alternatives considered during the study. The *Transportation Environmental Study Report* (TESR) documents environmentally significant aspects of the planning, design, construction and operation of specific types of projects that fall within the definition of the *Class Environmental Assessment (EA) for Provincial Transportation Facilities* (2000). The report provides a description of the Recommended Plan, associated environmental impacts, and proposed mitigation.

This TESR fulfills the documentation requirements of the Class EA process for Provincial Transportation Facilities (2000) for 'Group B' projects, as described in the sections that follow. This report is being submitted for a 60-day Public Review Period.

If a 'Bump Up' request or Part II Order for an Individual Environmental Assessment is received during the public review period for this report, the Minister of Environment will determine the need for an Individual Environmental Assessment.

2.0 Outline of Environmental Assessment Process

2.1 Project Specific Study Process

The project was carried out following the requirements of the *Ministry of Transportation's Class Environmental Assessment (Class EA) for Provincial Transportation Facilities* (2000). The Class EA process is for projects of a defined scope and magnitude, where the impact can effectively be determined and mitigated. This project falls within the scope of a Class "B" project, which includes introducing or eliminating municipal road access to local areas, new interchanges, and improvements that significantly modify highway/roadway traffic access to and from the facility.

Other aspects of the Class EA process and environmental documentation required by the process are contained in the *Class Environmental Assessment for Provincial Transportation Facilities* (2000). Readers interested in these matters are encouraged to refer to that document, which is available from the MTO Research Library Online Catalogue (www.library.mto.gov.on.ca/webopac) and from Publications Ontario (www.publications.serviceontario.ca). The study process is illustrated in Exhibit 3.

2.2 Environmental Assessment Approval Regulations

The work on a planning and preliminary design study of this type must be carried out in accordance with the applicable environmental legislation and the current government policies and procedures. The policies and legislation that apply to this study are described below.

2.2.1 Ontario Environmental Assessment Act

The *Ontario Environmental Assessment Act* (EAA) governs the conduct of planning and preliminary design studies in the province of Ontario. The purpose of the EAA is to make sure that:

- A reasonable and traceable planning process is followed
- The need for the project is demonstrated
- The public has input into the process and investigations
- The study includes a review of a full range of alternatives
- The selected alternative minimizes any environmental impacts or provides mitigation strategies to minimize impacts resulting from the improvements

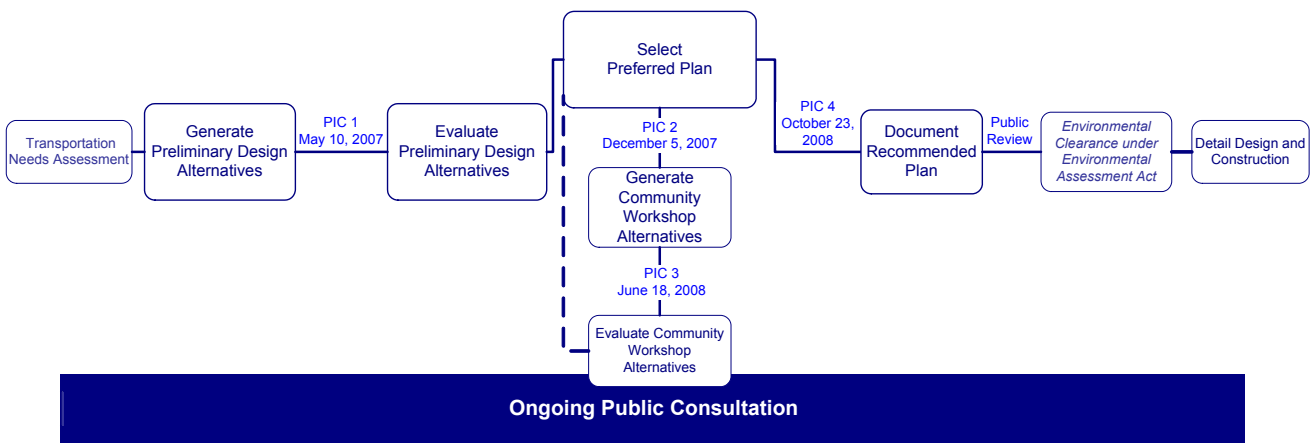


Exhibit 3: Class EA Study Process

2.2.2 Canadian Environmental Assessment Act

The *Canadian Environmental Assessment Act* (CEAA, 2005) is legislation that applies to federal authorities when they are taking certain actions in support of a project or a component of the project such as providing federal land, funds, or regulatory approvals identified in the CEAA Law List Regulations. CEAA is also '*triggered*' where a federal authority is a proponent or co-proponent of a project.

It is not expected that a screening under the CEAA will be required as a result of this project since approvals under the *Navigable Waters Protection Act* (NWPA) or as a result of a *Fisheries Act Authorization* (FAA) are not expected to be required.

2.2.3 Project Specific Environmental Assessment Process

For more information on the environmental assessment process for provincial transportation facilities, the public may contact the Ministry of Environment, Environmental Assessment Branch. Documents are available to assist with understanding the process. Relevant publications include:

- *Class Environmental Assessment for Provincial Transportation Facilities*, MTO, July 2000
- *MTO Environmental Reference for Highway Design*, MTO, 2006
- *MTO Statement of Environmental Values*, MTO, 1994
- The Ministry of the Environment (MOE) *Code of Practice – Preparing, Reviewing, and using Class Environmental Assessments in Ontario* (draft August 2007)

Publications are available from Publications Ontario (https://www.publications.serviceontario.ca/ecom/).

2.2.4 Other Approvals Required

Undertaking an Environmental Assessment can require consideration of other approvals and review agencies. They may include:

- Federal Review
  - Department of Fisheries and Oceans (DFO) – *Fisheries Act Authorizations* (FAA)
  - Transport Canada – *Navigable Waters Protection Act* (NWPA)
  - Environment Canada – *Species at Risk Act* (SARA)
- Provincial Review/Policy Requirements
  - Provincial Policy Statements (2005)
  - Ministry of the Environment – *Environmental Assessment Act, Environmental Protection Act, Ontario Water Resources Act, Certificates of Approval, Permits to Take Water, Ontario Noise Protocol, Species at Risk Act*
  - Ontario Access and Privacy Office – *Freedom of Information and Protection of Privacy Act*
  - Ministry of Agriculture and Food – *Ontario Foodlands Preservation Guidelines*
  - Ministry of Natural Resources – *MTO/DFO/OMNR Fisheries Protocol, Ontario Wetlands Policy, Endangered Species Act* (ESA)
  - Ministry of Culture – Ontario *Archaeological Protocol, Ontario Heritage Act*
- Municipal Policy (City of Guelph, Township of Puslinch, Wellington County):
  - Development control, Official Plans
  - Noise Bylaws
  - Zoning Bylaws
  - Transportation Planning Policy
  - Strategic Plans
  - Guelph Natural Heritage Strategy

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3.0 Consultation Process

This section describes the consultation program that was carried out for this study.

The consultation process provided an opportunity for the project team and representatives from the Ministry of Transportation to discuss the study process with the public, property owners, external agencies, and stakeholders.

The process aims to notify all interested parties of the project and to provide an opportunity for input to the study and decision-making processes. This was accomplished by presenting the findings of each stage of work to the public, and through ongoing discussions with the various government agencies and ministries, non-government interest groups and property owners.

Public input was received at each of four Public Information Centres, through a Community Workshop, community meetings, and continuously during the study through correspondence and emails from the project website. As the project progressed, on-going contact was also maintained with groups and organizations with interests in the study area.

To make sure that all interested members of the public were contacted, an extensive notification process was used. It consisted of:

- Newspaper notices in the *Guelph Tribune, Guelph Mercury, and Wellington Advertiser*
- Mailings to properties within the study area (over 4000 residences / businesses)
- Direct mailings to external agencies, stakeholders, and property owners in the study area as well as members of the public who indicated an interest in the study

Newspaper notices and notification materials are contained in Appendix A.

3.1 Project Website

A project website was developed as part of this study to provide an additional way for the project team to communicate information to the public and to external agencies. The project website (www.hanlonimprovements.ca) contained: information about the EA process, an overview of the project, background information, frequently asked questions, and a feedback form for comments from the public. The website gave the public an opportunity to view information about the project in their own time, and provide comments to the project team.

During the study, additional information was periodically uploaded to the project website, including study reports, presentations, meeting notes, and information about City of Guelph meetings related to the project.

Opportunities for public consultation, such as Public Information Centres, were also advertised on the website, and the displays available at the PICs were made available online following each meeting, for the duration of the study.

Pages from the project website are contained in Appendix B.

3.2 Notice of Study Commencement

The Commencement of the Planning and Preliminary Design Study was announced in the *Guelph Mercury* on Tuesday, February 13, 2007 and Saturday, February 17, 2007 and in the *Guelph Tribune* on Tuesday, February 13, 2007 and Friday, February 16, 2007. The notice of study commencement was also uploaded to the project website on Tuesday, February 13, 2007.

The *Commencement of Study* notice described the project including potential improvements, the Class EA process, requested public involvement, and listed contact names for additional information.

Initial project notification also included individual study notification letters sent on Friday, February 9, 2007 to federal, provincial and municipal agencies and interest groups expected to have an interest in the study. This letter also included a comment form inviting agencies to provide additional information regarding their specific interest in the study, any relevant information that they were able to provide, and the level of involvement that they desire.

Notification materials, including the newspaper notices, are contained in Appendix A.

Correspondence received from external agencies as a result of the Notice of Study Commencement is contained in Appendix C and discussed in Section 3.7.

3.2.1 Comments Received from Notice of Study Commencement

Following the notice of study commencement, the project team received comments and emails from the general public and property owners in the study area. Comments received from the public indicated a strong interest in the proposed improvements. Residents provided comments regarding pedestrian access across the highway, environmental and social impacts, potential interim improvements, noise, and the range of interchange alternatives that would be considered.

Adjacent residents were primarily interested in future access from Highway 6 to the adjacent municipal road network.

3.3 Public Information Centre 1—May 10, 2007

The first Public Information Centre (PIC) was held on Thursday, May 10, 2007 at the Holiday Inn, on Scottsdale Road, in the City of Guelph. Ninety-eight members of the public and external agency representatives attended the PIC.

The purpose of the PIC was to:

- Display and seek input on interchange and access alternatives for College Avenue, Stone Road, Kortright Road, Laird Road, Clair Road and Maltby Road
- Display and seek input on the environmental conditions in the study area (i.e. natural, social, economic and cultural)
- Seek input on the evaluation criteria and process to be used to identify a preferred plan
- Answer questions about the study

The PIC was advertised in the *Guelph Mercury* (Tuesday, April 24, 2007 and Saturday, May 5, 2007), *the Guelph Tribune* (Tuesday, April 24, 2007 and Friday, May 4, 2007) and the *Wellington Advertiser* (Friday, April 27, 2007 and Friday, May 4, 2007).

In addition, notification letters and flyers were mailed on Friday, April 20, 2007 to external agencies, stakeholders and members of the public who had requested that their name be added to the project mailing list. Notice of the PIC was also posted on the project website.

The following information was displayed at the PIC:

Display Panels	Plans
• Welcome Panel	• Existing Environmental Conditions
• Environmental Assessment Process Flow Chart	• Existing Transportation Conditions
• Project Background	• Potential Interchange Locations
• Evaluation Process	• Central Section Alternatives
• Evaluation Criteria	• North Section Alternatives
• Interim Improvements	• Municipal Road Alternatives
• Existing Environmental Conditions	• Related Provincial Projects

The text panels and displays were available for review and the project team was available to answer questions and discuss the study. Comment sheets were made available and residents and agencies were encouraged to return them either in the comment sheet box at the meeting or by mail, fax, or email until the June 7, 2007 deadline.

The comments deadline was extended by a week following a request from a community group.

A copy of the materials available at the PIC is provided in Appendix E.

3.3.1 External Agency Meeting 1

A separate external agency meeting was held on Thursday, May 10, 2007 at 2:00 PM at the Holiday Inn in Guelph. An invitation to attend the meeting was sent to external agencies on the project mailing list on Friday, April 20, 2007.

External agencies and stakeholders that were represented at the PIC included the City of Guelph, OPP, Kortright Hills Community Association, Guelph Hydro, Guelph District Real Estate Board, Royal City Ambulance, Guelph Chamber of Commerce, Guelph Trail Club, and Guelph Field Naturalists.

A representative from the office of the local MPP was also in attendance.

The text panels and displays were available for review and the project team was on hand to answer questions and discuss the study.

3.3.2 Additional Community Meetings

Following the first Public Information Centre, the Kortright Hills Community Association (KHCA) requested a follow up meeting with the project team. The meeting was held on July 26, 2007. Representatives from the project team and the KHCA were in attendance. At the meeting the KHCA indicated that they did not support alternatives that increased traffic or noise within the community, and noted concerns regarding environmental impacts and existing concerns with traffic volumes on Downey Road. Representatives at the meeting indicated support for a partial interchange at Kortright Road/Downey Road and a service road on the east side of Highway 6. The project team noted that comments would be considered during the evaluation of alternatives. Meeting notes from the meeting are provided in Appendix D.

3.3.3 Comments Received

In total, approximately 70 comment sheets and emails were received at and following the PIC.

When asked about the importance ranking of evaluation criteria, most respondents indicated that access to the highway, traffic operations, pedestrian/cyclist access, and impacts to the natural and social environments were most important.

Table 2 provides a summary of comments received from PIC 1, and the responses provided by the project team. Complete tables of comments received and responses provided are in Appendix C.

Table 2: PIC 1 Public Comments Summary

Input Received	Response Provided
• Kortright Road is a major intersection and should have northbound and southbound access to the Hanlon Expressway • The project should include an interchange at Kortright Road • Support the southbound ramps at Kortright Road	• Potential for an interchange at Kortright Road was considered. Interchanges are not being recommended at all of the existing intersections since the intersections are too closely spaced to accommodate an interchange without overlapping interchange ramps, therefore compromising highway safety. A full interchange has not been carried forward at Kortright Road for the following reasons: • Kortright Road and Downey Road are residential collectors (as opposed to 'arterial') in the City of Guelph Road network • There would be significant property requirements • The entrance/exit ramps to the north would overlap with the ramps at a possible Stone Road interchange, without sufficient space for weaving areas between the interchanges • An interchange at Stone Road is preferred since it is a major east-west arterial road in the City of Guelph Road network and has the potential for an increased role in the urban and regional transportation system.

Input Received	Response Provided
• Do not support the College Avenue Extension • Do not want traffic to the YMCA to be directed through the community • Do not want to see Stone Road Extension • Support the Stone Road Extension to improve connectivity to the northwest • College Avenue Extension has significant impacts to the Hanlon Creek corridor/wetland • Believe that the College Avenue Extension can be constructed with consideration for the natural environment	• Although potential municipal road network connections were displayed at the recent Public Information Centre (PIC 1), they are not part of the Environmental Assessment for this study. • Potential municipal road network connections were illustrated schematically to show how municipal roads may access the Hanlon Expressway in the future. The City would be required to undertake further study and initiate a Municipal Class Environmental Assessment Study for possible municipal road network connections. The studies have not yet been initiated. • MTO and Stantec have been working with representatives from the City of Guelph and will continue to keep the City involved as the study progresses. • Provided contact information for City of Guelph Transportation Planning Engineer for additional information about future municipal road network connections.
• Require direct access from College Avenue to the Hanlon Expressway	• Interchanges are not being recommended at all of the existing roads since the intersections are too closely spaced to accommodate an interchange without overlapping interchange ramps, therefore compromising highway safety. • A Road Safety Assessment has been carried out to investigate the potential for a partial interchange, with ramps to and from the north at College Avenue. The results of the Road Safety Assessment indicate that there would be operational concerns between the College Avenue on and off ramps and the ramps for the existing Wellington Street interchange. As a result, this option has not been carried forward for consideration.
• Project team should consider roundabouts or 'traffic circles' • Interchanges are too expensive	• The Ministry of Transportation is actively considering possible locations for a modern roundabout and has recommended the implementation of a roundabout as a pilot project at an intersection on Highway 33 west of Kingston. A Roundabout Innovation Team has been established to share expertise, research, experience and best practices with other jurisdictions to further the implementation of roundabouts on provincial highways. In terms of implementing roundabouts on the Hanlon Expressway, there is concern that high traffic volumes and anticipated traveling speeds cannot be accommodated by a roundabout.
• Do not think there is a need for grade-separating the Hanlon Expressway • The Hanlon Expressway should be downgraded to a Municipal Road • The need for municipal road network connections must be considered	• As well as being a major arterial in the City of Guelph, the Hanlon Expressway is a provincial facility that provides a vital link within the provincial highway network and is intended to serve as a higher order highway, providing long-distance and regional connections. • The Hanlon Expressway has been studied extensively over a number of years. The Ministry of Transportation has conducted several planning studies on the Hanlon Expressway and the connecting provincial highway network. In 1969, the Ministry completed a Functional Planning Study of the Hanlon Expressway, from Clair Road, Northerly to Woodlawn Road. This study identified that the Expressway would serve as a major north-south link connecting Highway 401 to Highway 7. The Hanlon Expressway was constructed in 1972 to relieve traffic on Guelph's arterial road system, with the ultimate long-term goal of converting the Expressway to a fully-controlled access facility. • In 2004 a Traffic Operations Study was carried out for the Hanlon Expressway to assess existing and future traffic operations of the existing at-grade intersections. The Traffic Operations Study identified a need for upgrading the at-grade intersections to grade-separations (i.e. flyovers) or interchanges. A four-lane, access controlled highway will improve traffic safety and operations on this section of the Hanlon Expressway.
• The Hanlon Expressway is currently a barrier for pedestrians and cyclists	• Existing pedestrian and cyclist routes/crossings will be maintained and/or reinstated, wherever possible.
• Would prefer a ring road around the city that should connect Highway 6, Highway 7 • Recommend improvements to the north section of the Hanlon Expressway • There should be a connection to Highway 24 • The plan does not provide a comprehensive plan for the entire (north and south) Hanlon Expressway – how does this fit into the Provincial Highway network? • Highway 6 should be relocated to a new corridor outside of the City of Guelph • Return Highway 7 to its original alignment	• The purpose of this study is to upgrade the expressway to a fully-controlled access freeway between the Speed River and 0.5 kilometres south of Maltby Road, with access restricted to interchange locations only. As well as being a major arterial in the City of Guelph, the Hanlon Expressway is a provincial facility that provides a vital link within the provincial highway network and is intended to serve as a higher order highway, providing long-distance and regional connections. • The project limits for this study are Highway 6 (Hanlon Expressway) between Matlby Road and the Speed River. Improvements to the Hanlon Expressway north of the study area would be carried out as a separate assignment. Your comments regarding potential improvements north of the study area have been forwarded to the Ministry of Transportation for consideration.
• What environmental investigations are being undertaken?	• The evaluation process includes many detailed engineering and environmental investigations. A noise study, archaeological and cultural heritage assessment, land use study, terrestrial and aquatic studies, and various engineering investigations are being carried out as part of this project. Results of the evaluation of the environmental and engineering investigations will be presented at the second Public Information Centre.

3.4 Public Information Centre 2—December 5, 2007

The second Public Information Centre was held on Wednesday, December 5, 2007 at the Holiday Inn in the City of Guelph. Four-hundred and fifty-nine members of the public and external agency representatives attended the PIC.

The purpose of the PIC was to:

- Present and discuss the Preferred Plan

- Seek input on the Preferred Plan
- Answer questions about the study

The PIC was advertised in the *Guelph Mercury* (Tuesday, November 20, 2007 and Saturday, December 1, 2007), *the Guelph Tribune* (Tuesday, November 20, 2007 and Friday, November 30, 2007) and the *Wellington Advertiser* (Friday, November 23, 2007 and Friday, November 30, 2007).

In addition, notification letters and flyers were mailed on Friday, November 16, 2007 to external agencies, stakeholders and members of the public who had requested that their name be on the project mailing list. An additional bulk mailing was distributed to over 4,000 property owners adjacent to the highway on Friday, November 16, 2007. Notice of the PIC was also posted on the project website.

The following information was displayed at the PIC:

- Welcome/Study Process
- Environmental Assessment Process
- Project Background
- Interim Improvements
- Existing Transportation Conditions
- Existing Environment
- Potential Interchange Locations
- Evaluation Criteria Weighting
- Central and North Sections – Alternatives and Evaluation
- Other Alternatives Considered – Diamond Interchange and Roundabouts
- Preferred Plan
- Cross-Sections
- Pedestrian and Cyclist Access
- MTO Noise Policy
- Preliminary Noise Study Results
- Receptor Locations and Schematic Noise Barrier/Berm Locations
- Related Provincial Projects

The text panels and displays were available for review and the project team (including noise and property specialists) was available to answer questions and discuss the study. Additional resources, including the draft Noise Impact Study and an MTO video regarding noise mitigation on provincial highways were available at the PIC.

Comment sheets were made available and agencies were encouraged to return them either in the comment sheet box at the meeting or by mail, fax, or email until the January 18, 2008 deadline.

The comments deadline was extended to the end of January 2008 following a request from City Council and local residents.

A copy of the materials available at the PIC is provided in Appendix E.

3.4.1 External Agency Meeting 2

A separate external agency meeting was held on Wednesday, December 5, 2007 at 2:00 PM at the Holiday Inn in Guelph. An invitation to attend the meeting was sent to external agencies on the project mailing list on Friday, November 16, 2007.

External agencies and stakeholders that were represented included the City of Guelph, Guelph Hydro, Union Gas, Grand River Conservation Authority, Chamber of Commerce, County of Wellington, Guelph Police, Bell Canada, Guelph District Real Estate Board, and Gamsby and Mannerow Ltd (Township of Puslinch). City of Guelph and Township of Puslinch Councillors, and a representative from the office of the local MPP were also in attendance.

The PIC text panels and displays were available for review and the project team was on hand to answer questions and discuss the study.

3.4.2 Community Meetings

Following the second Public Information Centre, the City of Guelph held a Special Council Meeting to hear delegations from the community regarding the Preferred Plan presented at PIC 2. The special Council Meeting was held on Monday, January 14, 2008 at 7:00 PM.

Twenty-nine delegations from the community, including local residents, the YMCA, and the Chamber of Commerce provided short presentations to City Council. Meeting notes from the meeting are available from the City of Guelph.

3.4.3 Community Workshop – May 1, 3, and 13, 2008

In response to concerns identified from the public and expressed by City of Guelph Councillors, the Ministry and the City partnered to carry out a Community Workshop to identify and evaluate possible alternative solutions for the project between Kortright Road/Downey Road and College Avenue (i.e. the North Study Area). Participants were identified based on a list of interested residents and local stakeholders identified by the City and City Councillors.

The community workshop was intended to bring together representatives from the adjacent residential neighbourhoods, and from various interest groups and agencies to collaborate with the MTO, the City and the consultants in a focused workshop setting.

The purpose of the workshop was to:

- Gain a common understanding of the context (broad policy and physical site conditions) for improvements to Highway 6 (the Hanlon Expressway)
- Gain a common understanding of the scope of possible options
- Develop various options for improvements at Kortright Road, Stone Road and College Avenue
- Review evaluation criteria and weighting to be used to identify a Preferred Plan

Workshop participants were identified by the City of Guelph based on their involvement in the study to date. Representatives included members from the West Hanlon Neighbourhood Group, Kortright Hills Community Association, residents east of the Hanlon Expressway, the Hanlon Awareness Group, Guelph Field Naturalists, Chamber of Commerce, Real Estate Board, Emergency Services, Mary Phelan School and Priory Park Baptist Church.

The Community Workshop included three events: a kick-off meeting to provide background information and to define the context of the workshop event (May 1, 2008); a full-day workshop to discuss and develop possible solutions to local issues associated with the current Preferred Plan (May 3, 2008); and a follow-up meeting to present the results of the workshop and to discuss the next stages of the study (May 13, 2008).

There were two key outcomes of the Community Workshop. The first outcome related to the evaluation criteria used to assess various design alternatives. The four workshop groups were asked to develop their own ranking and weighting of the evaluation criteria which was used to identify the Preferred Plan from December 2007.

The second key result was that each of the four workshop groups developed their own design alternative for the highway corridor between Kortright Road/Downey Road and College Avenue.

The workshop groups developed four alternatives for consideration. Key features of the design alternatives included the provision of either a one-way or two-way service road between Kortright Road/Downey Road and Stone Road; removing the directional ramp in the southwest quadrant of the interchange at Stone Road, and removing the loop ramp in the southeast quadrant of the Stone Road interchange to provide a simple diamond interchange on the east side of the Hanlon Expressway. Three of the design alternatives maintained the south ramps at Kortright Road/Downey Road while one design alternative incorporated a grade-separated roundabout at this location.

Additional information regarding the alternatives developed at the Community Workshops is available in Section 6.3.2.

3.4.4 Comments Received

In total, approximately 290 comment sheets and emails were received following PIC 2 and the City's January 14, 2008 Special Council Meeting.

Table 3 provides a summary of the comments received from PIC 2, and the responses provided by the project team. Complete tables of comments received and responses provided are in Appendix C.

Table 3: PIC 2 Public Comments Summary

Input Received	Response Provided
• Concerned about access to the municipal road network	• The purpose of this study is to improve traffic operations and safety within the study area. This will be achieved, partially, by the removal of the at-grade intersections. We acknowledge that the removal of the at-grade intersections may result in some additional out-of-way travel for local residents. One of the purposes of the community workshop was to consider additional alternatives that could improve local access while addressing traffic operations on the Hanlon Expressway and minimizing impacts to the natural, social and cultural environments
• Concerned about additional traffic on local roads	• The Hanlon Expressway is a vital link within the Provincial Highway Network, connecting Highway 401 with Highway 7 (Guelph to Kitchener), and the continuation of Highway 6 north of Guelph. It also provides regional connections to the Cambridge area (via Wellington Road 124/City Road 124 – formerly Highway 24), the Kitchener area (via Highway 7), and the Country of Wellington north of Guelph (via Highway7). • Many residents have indicated that they are concerned that traffic volumes on local roads in the study area are already too high. The City of Guelph has indicated that some of the existing traffic on local roads, including Woodland Glen Drive, is 'external' traffic using local roads to access the Hanlon Expressway. The City and MTO have carried out an additional traffic study to confirm the origins and destinations of vehicles that are currently using the municipal road network in the study area. Results of the additional traffic study will be available at the upcoming Public Information Centre. • The City of Guelph routinely carries out traffic studies on municipal roads in the City to determine if there are alternative methods (i.e. traffic calming or signing) that may be appropriate to divert some of the vehicular traffic on these roads. This type of study has been initiated for Woodland Glen Drive. If you have additional questions regarding the City's methods for minimizing traffic on municipal roads, or the current study on Woodland Glen Drive, please contact City of Guelph Transportation Planning Engineer, for additional information about future municipal road network connections.
• Request additional information about pedestrian and cyclist access	• Although pedestrian sidewalks and bicycle lanes are a municipal responsibility, the Preferred Plan presented in December 2007 accommodated pedestrians on raised sidewalks at Kortright Road and College Avenue and on sidewalks at the Laird Road and Stone Road interchanges. Bicycle lanes were provided at all of the grade separations. Details of bicycle lanes, including widths, will be confirmed in the final Transportation Environmental Study Report (TESR). • The City of Guelph has completed detailed Trails and Transportation Master Plans which provide an overview of expectations for future pedestrian and cyclist access across the Hanlon Expressway. The Trails Master Plan indicates that 'the existing culvert underpass of the Hanlon Expressway, south of Kortright Road provides an opportunity to improve walkability [across the Hanlon Expressway]' through improvements to lighting and access. This initiative would be carried out by the City of Guelph since the trail is part of the City's Trail Network. • MTO supports the development of bike lanes in municipalities by designing bridge structures that can accommodate a bike lane, where possible. This is carried out on a case-by-case basis when identified by a local municipality and is incorporated into the Environmental Assessment process. Additional alternatives that may enhance pedestrian and cyclist access across Highway 6 were considered at the community workshop.
• Why can't full access at Downey Road / Kortright Road be included in the Preferred Plan?	• The potential for a full interchange at Kortright Road was considered. However, full interchanges are not recommended at all of the existing intersections since the intersections are too closely spaced to accommodate an interchange without overlapping interchange ramps, which compromises highway safety. • A full interchange was not carried forward at Kortright Road for the following reasons: • Downey Road is an arterial road with a residential character in the City of Guelph Road network • There would be significant property requirements • The entrance/exit ramps to the north would overlap with the ramps at a possible Stone Road interchange, without sufficient space for weaving areas between the interchanges • There would be impacts to the Hanlon Creek Provincially Significant Wetland • The project team acknowledges that the removal of direct access at Downey Road / Kortight Road will result in some out-of-way travel. Additional alternatives that may improve access in the vicinity of this intersection were considered at the community workshop.

Input Received	Response Provided
• Why can't full access at College Avenue be included in the Preferred Plan?	• The desire for direct access at College Avenue has been noted. Interchanges cannot be provided at all of the existing intersections since on and off-ramps would overlap. A Road Safety Assessment has been carried out to investigate a potential partial interchange at College Avenue. The results of the Road Safety Assessment indicate that predicted accidents could increase if the ramps overlap with the Wellington Street ramps, which is not desirable. Direct access from the Hanlon Expressway to College Avenue is not being considered. • This was subsequently confirmed by an independent consultant that was retained by the City.
• What are the results of the noise study that was carried out?	• A Noise Study has been carried out as part of this assignment in accordance with the MTO Noise Policy (2006), which has been approved and endorsed by the Ministry of the Environment. The Noise Study indicates that provision for noise attenuation (i.e. noise walls or berms) is warranted on both the east and west sides of the Hanlon Expressway between Kortright Road and College Avenue. Since the required mitigation is primarily based on predicted future traffic volumes on the Hanlon Expressway and does not change as a result of project alternatives, the noise factor is potentially impacted to the same degree or in the same way for all alternatives. Impacts to this factor are being mitigated in accordance with the MTO Noise Policy as displayed on the Noise Impacts panel at the December Public Information Centre. • Members of the public have indicated that they are concerned that the Noise Model does not accurately identify existing noise levels. This summer (2008), the Noise Specialist will conduct field measurements in the study area to verify the numbers obtained from the noise model.
• Will an air quality study be carried out?	• An air quality assessment has been carried out as part of this assignment. The assessment considered air quality levels adjacent to the highway based on the proposed change from a highway with signalized intersections to a free-flow freeway and were based on the future (2021) predicted traffic volumes. Results of the assessment will be made available at the upcoming Public Information Centre.
• Can the MTO lower the highway design standards so that closely spaced interchanges can be considered?	• There have been several requests from the public to lower the design standards and posted speed on Highway 6. As well as being a major arterial in the City of Guelph, the Hanlon Expressway is a provincial facility that provides a vital link within the provincial highway network and is intended to serve as a higher order highway, providing long-distance and regional connections. The MTO will not be considering lowering the highway design standards on the Hanlon Expressway. Provincial highways are designed in accordance with the Geometric Design Standards for Ontario Highways, which is available for purchase on the Publications Ontario website at www.publications.serviceontario.ca and online at the Ministry of Transportation's Online Research Library.

3.5 Public Information Centre 3 – June 18, 2008

A third Public Information Centre was held on Wednesday, June 18, 2008 at the Holiday Inn in the City of Guelph. Two hundred and twenty-seven members of the public and external agency representatives attended the PIC.

The purpose of the PIC was to:

- Display and seek input on interchange and access alternatives for College Avenue, Stone Road, and Kortright Road including solutions developed at the Community Workshop
- Seek input on the evaluation criteria to be used to identify a Preferred Plan
- Present the Preferred Plan for Laird Road, Maltby Road, and Clair Road (Central Section)
- Answer questions about the study

The PIC was advertised in the *Guelph Mercury* (Tuesday, June 3, 2008 and Saturday, June 7, 2008), *the Guelph Tribune* (Tuesday, June 3, 2008 and Friday, June 6, 2008) *and the Wellington Advertiser* (Friday, June 6, 2008 and Friday, June 13, 2008).

In addition, notification letters and flyers were mailed on Friday, May 30, 2008 to external agencies, stakeholders and members of the public who had requested that their name be on the project mailing list. Over 4,000 property owners were advised of the PIC via a direct mailing on Friday, May 30, 2008 and notice of the PIC was posted on the project website.

The following information was displayed at the PIC:

- Welcome Panel
- Environmental Assessment Process
- Additional Studies
- Project Background
- Interim Improvements
- Existing Environment
- Existing Transportation Conditions
- Evaluation Criteria Weighting
- South Section Preferred Plan/ North Section Alternatives
- Alternative 1
- Alternative 2
- Alternative 3
- Alternative 4
- Alternative 5
- Alternative 6
- Pedestrian/Cyclist Access
- Related Provincial Facilities

The text panels and displays were available for review and the project team was available to answer questions and discuss the study. Comment sheets were made available and residents and agencies were encouraged to return them either in the comment sheet box at the meeting or by mail, fax, or email until the July 18, 2008 deadline.

The comments deadline was extended by a week following a request from a local community group.

A copy of the materials available at the PIC is provided in Appendix E.

3.5.1 External Agency Meeting 3

A separate external agency meeting was held on Wednesday, June 18, 2008 at 2:00 PM at the Holiday Inn in Guelph. An invitation to attend the meeting was sent to external agencies on the project mailing list on Friday, May 30, 2008.

External agencies and stakeholders that were represented at the PIC included the City of Guelph, Wellington-Dufferin-Guelph Health Unit (Medical Officer of Health), Upper Grand District School Board, Guelph District Real Estate Board, Guelph Hydro, Guelph Police, Priory Park Church and the Kortright Hills Neighbourhood Association.

Councillors from the Township of Puslinch and the City of Guelph were also in attendance.

The text panels and displays were available for review and the project team was on hand to answer questions and discuss the study.

3.5.2 Comments Received

In total, approximately 150 comment sheets and emails were received following the PIC.

Table 4 provides a summary of the most commonly submitted comments received from PIC 3, and the responses provided by the project team. Complete tables of comments received and responses provided are in Appendix C.

Table 4: PIC 3 Public Comments Summary

Input Received	Response Provided
• Design Speed	• There have been several requests from the public to lower the design standards and posted speed on Highway 6. However, the Hanlon Expressway is an important part of the provincial highway network and will continue to function as a provincial transportation link between Highway 401 and the new Highway 7 from Guelph to Kitchener. The current posted speed on Highway 6 is 90 km/hr. • The posted speed will be increased when the highway is upgraded to a freeway to provide consistent driver expectations for the facility. Design speed has to match the expected operating speed of a facility. It is not practical to artificially lower the posted speed on a freeway and expect operating speeds to follow. A 100 km/h posted speed is appropriate for this type of facility and the existing highway alignment has been designed to meet this standard. The posted speed for the facility will be confirmed by MTO in advance of construction.
• Pedestrians and cyclists	• With regards to pedestrian and cyclist access, the Ministry of Transportation is committed to sustainable transportation and active-transportation alternatives, which includes trails and pathways. The Ministry has successfully worked with municipalities to incorporate bicycle/trail/pedestrian access into other Ministry of Transportation projects. All of the proposed alternatives will include pedestrian and cyclist access across Highway 6 at Kortright Road / Downey Road, Stone Road, and College Avenue. An attempt is being made to accommodate/connect all of the City of Guelph's existing and proposed trails affected by the Preferred Plan.
• Air quality	• An air quality assessment was carried out to determine air quality levels adjacent to the highway based on the proposed change from a highway with signalized intersections to a free-flow freeway. Predicted air contaminant concentrations were compared to provincial and federal criteria established by regulatory authorities such as the MOE. These authorities typically base their criteria on the potential for human health effects. Predicted results of the air quality assessment were all within provincial and federal guidelines. • The Province of Ontario has set a provincial target to reduce greenhouse gases from 60 megatons to 54 megatons in 2014. For 2020, the greenhouse gases are targeted to be reduced by another 10 megatons to 44 megatons. In order to achieve these targets, the Province is moving forward with a number of initiatives. For example, the Province is planning to adopt new legislation that will limit truck speeds to 105 km/hr. This legislation is being implemented to increase safety and reduce greenhouse emissions. At this time there are no plans to reduce speed limits for motor vehicles. • Other initiatives include continued increased emphasis on integrated approaches to land use planning and transportation planning. This will allow individuals multiple transportation choices such as motor vehicles, transit, walking and cycling to meet their transportation needs. Further improvements to public transportation and the mandate to increase ethanol use in motor vehicles are also part of the overall strategy. In conjunction with these Provincial initiatives, the Federal Government is introducing federal fuel efficiency standards for motor vehicles as well as a low carbon fuel standard. • In addition, the City of Guelph is considering initiating a comprehensive air quality monitoring program; which could include the installation of air quality monitors to better assess the existing air quality in the City. • With regards to the potential for future railway or light rail transportation corridors in the City of Guelph, the project team is aware of the City's recent decision to pursue potential alternatives for rail transportation in the City. The Ministry supports public transit and will continue to work with cities and municipalities to implement new public transit initiatives. Improving the quality of transit services is critical to Ontario's economic, social and environmental well being, since it reduces pollution, commuting times, and gridlock. The current Ontario government has made it a priority to make sure that Ontarians living in urban communities have access to seamless, safe, reliable and affordable public transit and transportation alternatives, and continues to make investments that will increase service and access and ultimately make transit a more desirable transportation alternative. However, transit alone will not address the travel demand on Highway 6 into the future.
• Noise Impacts / Study	• A Noise Study has been carried out in accordance with the MTO Noise Policy (2006), which has been approved and endorsed by the Ministry of the Environment. The Noise Study indicates that provision for noise attenuation (i.e. noise walls or berms) is warranted on both the east and west sides of the highway between Kortright Road and College Avenue. The required mitigation is primarily based on predicted future traffic volumes on the Hanlon Expressway and does not change significantly as a result of project alternatives. Noise impacts are being mitigated in accordance with the MTO Noise Policy as displayed on the Noise Impacts panel at the December Public Information Centre. Members of the public have indicated that they are concerned that the noise model does not accurately identify existing noise levels. The noise specialist has conducted field measurements in the study area to verify the noise model results.
• Noise Protocol	• In response to concerns regarding the proposed noise monitoring, the project noise specialist (SS Wilson and Associates) has conducted field measurements within the study area to verify the noise model results. Noise impacts and mitigation for MTO projects are identified in accordance with the MTO Noise Policy, which has been approved by the Ministry of the Environment. There are different MOE regulations with respect to the operation of stationary sources. The MTO provides noise mitigation at sound levels below 65 dBA if there is a greater than 5 dBA increase in levels. The 65 dBA level is in place to recognize that as sound levels approach and exceed that level, extra care needs to be taken with respect to the

Input Received	Response Provided
	provision of noise mitigation.
• Adjacent projects	• With regards to future connections to the adjacent provincial highway network, the extension of Highway 6 is not part of this study. The new Highway 7 alignment recently received Environmental Assessment approval from the Ministry of the Environment and will proceed to construction. In the future, it is planned to extend Highway 6 northward to connect with the new Highway 7 route with an interchange at Woodlawn Road, as approved under the Highway 7 EA. The EA Study for Highway 6 from Freelton to Guelph has been submitted to the Ministry of Environment and is currently awaiting approval.
• Access at existing intersections	• The project team understands that there is a desire to maintain access at all of the existing intersections with the Hanlon Expressway. However, a full interchange cannot be provided at College Avenue because the interchange ramps would overlap with the proposed interchange ramps at Stone Road, and the existing ramps at Wellington Street. Overlapping interchange ramps are not desirable because they compromise safety. • Similarly, a full interchange cannot be provided at Kortright Road / Downey Road because the interchange ramps to and from the north would overlap with the proposed interchange ramps at Stone Road. A partial interchange will be provided at Kortright Road / Downey Road to provide access to and from the south.
• Out of way travel	• We acknowledge that local traffic patterns will change and that there will be some out-of-way travel required to access the highway. However, the removal of the at-grade intersections will result in fewer delays on the Hanlon Expressway, and significant safety improvements for the traveling public.
• Stone Road interchange	• With respect to the number of lanes on Stone Road, the results of traffic modelling indicate that four through lanes (i.e. two lanes in each direction) are required on Stone Road though the interchange to accommodate the traffic volumes entering and exiting the highway. West of the interchange, projected volumes are expected to decrease sufficiently that only two through lanes (i.e. one lane in each direction) are required. The transition from four lanes to two lanes will be located beyond the limits of the interchange but before the intersection at Stone Road and Woodland Glen Drive. The traffic modelling was based on the assumption that Stone Road will not be extended. • The configuration of the Stone Road interchange has been refined to minimize property impacts where possible.

3.6 Public Information Centre 4 – October 23, 2008

A fourth Public Information Centre was held on Thursday, October 23, 2008 at the Holiday Inn in the City of Guelph. Two hundred and forty-five members of the public and external agency representatives attended the PIC.

The purpose of the PIC was to:

- Present the evaluation of North Section Alternatives
- Present and discuss the Preferred Plan
- Answer questions about the study

The PIC was advertised in the *Guelph Mercury* (Tuesday, October 7, 2008 and Saturday, October 18, 2008), *the Guelph Tribune* (Tuesday, October 7, 2008 and Friday, October 17, 2008) *and the Wellington Advertiser* (Friday, October 10, 2008 and Friday, October 17, 2008).

In addition, notification letters and flyers were mailed on Tuesday, October 7, 2008 to external agencies, stakeholders and members of the public who had requested that their name be on the project mailing list. Over 4,000 property owners were advised of the PIC via a direct mailing on Tuesday, October 7, 2008 and a notice of the PIC was posted on the project website.

The following information was displayed at the PIC:

- Welcome
- Environmental Assessment Process
- Related Provincial Projects
- Existing Environment
- Environmental Update
- Transportation Update
- Evaluation Process
- Evaluation of Alternatives
- Preferred Plan
- Cross-Sections
- West Service Road and Cross-Sections

The text panels and displays were presented for review and the project team was available to answer questions and discuss the study.

A copy of the materials available at the PIC is provided in Appendix E.

3.6.1 External Agency Meeting 4

A separate external agency meeting was held on Thursday, October 23, 2008 at 2:00 PM at the Holiday Inn in Guelph. An invitation to attend the meeting was sent to external agencies on the project mailing list on Tuesday, October 7, 2008.

External agencies and stakeholders that were represented at the PIC included the City of Guelph; a representative from MPP Liz Sandals' Office; Wellington Catholic District School Board; Wellington County; YMCA; and Guelph Hydro Electric Inc.

Councillors from the City of Guelph were also in attendance.

The text panels and displays were available for review and the project team was on hand to answer questions and discuss the study. Comment sheets were made available and agencies were encouraged to return them either in the comment sheet box at the meeting or by mail, fax, or email.

3.6.2 Comments Received

Approximately one hundred and fifty comment sheets and emails were received following the PIC.

Table 5 provides a summary of the comments received from PIC 4, and the responses provided by the project team. Complete tables of comments received and responses provided are in Appendix C.

Table 5: PIC 4 Public Comments Summary

Input Received	Response Provided
• The updated plan addresses most of the previous issues	• Support noted, no response required
• What is the proposed height for the noise walls? • Will the barriers be located to reduce noise at houses below the roadway?	• Noise barriers in the study area are proposed to be between 3 metres and 5 metres in height and will be provided where a sound reduction of a minimum of 5 dBA can be achieved for first row receivers. • Noise calculations for this project have been carried out for the future (year 2027) in accordance with the requirements in the Ministry of Transportation Noise Guide (2006). • Noise barrier locations are based on current Ministry of Transportation practice for sound barrier locations. The barriers are generally located where highway sound will be best absorbed. The sound barriers can be a combination noise berm/wall, where possible and are normally placed adjacent to the highway right-of-way where they provide good acoustical value and allow for maintenance of the barrier and the right-of-way without creating a 'dead zone' behind the barrier. The project team is currently investigating alternative noise wall locations and the potential for a noise wall/berm combination between the proposed West Service Road and Old Colony Trail / Wagoners Trail. The results of this analysis will be documented in the TESR. Noise Wall details, such as height, colour, and landscape treatments, will be determined during detail design.
• Ramp from Downey Road to Hanlon southbound is too close to Hanlon Creek Wetland	• With regards to the Hanlon Creek PSW, the Preferred Plan does not impact the PSW. However, there are minor impacts to the Hanlon Creek floodplain. The project team met with the Grand River Conservation Authority (GRCA) in March 2008. At that meeting GRCA staff indicated that they do not expect that there will be significant impacts to the Hanlon Creek Floodplain if there is minor encroachment in the southwest quadrant of Highway 6 and Downey Road and noted that there were no significant concerns with a minor encroachment, if no other reasonable alternatives were identified. The study has also included consultation with the Ministry of Natural Resources. • Support for the proposed improvements will be obtained from GRCA and will be documented in the Transportation Environmental Study Report.
• Why must the speed limit be increased to 100 km/hr? Highway 8 in Kitchener is only posted at 80 km/hr. • Speed limit should be 90 km/hr through residential areas	• The Hanlon Expressway is an important part of the provincial highway network and will function as a provincial transportation link between Highway 401 and the new Highway 7 from Guelph to Kitchener. A 100 km/h posted speed is appropriate for this type of facility and the existing highway alignment has been designed to meet this standard. • The Ministry has agreed that it will review the posted speed for this facility during the detail design phase of the project. • New legislation implemented on Jan. 1, 2009 requires the mandatory activation of speed limiters to cap the speeds of most large trucks at 105 km/hr.
• Do not see the need for the West Service Road	• When the project was initiated, the alternatives were developed with consideration for future transportation connections identified in the City of Guelph Official Plan and the Guelph-Wellington Transportation Study. Development on the west side of the highway has been constrained by sensitive natural features and the need to have a road system that maximized development potential. The College Avenue Extension and Stone Road Extension were identified in the City's Official Plan to provide North-South and East-West connections. • Although the purpose of this study is to develop a Preliminary Design Plan to upgrade Highway 6 (Hanlon Expressway) from south of Maltby Road to the Speed River, to a freeway with access restricted to interchange locations only, the project includes consideration for changes to traffic operations on the municipal road network. • After the project started, the City of Guelph's Council indicated that it would not support a future College Avenue Extension, which led to concerns from local residents regarding future traffic volumes on municipal roads. Concerns regarding the proposed extension include impacts to a Provincially Significant Wetland, and impacts to adjacent property owners. • The Preferred Plan presented at PIC 4 included a service road west of Highway 6 between Kortright Road / Downey Road and Stone Road, and direct access to Highway 6 southbound from Kortright Road / Downey Road. • The service road provides direct access from the Kortright Hills area to Highway 6 northbound and provides a municipal north-south connection on the west side of Highway 6 in place of the College Avenue extension. Scottsdale Drive provides the north-south connection on the east side of the Hanlon.
• Concerned about winter access to Shadybrook neighbourhood	• Shadybrook Community residents use the Old Hanlon Road as a winter access to the community to avoid a steep hill on Shadybrook Crescent. Winter maintenance on municipal roads is the responsibility of the City of Guelph. The City of Guelph has indicated that winter maintenance priority for Shadybrook Crescent will be increased to provide for better winter access to the community.
• The closure of the College Avenue intersection will affect traffic and access to and from the local schools and increase traffic on local roads	• Preference for direct access at College Avenue has been noted. Direct access cannot be provided at this location because the interchange ramps would overlap with the proposed interchange ramps at Stone Road and the existing ramps at Wellington Street, causing an unsafe weaving situation. • Access at the College Avenue area will be accomplished through the Stone Road interchange and the local road system. • With regards to emergency access to the College Avenue community, local emergency service providers have been contacted as part of this study and will continue to be involved until the improvements are constructed. No concerns regarding emergency service access to the College Avenue neighbourhood have been identified by emergency service providers.
• Plan should include traffic calming on Woodland Glen Drive between Downey Road and the proposed Service Road	• With regards to traffic volumes on the section of Woodland Glen Drive between Downey Road and the proposed Service Road, gaps in the traffic stream will be created by the all-way stop controlled intersection at Woodland Glen Drive and the Service Road. In addition, the City of Guelph will be initiating improvements (e.g. traffic calming, signage) to reduce traffic on the Service Road by directing non-neighbourhood traffic away from the Service Road and to divert northbound traffic on Downey Road to the Hanlon Expressway at Laird Road. The intersection at Downey Road/Woodland Glen Drive will also be signalized to provide control over the traffic flow and to relieve the congestion identified by local residents. It is expected that this combination of improvements will provide for improved traffic flow on Woodland Glen Drive and Downey Road.

Input Received	Response Provided
• Why didn't the project team consider a service road on the East Side of Highway 6?	• As a result of the Community Workshop, four design alternatives were developed. Two of the workshop alternatives included a two-way service road on the west side of the Hanlon Expressway. The other two alternatives included a one-way (southbound) service road on the west side of the Hanlon Expressway and a one-way (northbound) service road on the east side of the Hanlon Expressway. • The project team added the following two alternatives to the four developed at the Community Workshop: • A two-way service road on the east side of the Hanlon Expressway • A 'no service road' alternative (similar to the PIC 2 Preferred Plan) • The four Workshop alternatives and the two additional project alternatives were presented at Public Information Centre 3 on June 4, 2008. • The PIC 4 Preferred Plan was based on an evaluation of the six North Section project alternatives, applying a number of evaluation criteria which were quantified using a point scoring system. The alternative with a two-way sevice road on the west side of the Hanlon scored highest of the six alternatives. This evaluation is supplemented by a qualitative overview of the advantages and disadvantages of each alternative, which was also presented at PIC 4. • With regards to the reason that the service road cannot be moved east of Highway 6, a service road on the east side of Highway 6 was evaluated during this study. A service road on the east side does not adequately address the access requirements of the residents west of the Hanlon Expressway and presents significant operational problem since the northbound exit ramp at Stone Road cannot be provided in conjunction with an east side Service Road. All northbound traffic destined for Kortright Road, Downey Road and Stone Road would be required to exit at Kortright Road to access the east Service Road which would negatively impact the long term traffic operations of the ramp terminal intersection at Kortright Road. The evaluation of the east side service road included consideration of the traffic operations concerns identified with the east side Service Road alternative. • A key benefit of the Preferred Plan is the provision of a north-south Service Road on the west side of the Hanlon Expressway between Downey Road and Stone Road. The addition of a north-south collector road on the east side of the Hanlon would duplicate the existing north-south connection provide by Scottsdale Drive and does not address the need for a north-south connection on the west side of the Hanlon.
• Do not support the upgrading of this section of the Hanlon Expressway	• With regards to the need for the proposed improvements, a Traffic Operations Study was carried out for the Hanlon Expressway in 2004 to assess existing and future traffic operations of the existing at-grade intersections. The Traffic Operations Study identified many intersections with poor operations and identified a future need for upgrading the at-grade intersections to grade-separations (i.e., flyovers) or interchanges. • Issues leading to the need for improvements to the Hanlon Expressway Corridor include: • Existing Operational Deficiencies – available capacity and deteriorating level of service of the multiple at-grade intersections limit the volume of traffic that can be accommodated safely on the highway. • Anticipated Growth Model - as the City of Guelph continues to grow, and the regional importance of the Hanlon Expressway continues to increase, the need for the highway as a primary transportation corridor will increase to support the anticipated growth, mobility of people, and movement of goods. • Transportation Demand - increased demand on the existing system will cause traffic congestion, delays and deteriorating safety conditions. The demand is based on planned urbanization in the Guelph South area, locally generated growth, and future planned connections to the provincial highway system, including the recently approved future new Highway 7 and planned realignment of Highway 6 south of Guelph. • Role and Function of the Hanlon Expressway – the role of the Hanlon Expressway is both local, providing municipal access to the highway system, and provincial, providing long-distance regional and provincial connections. The combination of these two functions has led to a conflict between the need for access and the need for conditions allowing an uninterrupted traffic flow. It has been recognized by all authorities involved that the primary role of the Hanlon Expressway is to be a higher order highway and that the problem can be resolved only by replacing the at-grade intersections with interchanges. • The above is partially based on the City of Guelph's anticipated Growth Model and type of Future Transportation Demand, as it provides a context to evaluate Alternatives to the Undertaking. The City anticipates that the following growth scenario is expected to occur • The existing Growth Model will continue to be fuelled by population growth and will manifest itself by urban and regional development (converting available lands into urbanized areas). Smart Growth, Transportation Demand Management, and other initiatives will attempt to control and minimize urban sprawl, and the expansion of transportation demand. • Increasing travel/mobility will continue to be realized by using individual automobiles as a dominant mode of transportation. • Alternative Transportation Modes (i.e. public transit) will continue to develop and increase their share in responding to transportation demand but not enough to significantly affect the use of individual automobiles. • The existing trend in vehicle occupancy (i.e. individual automobiles) indicates that a shift in the population's travel behaviour towards the better use of automobiles, at least for compulsory trips, should not be anticipated within a foreseeable future. • The existing economic model, relying on roadway transportation (trucks) for moving goods, will continue into the future. • As a result of the above, the expansions/improvements to the Provincial Highway System and particularly freeways are unavoidable and therefore necessary to support the anticipated growth, mobility of people and movement of goods.
• Concerned about tree and vegetation loss	• Current MTO practices for construction adjacent to trees and vegetation removal include retaining existing vegetation where feasible, and minimizing vegetation removal and impacts to adjacent vegetation, using temporary fencing during construction. • In addition, for this project a tree saving plan and a landscaping plan will be developed during detail design and additional landscaping details will be confirmed during detail design through consultation with property owners. Requirements for protection of vegetation can be found in MTO's Environmental Standards and Practices. Commitments to minimize tree and vegetation impacts will be included in the final Transportation Environmental Study Report (TESR).

3.6.3 Additional Community Meetings

Following PIC 4 the project team held two neighbourhood meetings with residents from Woodland Glen Drive and Old Colony Trail regarding the location and configuration of the proposed West Service Road.

3.6.3.1 Old Colony Trail – November 19, 2008

The first meeting was held on Wednesday, November 19, 2008 at 7:00 PM in the City of Guelph Council Chambers. The purpose of the meeting was to provide residents with an overview of the study, evaluation, and consultation process carried out for the project; and to address concerns identified in a petition from residents received following PIC 4.

Approximately 45 community members attended the meeting. Residents who attended the meeting had an opportunity to make a brief presentation to the project team. The following responses were provided to issues identified in the petition.

Issue	Response Provided at November 19 Meeting
Air quality	• Air quality assessment concluded that predicted air contaminant concentrations are within provincial and federal guidelines • Additional analysis is being carried out • City of Guelph will be undertaking a comprehensive air quality monitoring program
Noise	• Noise mitigation is warranted between Kortright Road and Stone Road • Predicted future sound is predominantly from Highway 6 • Typically noise walls are placed adjacent to the right-of-way
Loss of Mature Trees	• Detailed tree inventory will be undertaken during detail design • Existing vegetation will be retained adjacent to the noise barrier, where feasible • A tree transplanting and re-vegetation plan will be developed
Loss of pedestrian walkway from Old Colony Trail rear yards to Stone Road	• If desired by local residents, the City of Guelph will include a sidewalk, between Stone Road and Woodland Glen Drive, adjacent to the proposed service road
Location of proposed retaining wall (too close to property line)	• Retaining wall would be located within MTO right-of-way • Wall would include a noise barrier • Additional consultation with residents to confirm details of the wall
Noise During Construction	• Noise wall can be one of first items constructed • Contractor must abide by municipal noise by-laws • Noise from construction is for a limited duration
Loss of Property Value	• MTO does not provide compensation for indirect impacts for properties that are located adjacent to an exiting highway corridor when highway improvements are planned • Properties that are directly impacted (i.e. where property acquisition is required) are compensated at fair market value
Light Pollution	• Highway 6 will have full illumination in accordance with current design standards • Municipal illumination of Service Road will be designed to minimize light trespass beyond property line
Pedestrian Crossing of Service Road	• Intersection of Service Road with Stone Road will be signalized and include pedestrian signals • Three-leg intersection of Service Road with Woodland Glen Drive will have all-way stop control
Driveway Access for Woodland Glen Drive Residents Opposite YMCA	• Gaps in traffic stream will be created by all-way stop controlled intersection at Woodland Glen Drive and Service Road • City of Guelph will be initiating improvements to reduce traffic on service road by directing non-neighbourhood traffic away from the service road: • Construction of the Laird Road interchange first and intersection improvements to direct traffic from Downey to Laird • Introduction of traffic calming measures on Downey • City estimate that about 300 vehicles will be diverted during peak hour
Loss of Wildlife	• City of Guelph recently completed a Natural Heritage Strategy that confirmed vegetation between Highway 6 and Old Colony Trail is not considered to be locally, regionally or provincially significant • Commitment to review vegetation for migratory birds prior to construction
Move Service Road to East Side	• An East Side Service Road presents significant operational problems: • A northbound exit ramp at Stone Road cannot be provided, which is a significant origin and destination for users of the Hanlon Expressway • All northbound traffic destined for Kortright Road, Downey Road and Stone Road would be required to exit at Kortright Road, which would negatively impact the traffic operations of the ramp terminal intersection at Kortright Road
Use original PIC 2 Preferred Plan	• The previous Preferred Plan is not supported by the greater local community • A number of Guelph councillors expressed concern with the previous Preferred Plan • The previous Preferred Plan includes a directional ramp in the southwest quadrant of the interchange (behind Old Colony Trail) and an extension of Stone Road
Selection of Community Workshop participants	• Workshop participants were identified by the City of Guelph (including Councillors, as an impartial party) based on their involvement in the study to date. Representatives were selected from adjacent neighbourhoods, neighbourhood groups, and other interest groups • Participation in the workshop was limited to 40-50 participants to maintain a manageable group size • No parties who committed to attend all three Workshop events were denied participation at the workshop – one resident from Old Colony Trail expressed interest but could not commit to attending all three events • A feedback form on the website allowed the public to submit anonymous comments directly to the community Workshop participants

Following the meeting, the project team agreed to revisit the evaluation of alternatives and the details of the proposed West Service Road.

3.6.3.2 Old Colony Trail – February 11, 2009

The second meeting was held on Wednesday, February 11, 2009 at 7:00 PM at the Holiday Inn on Scottsdale Drive, in Guelph. The purpose of the meeting was to follow up on the issues raised at the November 19, 2008 meeting and to confirm the details of the Preferred Plan.

Approximately 42 community members attended the meeting.

At the meeting, a representative from the City of Guelph provided an overview of the operations of the proposed west Service Road and municipal initiatives to minimize external traffic on municipal roads on the west side of Highway 6. Details of revisions to the proposed West Service Road to minimize impacts to adjacent residents are discussed in Section 6.0.

At the meeting the project team provided an overview of the results of the evaluation of project alternatives, the final Preferred Plan, and proposed mitigation measures.

The following commitments were made for inclusion in the detail design stage of the study:

- Initiate Citizens Liaison Committee to provide input on the details of the Service Road during Detail Design
- Finalize design of the noise barrier and retaining wall (i.e. type, height, aesthetic details)
- Complete a detailed tree inventory to identify trees that can be saved
- Develop a tree relocation and landscaping plan

3.7 External Agency Liaison

The Planning and Preliminary Design Study has been co-ordinated with a full range of government agencies and ministries. The co-ordination occurred with all three levels of government (i.e. Federal, Provincial and Municipal).

The following Ministries, agencies and stakeholders were contacted during the study:

First Nations:

- Six Nations of the Grand River
- Six Nations Confederacy Council
- Mississaugas of the New Credit First Nation

Federal:

- Indian and Northern Affairs Canada – Specific Claim and Comprehensive Claim Branches
- Department of Fisheries and Oceans

Provincial:

- Ministry of Aboriginal Affairs
- Ministry of Environment
- Grand River Conservation Authority
- Ministry of Tourism
- Ontario Provincial Police – Wellington District
- Ministry of Natural Resources
- Ministry of Culture
- MPP – Wellington Halton Hills
- Ministry of the Attorney General
- MPP – Guelph Wellington
- Ministry of Citizenship and Immigration, Health Promotion, Sports and Recreation Branch
- Ministry of Agriculture, Food and Rural Affairs

Municipal:

- City of Guelph
- County of Wellington
- Chamber of Commerce
- Guelph Police Service
- Royal City Ambulance Service
- Township of Puslinch
- Puslinch Fire

Stakeholders:

- Architectural Conservancy of Ontario
- Mary Phelan Catholic School
- Guelph and District Real Estate Board
- Guelph Environmental Leadership
- Guelph Hiking Trail Club
- Guelph Historical Society
- Wellington-Dufferin-Guelph Public Health
- Hanlon Creek Neighbourhood Group
- Guelph Hydro Electric Systems Inc.
- South Kingdom Hall of Jehovah's Witnesses, Guelph
- Guelph Wellington Association for Community Living Inc.
- Bell Canada
- Kortright Hills Neighbourhood Association
- Guelph Development Association
- Guelph Field Naturalists
- Ontario Trucking Association
- Puslinch Historical Society
- Upper Grand District School Board
- Wellington Catholic District School Board
- YMCA-YWCA
- West Hanlon Neighbourhood Group
- Union Gas Ltd.
- Old University Neighbourhood Residents Association Inc.
- Guelph and District Homebuilders Association

A summary of input received and responses provided to external agencies and municipalities and copies of correspondence is in Appendix C.

3.7.1 City of Guelph

The project team met with representatives from the City of Guelph on a regular basis during the study to make sure that the City was kept up-to-date on the study and to make sure that City input was considered throughout the study. Meetings were frequently held in Guelph to facilitate City attendance.

City staff attended all Public Information Centres, the Community Workshop, and meetings with neighbourhood groups, including the Kortright Hills Community Association, West Hanlon Neighbourhood Group, and Old Colony Trail/Woodland Glen Drive residents during the study.

The City's responsibilities during the study included:

- Providing input and guidance on the need and location of potential municipal road network connections
- Providing input during the development of access and interchange alternatives and confirmation of a Preferred Plan
- Providing and updating the City's Transportation Model
- Providing information about municipal initiatives, including but not limited to, the City's Official Plan, the City's response to the Growth Plan, land use and business park development, the South Guelph Groundwater Study, the City's Natural Heritage Strategy update (completed April 2009) and noise and air quality concerns

3.7.1.1 City of Guelph Council

The project team met with City of Guelph Council in advance of each Public Information Centre to provide an overview of the display materials, study process, to hear comments and to answer questions.

In addition, City Council met with the project team on July 17, 2007 to discuss the interchange and access alternatives in advance of the evaluation of alternatives. At the meeting, Councillors discussed concerns regarding the range of interchange and access alternatives being considered. Comments provided at the meeting were considered during the evaluation of project alternatives. In response to Councillors requests, the project team also carried out a traffic analysis to review the traffic operations of roundabouts on Highway 6. The results of the analysis were presented at PIC 2 and are discussed in Section 6.3.1.3.

City Councillors also attended the Community Workshop as observers, and meetings with neighbourhood groups, including the November 2008 and February 2009 Old Colony Trail/Woodland Glen Drive meetings.

Following PIC 2, Council arranged a Special Council meeting, on January 14, 2008, to hear residents concerns regarding the Preferred Plan presented at the December 5, 2007 PIC.

Following the Special Council Meeting and discussions with City staff and Councillors, the project team agreed to hold a Community Workshop which is discussed in greater detail in Section 3.4.2. The development of the workshop and identification of workshop participants was carried out in consultation with City Councillors and staff, and included a meeting on April 15, 2008 to confirm and discuss the format and design assumptions for the workshop.

Meeting notes from presentations to City Council are available in Appendix D.

On Monday, March 30, 2009, City Staff presented the Preferred Plan for the proposed improvements to the City's *Community Development and Environmental Services Committee* (CDES). At the meeting the Committee also heard presentations from community delegations. The Committee voted to receive the report and forward it to the next Council meeting, scheduled for April 27, 2009, with a condition that the following issues be addressed/responded to:

- Confirm potential to consider alternative noise guidelines
- Clarify operational issues related to the East Service Road alternative
- Interim traffic operations improvements
- Identify potential to realign service road closer to the highway
- Quantify greenhouse gas and energy impacts of project, including proposed ramps and overpasses, free-flow vs. signalized (including ramp terminals), temporary intersection improvements and reductions in the design/posted speed
- Compare noise berm vs. noise wall
- Investigate feasibility of reduced design speed/posted speed
- Other methods of improving the highway, without developing a grade-separated freeway
- Tree removal and landscape plans

City Council received the final Staff Report for the Recommended Plan for the Highway 6 (Hanlon Expressway) Improvements from Maltby Road to the Speed River, and a brief presentation from MTO at a Council Meeting on Monday, April 27, 2009. The final Staff Report included a response to the issues identified at the CDES meeting. At the meeting Council also heard delegations from local residents and community groups.

The staff reports from the CDES Committee and Council Meetings are provided in Appendix D.

Council Resolution

On April 27, 2009, City Council passed a resolution in support of the Preferred Plan as presented to CDES Council in March 30, 2009. A copy of the resolution is provided in Appendix D.

3.7.2 External Agency and Municipal Meetings

Township of Puslinch and County of Wellington staff and their Councils were also invited to participate in the study, via project team meetings, and external agency meetings held in advance of each Public Information Centre. No significant concerns were identified from Township of Puslinch or County of Wellington staff or Council during the study. However, both the Township and County were involved in discussions regarding emergency access and future access to Highway 6 from Maltby Road.

Meetings with Township and County staff are discussed below and are summarized in Appendix C.

3.7.2.1 Municipal Meeting 1

A meeting was held on Friday, February 23, 2007 with the City of Guelph, County of Wellington, and Township of Puslinch (as represented by Gamsby and Mannerow). The purpose of the meeting was to provide an overview of the project and update the City, County, and Township on the study and the results of the *Highway 6 – Highway 401 to Wellington Street (the Hanlon Expressway) Feasibility Study*.

At the meeting, the municipalities agreed to review the project stakeholder list and to provide contact information for any additional groups that should be included on the contact list.

Meeting notes from the meeting are available in Appendix D.

3.7.2.2 Municipal Meeting 2

A meeting was held on Wednesday, April 25, 2007 to provide City of Guelph technical staff (transportation, policy and planning, environmental, heritage and urban design, and economic development and tourism) and the Township of Puslinch (represented by Gamsby and Mannerow) with an opportunity to review the displays for the first PIC. At

the meeting the project team responded to questions regarding the study process, EA process for potential municipal road network connections, and provincial highway standards.

Representatives from the City and Township provided information regarding the City's Growth Strategy, Groundwater Source Protection, and land use in the study area.

Modifications to PIC displays were incorporated into the plans in advance of PIC 1.

Meeting notes from the meeting are available in Appendix D.

3.7.2.3 Municipal / Emergency Services Meeting 3

The project team met with representatives from local municipalities and emergency service providers on Thursday, February 21, 2008. The City of Guelph, Township of Puslinch, Wellington County, Guelph Fire, Puslinch Fire, and Guelph Police were in attendance.

The purpose of the meeting was to discuss the Hanlon Expressway improvements between Maltby Road and the Speed River and to provide an update on the *Highway 6 Freelton to Guelph EA*. At the meeting, concerns regarding emergency service access to Forestell Road due to the closure of Maltby Road were identified. However, further discussions confirmed that the proposed mid-block (Wellington Road 34) interchange would provide improved access to the Forestell Road area and would not significantly increase emergency response times.

Additional discussions at the meeting related to future access from Maltby Road to the Wellington Road 34 interchange and additional municipal road network connections for the Southgate Business Park.

Meeting notes from the meeting are available in Appendix D.

3.7.2.4 MNR/GRCA

The project team met with representatives from the Ministry of Natural Resources and the Grand River Conservation Authority on Monday, March 31, 2008. The purpose of the meeting was to review/confirm/understand the 'environmental constraints' (including fisheries, floodplain, vegetation, wetlands) associated with the project.

At the meeting, the potential for impacts to Hanlon Creek, the Hanlon Creek Provincially Significant Wetland (PSW), wetlands in the vicinity of the proposed Laird Road interchange, and the associated floodplain were discussed.

GRCA noted that there are no significant concerns with the Kortright Road underpass since the existing floodplain low point will be maintained. With regards to the potential for ramp encroachment in the floodplain, GRCA noted that their interest would primarily be related to loss of floodplain storage and that provincial roadway encroachment in a floodplain is consistent with the *Provincial Policy Statement*, provided that the need for encroachment can be justified.

Meeting notes from the meeting are available in Appendix D.

3.7.3 First Nations Contact

Although this study area does not include any First Nation lands within its limits, the consultation program included written communications with the Six Nations of the Grand River Territory, Six Nations Confederacy Council, and Mississaugas of the New Credit to advise them of the project progress.

No specific or comprehensive land claims were identified within the study area, and no comments were received from First Nation groups during the study.

4.0 Transportation Needs Assessment

Assessment of needs can result in a number of recommendations, including initiating a study, initiating major or minor improvements, initiating routine maintenance, monitoring a situation, or doing nothing. Because of the range of potential outcomes, the transportation needs assessment process includes the following key tasks:

- Identify transportation problems and opportunities
- Evaluate and select reasonable alternatives, including 'do nothing'
- Develop potential transportation study objectives
- Initiate the study process

This section of the report describes the transportation needs assessment process undertaken for this project.

4.1 Provincial Responsibilities

The Ministry of Transportation (MTO) is committed to:

- Identifying provincial transit and highway solutions
- Improving the condition of provincial and municipal highways and bridges
- Easing congestion and improving mobility through selective, sustainable expansion
- The environmental sustainability of Ontario's transportation system
- Delivering improvements to international gateways and border crossings

The Ministry's actions are guided by the transportation policies included in the MTO Provincial Policy Statement (PPS). The PPS indicates that:

- Transportation systems should be provided which are safe, energy efficient, facilitate the movement of people and goods, and are appropriate to address projected needs
- Efficient use shall be made of existing and planned infrastructure

The transportation needs assessment for this study was carried out within the context of the MTO responsibilities and requirements of the PPS.

4.2 Transportation Problems and Opportunities

Highway 6 (the Hanlon Expressway) is designated as a controlled access highway with access restricted to selected intersections. At the south end of the study area, Highway 6 passes through a rural area. Towards the north, the area becomes more urbanized with commercial development and residential subdivisions adjacent to the highway.

As shown in Exhibit 4, the Hanlon Expressway is a vital link within the provincial highway network, connecting Highway 401 with Highway 7 (Guelph to Kitchener), and the continuation of Highway 6 north of Guelph. It also provides regional connections to the Cambridge area (via Wellington Road 24 / City Road 124 – formerly Highway 24), the Kitchener area (via Highway 7), and the County of Wellington north of Guelph (via Highway 6 and Highway 7).

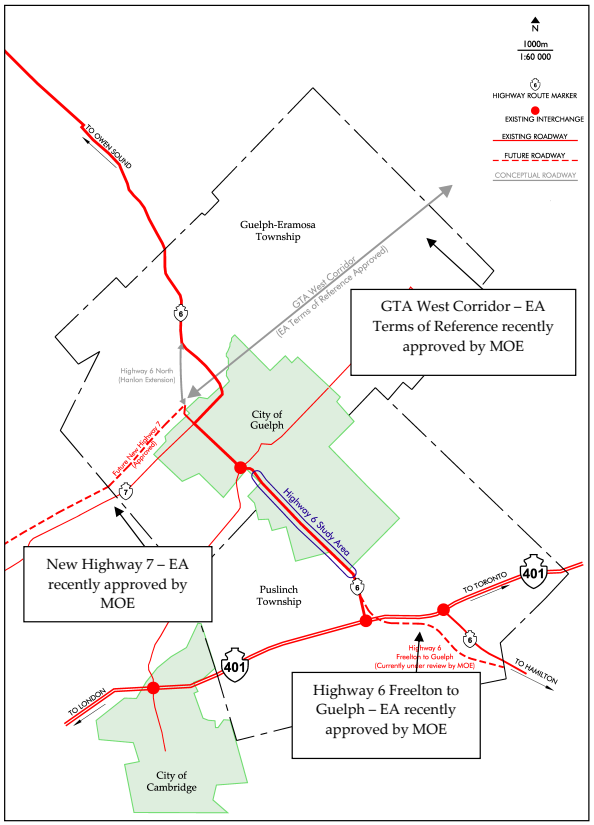

Exhibit 4: Adjacent Provincial Studies

The provincial highway network plays a key role in linking communities and supporting economic prosperity across Ontario.

Highway 6 provides a vital transportation link providing for the safe and efficient movement of people and goods. As discussed in Section 1.1.1, this section of Highway 6 was constructed, in part, to minimize traffic on municipal roads.

The Ministry of Transportation carried out a *Traffic Operations Study* for Highway 6 (the Hanlon Expressway) in 2004 to assess existing and future traffic operations of the existing at-grade intersections. The *Traffic Operations Study* identified many intersections with poor operations and confirmed a future need for upgrading the at-grade intersections to a system of grade-separations (i.e., flyovers) and interchanges. Additional concerns were identified relating to traffic queues and collisions at the intersections. The study recommended short-term intersection improvements that could improve operations for five to ten years while the long-term improvements were being developed.

This study was supported by the recommendations in the City's *Guelph Wellington Transportation Strategy* (GWTS 2005), which indicated that the existing intersections on the Hanlon Expressway would require upgrades by 2013.

In 2005 and 2006, the Ministry of Transportation consulted with a Municipal Advisory Group (MAG) that included representatives from the City of Guelph, County of Wellington and Township of Puslinch to identify issues and concerns along the Hanlon Expressway and to agree upon 'next steps' for resolving the issues and concerns. It was recognized during the meetings that the Ministry of Transportation should initiate the Environmental Assessment process for Highway 6 between Maltby Road and the Speed River.

Issues leading to the need for improvements to the Highway 6 corridor include:

- **Existing Operational Deficiencies –** available capacity and deteriorating level of service of the multiple at-grade intersections limit the volume of traffic that can be accommodated safely on the existing highway.
- **Anticipated Growth Model –** as the City of Guelph continues to grow, and the regional importance of the Hanlon Expressway continues to increase, the need for a primary transportation corridor will increase to support the anticipated growth, mobility of people, and movement of goods.
- **Transportation Demand –** increased demand on the existing system will cause traffic congestion, delays and deteriorating safety conditions. The demand is based on planned urbanization in the Guelph South area, locally generated growth, and future planned connections to the provincial highway system, including the recently approved future new Highway 7 and planned realignment of Highway 6 south of Guelph.
- **Role and Function of Highway 6 –** the role of the highway is both local, providing municipal access to the highway system, and provincial, providing long-distance regional and provincial connections. The combination of these two functions has led to a conflict between the need for access and the need for improved traffic flow. It has been recognized by all authorities involved that the primary role of Highway 6 is to be a higher order transportation corridor and that the problem can be resolved only by replacing the at-grade intersections with a system of grade separations and interchanges.

4.3 Anticipated City Growth Model

It is important to address the anticipated Growth Model and type of future transportation demand, as it provides a context to evaluate *Alternatives to the Undertaking*. Just as the Province's Places to Grow requires that municipalities plan for infrastructure requirements to support their growth projections, the Ministry must plan to provide for provincial transportation needs between the identified growth nodes (including the City of Guelph).

The following growth scenario is expected to occur:

- The existing Growth Model will continue to be fuelled by population growth and will manifest itself by urban and regional development (converting available lands into urbanized areas). Smart Growth, Transportation Demand Management, and other initiatives will attempt to control and minimize urban sprawl, and the expansion of transportation demand
- Increasing travel/mobility will continue to be realized by using individual automobiles as a dominant mode of transportation
- Alternative Transportation Modes (i.e. public transit) will continue to develop and increase their share in responding to transportation demand but not enough to significantly affect the use of individual automobiles
- The existing trend in vehicle occupancy (i.e. individual automobiles) indicates that a shift in the population's travel behaviour towards the better use of automobiles, at least for compulsory trips, should not be anticipated within a foreseeable future
- The existing economic model, relying on roadway transportation (trucks) for moving goods, will continue into the future

As a result of the above, the expansions/improvements to the provincial highway system and particularly freeways are unavoidable and necessary to support the anticipated growth, the mobility of people, and the movement of goods.

4.4 Alternative Transportation Options ("Alternatives To")

The Environmental Assessment Act requires the identification of *Alternatives to the Undertaking* to be considered as part of the Environmental Assessment process. For this project, the *Alternatives to the Undertaking* represent other possible ways or methods of addressing future needs and resolving deficiencies associated with the Highway 6 corridor within the study limits.

In recognition that there may be more than one way to solve the problem, the following *Alternatives to the Undertaking* were examined to determine the extent to which they address the transportation problems and opportunities. For this study, the evaluation of alternative solutions was based on the ability of the alternative to address the transportation problems, incorporate City of Guelph growth projections, and identified existing and future transportation system visions/initiatives (MTO, City, Township, and County).

4.4.1 Screening and Evaluation of Transportation Options

Five *Alternatives to the Undertaking* were identified and assessed to identify the most reasonable approach to address the identified problems or opportunities. A screening process was designed to evaluate these options and select only the most reasonable alternatives for more detailed study. This process allows unreasonable alternatives or alternatives that do not meet provincial policy requirements to be eliminated from consideration in advance of detailed development and evaluation stages.

Table 6 describes the results of the evaluation of the alternative solutions.

Table 6: Alternative Solutions to the Undertaking

Alternative Solutions	Description	Evaluation	Carried Forward?
Do Nothing	Maintain existing transportation infrastructure	Under this alternative, no measures to improve the identified deficiencies within the Hanlon Expressway Study Area Corridor are considered. Since the Level of Service at the existing intersections and existing traffic operations have already been identified as a problem, this alternative was not carried forward for further consideration. This option is not consistent with the adjacent highway projects that are already approved or planned, including the New Highway 7 and Highway 6 Freelton to Guelph alignment. Regional and local Transportation Studies and Policy, including the Guelph Wellington Transportation Study (2005) and City of Guelph Official Plan both support the need to upgrade the Hanlon Expressway to an access-controlled Freeway.	**No**
Non-Roadway Improvements	Develop Alternative Modes of Transportation and implement Transportation Demand Management measures	This alternative includes improvements to public (mass) transit transportation such as buses and Light Rail (LRT). These non-roadway improvements do not address traffic operation deficiencies and cannot accommodate future transportation demand and mobility needs. The majority of trips in this area are made using automobiles and the scattered distribution of origin and destination by users of the Expressway are not conducive to improved transit initiatives. While there may be a possibility to promote alternate modes of transportation, it is not likely that the use/demand for alternate transit will increase to a point where the level of service of the highway is improved to the point where physical improvements are not required. Therefore, improvements to non-roadway based facilities would not be adequate or sufficient to resolve the Hanlon Expressway Corridor's transportation problems. Transit services will play an important supportive role in the overall integrated transportation system's function. Development of these services is essential public policy for all jurisdictions involved and provides business opportunities for the transportation industry. Other modes of transportation are complementary solutions but would not eliminate the need for the upgrading of the Hanlon Expressway.	**No**
Roadway Improvements	Expand the Expressway's existing at-grade roadways through widening and intersection improvements Develop Alternative Modes of Transportation Manage demand Rationalize/balance urban structure	These improvements refer to physical and operational modifications, such as roadway widening and intersection improvements along the Hanlon Expressway Corridor. The 2004 Traffic Operations Study, completed for the Hanlon Expressway Corridor, indicates that this solution can only provide short-term relief in addressing existing deficiencies and accommodating future transportation demand but does not address traffic safety problems on Highway 6 and does not minimize environmental impact. Interim improvements to intersections will be implemented in 2010 to 2011 along the Hanlon Expressway to improve traffic operations. Although the interim improvements to intersections and the Expressway may play an important role in staging the Expressway's ultimate development, and provide a temporary solution to immediate problems, this alterative is not consistent with MTO policies and objectives related to the development of the higher order highway network within the region and is not considered an acceptable alternative to be considered further for the Corridor.	**No**
New Highway Corridor (parallel to the existing Hanlon Expressway)	Construct a new highway parallel to the Hanlon Expressway Implement other highway/City/County Road development and transportation initiatives	This alternative involves constructing a new parallel highway outside the Study Area. It is not compatible with future MTO long-term strategic planning and is not consistent with up-to-date investments in the transportation infrastructure within and outside the Corridor. In addition, the option is not a cost-effective alternative and would likely cause a significant impact to the natural environment and communities adjacent to a future corridor. This option does not support the projected City of Guelph population or employment growth allocations as outlined in the City's response to the Growth Plan, or planned land development/urbanization within the Study Area, such as the South Guelph Industrial Lands, and was therefore not carried forward for further consideration.	**No**

Alternative Solutions	Description	Evaluation	Carried Forward?
Convert the Hanlon Expressway to Freeway Standards	Convert the Hanlon Expressway to a full freeway Implement other highway/City and County Road development initiatives Develop alternative modes of transportation and apply demand management	This alternative solution is able to accommodate the projected long-term transportation demand and resolve safety problems inherent with the existing Freeway/at-grade intersections configuration. The solution protects the Ministry's long-term strategic goals for the movement of people and goods safely along the provincial highway network and is compatible with MTO, City of Guelph and County of Wellington planning visions of the provincial, regional and local transportation connections and road network expansion initiatives, as well as the local and regional development plans. As such, the conversion of the Hanlon Expressway to freeway standards was identified as the most appropriate solution to respond to the identified needs and resolve the defined problems, and is recommended for further consideration. This solution is consistent with the City of Guelph's Transportation Master Plan and Official Plan and Ontario's Places to Grow Act, which defines Guelph as an "Urban Growth Centre".	**Yes**

4.5 Study Initiation Stage

Planning is required to meet the future need and provincial growth and to outline a strategy to maintain the safe and efficient movement of people and goods in the corridor and beyond.

Since there are existing development pressures adjacent to the highway, and since the existing intersections are already nearing capacity, the Ministry initiated this study to:

- Identify the ultimate design and property requirements
- Make sure that the mobility of people and goods is protected
- Allow for a safe, rational and efficient improvement to the existing transportation system
- Permit effective planning to minimize environmental impacts
- Anticipate future needs by obtaining required approvals so that the improvements can be constructed when they are required

5.0 Existing Conditions

5.1 Transportation

Highway 6 is a vital link within the provincial highway network, connecting Highway 401 with Highway 7 (Guelph to Kitchener), and the continuation of Highway 6 north of Guelph. It also provides regional connections to the Cambridge area (via Wellington Road 124 – formerly Highway 24), the Kitchener area (via Highway 7), and the Country of Wellington north of Guelph (via Highway 6 and Highway 7).

The highway was designed with a wide median to accommodate future improvements to the highway corridor, such as widening, while minimizing additional property requirements. Since the construction of Highway 6, the ministry and the City have acquired additional property through the development process, to accommodate the anticipated ultimate transportation needs.

5.1.1 Traffic Operations

Highway Level of Service (LOS) is defined as a qualitative measure describing operational conditions within a traffic stream, and their perception by motorists. Level of service operating conditions are described in terms of factors such as speed and travel time, freedom to manoeuvre, traffic interruptions, comfort and convenience, and safety. Definitions of each Level of Service are provided in Table 7.

Table 7: Traffic Operation Level of Service Descriptions

LOS	Description
A	Represents free-flow. Individual users are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to manoeuvre within the traffic stream is extremely high. The general level of comfort and convenience provided to the driver is excellent.
B	Is in the range of stable flow, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to manoeuvre within the traffic steam from LOS A. The level of comfort and convenience provided is somewhat less than LOS A, because the presence of others in the traffic stream begins to affect individual behaviour.
C	Is in the range of stable flow, but marks the beginning of the range of flow in which operation of individual users becomes significantly affected by interactions with others in the traffic stream. The selection of speed is now affected by the presence of others, and manoeuvring within the traffic stream requires substantial vigilance on the part of the user. The general level of comfort and convenience declines noticeably at this level.
D	Represents high-density, but stable flow. Speed and freedom to manoeuvre are severely restricted and the driver experiences a generally poor level of comfort and convenience. Small increases in traffic flow will generally cause operational problems at this level.
E	Represents operating conditions at or near the capacity level. All speeds are reduced to a low, but relatively uniform value. Freedom to manoeuvre within the traffic stream is extremely difficult, and it is generally accomplished by forcing a vehicle or pedestrian to "give way" to accommodate such manoeuvres. Comfort and convenience levels are extremely poor, and driver frustration is generally high. Operations at this level are usually unstable, because small increases in flow or minor turbulence within the traffic stream cause breakdowns.
F	Is used to define forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse the point. Queues form behind such locations. Operations within the queue are characterized by stop-and-go waves, and they are extremely unstable. Vehicles may progress at reasonable speeds for several hundred metres or more, and then be required to stop in a cyclic fashion.

Within the study area, Highway 6 is a four-lane divided highway. Annual Average Daily Traffic (AADT) volumes vary on this section of Highway 6 from approximately 27,000 vehicles per day (2009 vpd) near the southerly limit at Maltby Road to 49,500 vpd at the northerly limit near College Avenue. Future traffic projections (2027) for Highway 6 are approximately 63,000 vpd at the south of the study area (Matlby Road) and approximately 82,000 at the north end of the study area.

The Highway 6 mainline (i.e. highway traffic movement in lanes, excluding intersections) is currently providing level of service ranging from B to D. Given the number and proximity of intersections on the corridor the overall highway operation is dependent on the intersections located on the highway.

A LOS analysis was conducted at the six major intersections on Highway 6: Maltby Road, Clair Road/Phelan Road, Laird Road, Downey Road/Kortright Road, Stone Road, and College Avenue.

Table 8 and Table 9 provide a summary of the traffic operations at the intersections within the study area during the AM and PM peak hours, respectively. Changes in the existing configuration have been included in the level of service analysis to account for minor intersection modifications currently being completed or planned in the future (i.e. new signals, illumination, and addition or lengthening of auxiliary lanes).

Table 8: Summary of Existing and Future AM Peak LOS for Sideroad Intersections

Sideroad Intersection	Time Period of Analysis			
	2007	2012	2017	2027
Maltby Road	A or B	A or B	A or B	C
Phelan Road/Clair Road	A or B	A or B	A or B	C
Laird Road	D	C	D	E or F
Downey Road/Kortright Road	D	C	D	E or F
Stone Road	C	C	C	E or F
College Avenue	C	C	C	E or F

LOS A or B C D E or F

Table 9: Summary of Existing and Future PM Peak LOS for Sideroad Intersections

Sideroad Intersection	Time Period of Analysis			
	2007	2012	2017	2027
Maltby Road	A or B	A or B	A or B	C
Phelan Road/Clair Road	A or B	A or B	A or B	A or B
Laird Road	D	C	C	E or F
Downey Road/Kortright Road	E or F	C	D	E or F
Stone Road	E or F	C	D	E or F
College Avenue	C	C	D	E or F

LOS A or B C D E or F

As shown in the above tables, the operations (measured by the overall delay) at the existing at-grade intersections along Highway 6 are expected to deteriorate to poor levels of service by the year 2027.

5.1.2 City of Guelph Transportation Model

In order to supplement the existing City of Guelph Transportation Model, origin-destination and intersection turning movement counts were conducted in April 2008. The counts were conducted during peak times to capture the large number of vehicles in the area that are generated by educational facilities, including local schools and the University of Guelph, in addition to local traffic.

This information was used to gain a better understanding of existing travel patterns on the west side of Highway 6 between Downey Road and College Avenue, and to assist in predicting future peak hour traffic volumes on local roads for each of the alternatives.

Future 2031 traffic volumes were identified based on the results of the modelling and the updated traffic model, and were used in the evaluation of project alternatives as described in Section 6.3.2.

5.2 Natural Environment

This section of the report describes the existing natural, social, and cultural conditions in the study area. Background studies and site specific field investigations were carried out by specialists in the areas of fisheries and aquatic resources, terrestrial resources, contamination, archaeology, stormwater management, noise, air quality, socio-economics, built heritage, and drainage.

The study was initiated in 2006. Fieldwork for this undertaking was carried out in accordance with the requirements of the *Environmental Reference for Highway Design* (ERHD 2002), which provides standards for scope of work, evaluation of environmental impacts, and proposed mitigation measures for MTO undertakings. However, most reports have been updated to meet the requirements of the updated 2006 ERHD and related Environmental Standards Guidelines, including the requirements of the *MTO Noise Guide* (2006).

Significant natural features are located within the study area include the Speed River Provincially Significant Wetland (PSW) and the Hanlon Creek PSW. Existing Environmental Conditions and Constraints are displayed in Exhibit 5.

5.2.1 Physiography and Soils

The study area is within the two distinct physiographic regions known as the *Guelph Drumlin Field* (northern section) and the *Horseshoe Moraines*. The drumlin areas are characterized by the deep depressions between the cross-valleys which contain broad sand and gravel terraces along the sides of the valleys. There are numerous interconnecting cross-valleys, which occupied deeper depressions between the drumlins. Along the sides of these valleys, there are broad sand and gravel terraces. The Horseshoe Moraines are characterized by stony knobs and ridges and gravel or swamp floored valleys.

The Paris-Galt Moraine is a moraine belt 6.4 to 8 kilometres wide of which a small portion crosses through the southeast part of Guelph, south of Clair Road. The Paris-Galt Moraine consists of sandy till deposits with some kame deposits of sand and gravel (MNR NHIC 2008). Moraines provide groundwater recharge, discharge and storage functions, which result in water quality and quantity benefits' (MOE 2009). In the Grand River watershed, moraines account for approximately 80 per cent of the groundwater recharge (GRCA 2005). Although the GRCA and other stakeholders have requested special legislation to protect the Moraine, the Ministry of the Environment (MOE) recently (April 2009) responded to this request and indicated that the current provincial policies (*Clean Water Act, Provincial Policy Statements, Greenbelt Plan* and the *Ontario Water Resources Act*) are sufficient to protect the function of the moraine. MOE has committed to developing guidance documents for agencies and municipalities to assist in the future protection of the function of the Paris-Galt Moraine.

Based on the Soils of Wellington County, Ontario – Soil Survey Report No. 35 (Canada Department of Agriculture and the Ontario Agricultural College, 1963), soils within the highway corridor generally consist of loams of the Burford, Dumfries, Guelph and Gilford variety. Generally the soils within the corridor are stony and contain variable boulder content, intermittent outwash sand, and gravel.

The GRCA has identified areas where development activities on or adjacent to steep slopes can be hazardous due to potential for slope failures and erosion. Based on GRCA mapping (2009), no areas of slope erosion hazard, steep slopes, or valleys are within the study area.

5.2.2 Geology and Groundwater

Groundwater in the study area is generally found from 11.5 to 13 metres below ground surface in the vicinity of the Highway 6/College Avenue intersection, from 0.9 metres to 4.3 metres below ground surface in the vicinity of the Highway 6/Stone Road intersection, and from 0.7 to 5.1 metres below ground surface in the vicinity of the Highway 6/Kortright Road/Downey Road intersection. Previous studies did not locate groundwater in the vicinity of the Highway 6/Laird Road intersection.

Groundwater forms the majority of the regional municipal water source.

The Downey Well is located on Hanlon Creek approximately 200 metres south of Downey Road, west of Highway 6. This municipal groundwater well provides approximately 7 per cent of the City's water supply. Land use within the well's groundwater recharge zones is managed through the City's *Official Plan* policies to prohibit operations that would potentially pose a risk to groundwater quality. The well accesses groundwater from the Amabel Aquifer, which flows in a southerly direction towards the Grand River. Particle tracking carried out by the City indicates that most of the groundwater that flows to the Downey Well is from the east and southeast of the well.

The City of Guelph is currently carrying out the *Southwest Quadrant Groundwater Supply Municipal Class EA Study* to identify methods of obtaining additional groundwater supply in the southwest area of Guelph, which includes the study area. Although a test well was located near the Highway 6/Stone Road intersection early in the study, none of the potential well locations that are currently being considered are in the vicinity of Highway 6.

Aggregate resource areas have been identified in the study area in the vicinity of the existing Hanlon Creek Business Park. However, this area is primarily under commercial and industrial development. The only licensed aggregate extraction in the study area is Guelph Limestone, located northwest of the Highway 6/College Avenue intersection.

The GRCA has identified areas where groundwater is sensitive to contamination and is currently carrying out a Regional Groundwater study to confirm vulnerable areas in the City. Vulnerable areas have been identified at the Guelph Lime Quarry, west of Highway 6 between Downey Road, southerly to Phelan Drive, and in the vicinity of Hanlon Creek.

5.2.2.1 Hanlon Creek Floodplain

The Grand River Conservation Authority's (GRCA) has identified the limits of the Hanlon Creek floodplain in the area of Downey Road. A floodplain is an area, generally along a stream or watercourse that is subject to flooding. The floodplain is based on with the regulatory flood which is the greater of the 100-year flood or Regional Storm. GRCA's Cut and Fill Regulations guide work within the floodplain. The floodplain lines are shown on the Recommended Plan provided at the end of this report.

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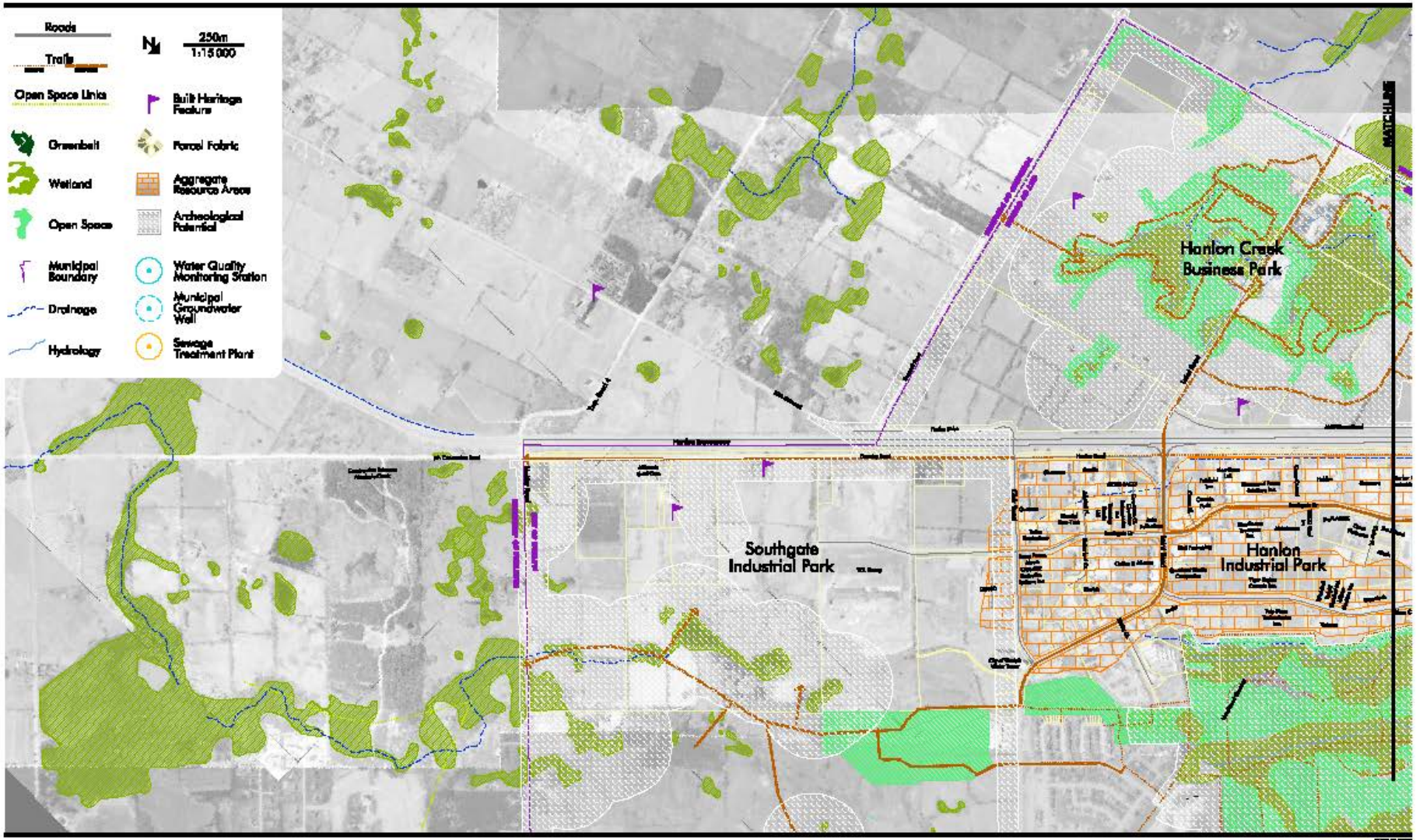


Ontario

Stantec

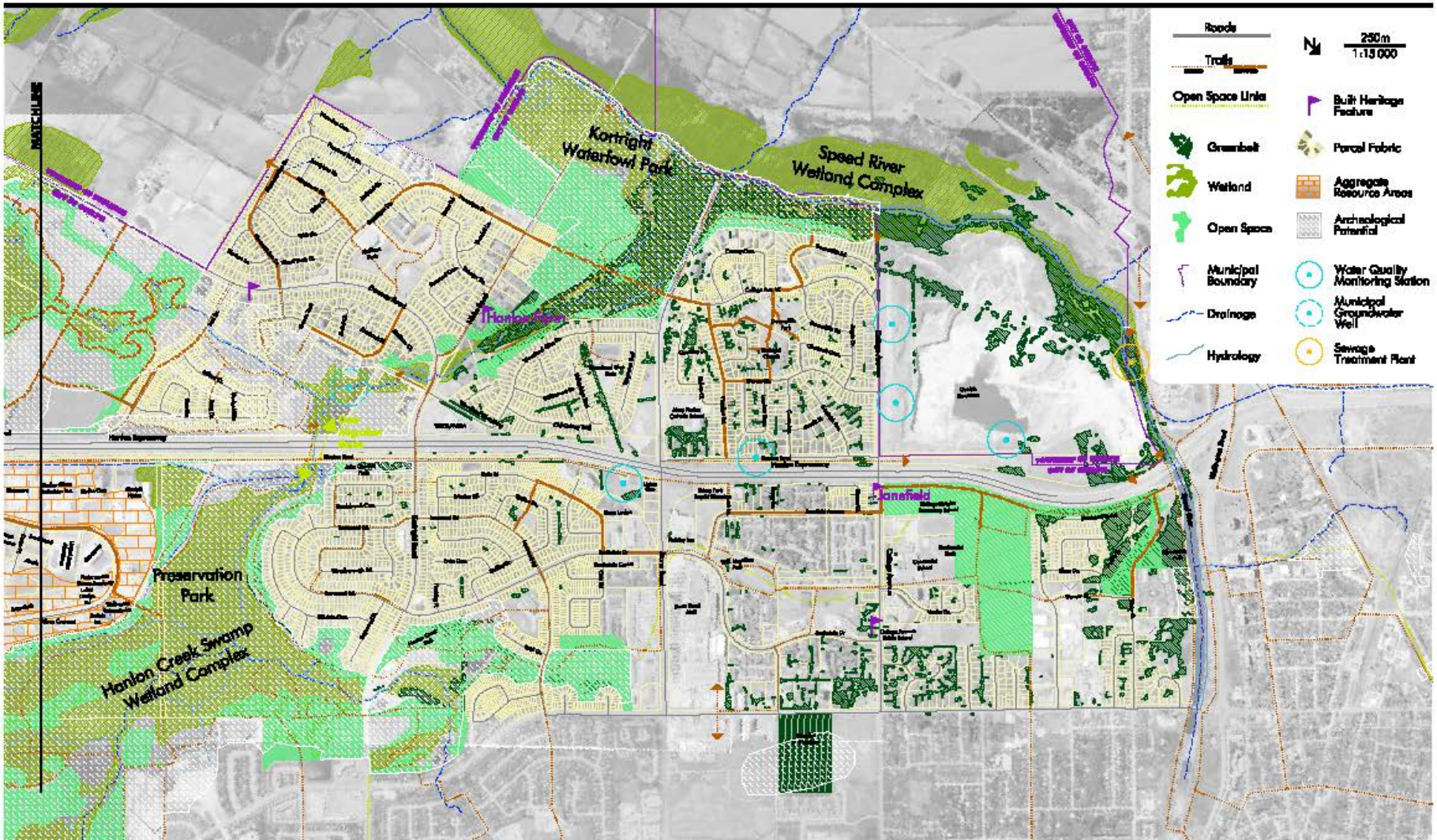
HIGHWAY 6 (HANLON EXPRESSWAY)

Maltby Road to the Speed River

Existing Environment

As shown on PIC 4 (October 23, 2008)

5a



Ontario

Stantec

HIGHWAY 6 (HANLON EXPRESSWAY)

Maltby Road to the Speed River

GWP 3093-00-00

Existing Environment

As shown on FIC 4 (October 23, 2008)

FIGURE 5b

5.2.3 Fisheries and Aquatic Resources

The study area is located within the Mill Creek Subwatershed, Hanlon Creek Subwatershed and the Speed River Subwatershed.

Lakes, rivers, streams, ponds and many wetlands provide fish habitat. Intermittent and seasonally flooded areas can also provide important habitat for some fish species at certain times of the year. In addition, in-water structures such as logs, stumps and other woody debris, pools and riffle areas, riparian and aquatic vegetation and groundwater recharge/discharge areas also provide fish habitat. Fish habitat includes the watercourses that act as corridors that allow fish to move from one area to another. Fish habitat provides food, cover, conditions for successful reproduction and supports fish life-cycles.

Primary fisheries concerns related to transportation projects include fish habitat impacts such as sedimentation (related to construction activities) and harmful alterations (construction activities that occur in the water). These concerns are generally centered on water crossings and work adjacent to watercourses or lakes.

A *Fisheries and Aquatic Ecosystems Study* was carried out as part of this study, with fieldwork carried out in June 2007. The *Fisheries and Aquatic Ecosystems Report* is provided in Appendix F.

The only fish bearing watercourse within the study limits is Hanlon Creek. The Speed River is north of the study area. No work is planned that would directly impact either of these watercourses.

There are no aquatic Species-at-Risk that have been identified within the study area.

5.2.3.1 Hanlon Creek

Within the study limits, Hanlon Creek is a meandering coldwater watercourse that crosses Highway 6 in a culvert approximately 400 metres south of Kortright Road/Downey Road. Hanlon Creek also crosses Downey Road in a culvert located approximately 300 metres west of Highway 6. Hanlon Creek supports habitat for a variety of sportfish, including brook trout, as well as smaller baitfish and minnows and is a tributary to the Speed River.

The Ministry of Natural Resources has indicated that spawning areas are not present in the study area. However, the GRCA and MNR have identified coldwater fish habitat and spawning areas in the upstream headwater reaches of Hanlon Creek, east of the Highway 6 culvert.

Upstream (east) of Highway 6, the watercourse exhibits a mean channel width of 2.5 m and mean water depth of 15 cm. In-stream habitat features include logs and trees, organic debris, and undercut banks. Downstream (west) of Highway 6, the mean channel width is 2.5 m and mean water depth is 15 cm. In-stream habitat features include logs and trees, organic debris, and boulders. The downstream reaches demonstrate good riffle-run complexing and riparian cover.

Hanlon Creek is managed by the GRCA.

5.2.4 Terrestrial Ecosystems

A Terrestrial Ecosystems Study was carried out as part of this study, including site-specific field investigations in June 2007. The *Terrestrial Ecosystems Report* is provided in Appendix F.

Significant terrestrial natural features identified within the study area, include the Hanlon Creek Provincially Significant Wetland (PSW) and Kortright Waterfowl Park. According to the Natural Heritage Information Centre (NHIC) database, there are no Areas of Natural Scientific Interest (ANSIs), Environmentally Significant Areas (ESAs), provincial or national parks, or conservation areas within the Highway 6 study area. This information was confirmed by the MNR.

Significant natural features in the study area are identified on Exhibit 5.

5.2.4.1 Vegetation and Wetlands

The study area is within the Huron-Ontario section of the Great Lakes Forest Region (Rowe, 1972). Natural upland forest cover in this region is generally dominated by sugar maple, American beech, basswood, white ash, white oak, bur oak, eastern hemlock and eastern white pine. Mixed forests of silver maple, white elm, red elm, black ash, and eastern white cedar generally develop in lowland areas.

Twenty-five vegetation communities were identified in the study area, of which all are considered to be secure in Ontario. Cultural meadows dominate the landscape adjacent to Highway 6 north of Kortright Road/Downey Road, while agricultural operations dominate the adjacent landscape to the south. Vegetation communities are delineated in an Exhibit in the *Terrestrial Ecosystems Report*, available in Appendix F.

No Endangered, Threatened, or Vulnerable plant or wildlife species were identified within in the study area, although a locally significant species exists outside of the study area, in the Hanlon Creek PSW.

Hanlon Creek Swamp Wetland Complex (comprised of 15 individual wetlands) includes wetlands designated as an Environmentally Significant Area and a Major Open Space Feature by the City of Guelph and is primarily associated with the wetlands adjacent to Hanlon Creek.

Some of the wetlands adjacent to Laird Road, between Downey Road and Highway 6 are also part of this Provincially Significant Wetland complex.

Provincially significant wetlands are protected under Section 2.1 of the Provincial Policy Statement (PPS) which indicates that '*development and site alteration shall not be permitted in…significant wetlands in Ecoregion 6E…unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions*'.

Local residents have indicated that the mature black walnut trees located in John Gamble Park and the vegetated areas between Highway 6 and Old Colony Trail and between Wagoners Trail and Stone Road are important to the community.

5.2.4.2 Wildlife Habitat and Open Space Linkages

The provision of wildlife habitat is one of the primary ecological functions of natural heritage features and areas. The study area includes potentially significant wildlife habitat areas, significant woodlands (≥ 1 ha), and open space linkages. In general, wildlife habitat and ecological function in the study area is associated with the Hanlon Creek Wetland Complex.

Amphibian migration routes (including frog and salamander), were identified in the City's Natural Heritage Strategy across Laird Road, west of Highway 6, and Maltby Road, east of Highway 6.

The Hanlon Creek provides a continuous open space linkage for fish, amphibian, and small wildlife movement along the valleys and wetlands adjacent to the watercourses. The City of Guelph has indicated that the Hanlon Creek corridor is used as a deer migration route across Highway 6 in the vicinity of the existing culvert and in the vicinity of the Hanlon Creek Downey Road culvert crossing.

City of Guelph policies support maintaining and improving wildlife habitat and wildlife travel corridors through the identification and protection of an Open Space and Greenlands System, in combination with development buffers and protection policies to maintain existing significant natural features. This is an ongoing process that was being updated to reflect the results of the *Natural Heritage Strategy* (2009) at the time of writing of this report.

5.2.4.3 Avian Species

A review of the *Ontario Breeding Bird Atlas* (Bird Studies Canada, 2005) indicates that one hundred-and-eighteen avian species have been recorded within the 10 km square that overlaps with the study area. Six of these species are significant species. However, only the *common nighthawk* (Threatened), *red-headed woodpecker* (Special Concern, Threatened), *golden-winged warbler* (Threatened), and *chimney swift* (Threatened) are potentially found within the study area. The federal *Species at Risk Act* (SARA, 2008) prohibits damage or destruction of habitat for SAR, including those listed as endangered or threatened on the *Species at Risk in Ontario List*. None of the above species are protected provincially.

5.2.4.4 Mammals and Amphibians

A total of thirty-seven mammal species have been identified within or are potentially found within the study area. Of these species, none are considered to be of conservation concern.

Thirty species of reptiles and amphibians are known to have ranges that overlap the study area. Seven of these species are considered species of conservation concern. Of these, suitable habitat exists within the study area for the *queen snake* (Threatened and protected by SARA and the provincial *Endangered Species Act* (ESA)), the *Jefferson Salamander* (Threatened and protected by SARA and ESA), *Blanding's Turtle* (Threatened and protected by SARA and ESA), *northern ribbonsnake* (Special Concern but not protected under the SARA or ESA), and the *Eastern milksnake* (Special Concern but not protected under the SARA or ESA). The *western chorus frog* (Threatened) was added to the Federal SAR list in April 2008.

MNR has noted that the *eastern milksnake* and *eastern ribbonsnake* have been observed in the Hanlon Creek and Preservation Park area.

The federal *Species at Risk Act* (2008) prohibits damage or destruction of habitat for SAR, including those listed as endangered or threatened on the *Species at Risk in Ontario List*.

5.3 Socio/Economic Environment

The study area is primarily within the City of Guelph and Township of Puslinch, which are both within the County of Wellington.

5.3.1 Land Use

Land use in the study area is primarily governed by policies contained in the City of Guelph and Wellington County *Official Plans*. Both the City of Guelph and Wellington County have recently (2009) updated their official plans to make sure that they are consistent with the requirements of the Ontario *Places to Grow Act* (2005).

5.3.2 Community Structure—Residential

As discussed in Section 1.1.4.1, the City of Guelph is identified as a Growth Centre in the *Greater Golden Horseshoe Growth Plan* (2006) and has recently developed an update to the *Official Plan* to make sure that it is consistent with Provincial policies and regulations and to provide a guideline for reasonable and practical growth in the City to the year 2031, including targets for residential intensification and identification of employment lands. The City of Guelph's population and employment projections will not exceed the capacity of the existing built area around Guelph.

Wellington County's Official Plan includes policies and designations for the Township of Puslinch. The County has also updated its *Official Plan* to be consistent with the Growth Plan. However, the County has not been identified as a growth centre and the County is expected to retain its rural nature.

The study area includes primarily residential areas on the east and west sides of Highway 6, between Kortright Road/Downey Road and College Avenue, primarily commercial/industrial areas east of Highway 6 between Clair Road and Hanlon Creek, extractive industry west of Highway 6 and north of College Avenue, and a mix of rural residential/agricultural uses in the remainder of the study area. The development of the residential subdivisions in the study area was discussed in Section 1.1.3.3.

There are approximately 6,800 residents residing west of Highway 6, between Laird Road and College Avenue and approximately 7,000 residents residing between Laird Road and College Avenue east of Highway 6 (when considering Edinburgh Road as an east limit).

The City has indicated that there is a low potential for future greenfield residential development within the study area, and growth is expected to be concentrated in an intensification area located in the vicinity of the Stone Road Mall.

5.3.3 Community Structure—Commercial/Industrial

Commercial and industrial development in the study area is located along Stone Road (i.e. the Stone Road Mall), east of Highway 6, and in the existing Hanlon Industrial Park, located east of Highway 6 between Clair Road and Hanlon Creek. There are also commercial properties located along Crawley Road, including an automobile dealership. Employment west of Highway 6 includes the YMCA, located in the northwest quadrant of the Highway 6/Downey Road intersection and Guelph Dolime Quarry, an aggregate extraction facility located west of Highway 6 between College Avenue and the Speed River. Together, these areas provide employment for approximately 3,100 people.

The provincial *Places to Grow* legislation also requires that the City plan for employment lands within the City boundaries. Within the study area, there are two large scale Business Parks that are planned for development.

The Hanlon Creek Business Park is a 675 acre master planned, mixed-use Business Park that was annexed to the City of Guelph from the Township of Puslinch in 1993 to provide for future employment and economic growth within the City. The Hanlon Creek Business Park is located between Forestell Road and Teal Drive on the west side of Highway 6. The development of this area is based on the *Hanlon Creek Business Park Consolidated Environmental Impact Study* (2004) and includes a realignment of Laird Road to accommodate the proposed developments and environmental protection requirements to protect wetland areas, significant wildlife habitat, and heritage trees. Development is expected to begin in 2009.

The proposed Southgate Industrial Park is located east of Highway 6 between Maltby Road and Clair Road. The development of the Industrial Park is based on the *South Guelph Secondary Plan Environmental Impact Study* (1998) and the *Southgate Business Park Environmental Impact Study* (2006) and includes the extension of Southgate Drive to Maltby Road, environmental protection requirements for wetland areas, parklands, a berm to minimize visual impact of the

development from residential properties on Maltby Road, and land to provide a public trail connection between Clair Road and Maltby Road.

The project team is not aware of any planned development of the lands zoned 'rural industrial' in Puslinch Township south of the City of Guelph limits and south of Township Road 4.

Mineral aggregate extraction is the primary industrial activity within the County of Wellington. Material from gravel pits is currently transported from Puslinch Township along Laird Road to access Highway 6.

The descriptions above are current at the time of writing of this report. Where possible, Site Plans for the development at the Hanlon Creek Business Park and Southgate Industrial Park have been considered during the development of project alternatives.

5.3.4 Community Structure—Institutional

The Upper Grand District School Board and the Wellington Catholic District School Board provide education facilities for City of Guelph residents. There are eight schools within the study area, including Mary Phelan Catholic School, a Catholic primary school located west of Highway 6, north of Stone Road; and College Heights Secondary and College Avenue (grades 7-8) Schools, located northeast of the Highway 6/College Avenue intersection.

The University of Guelph main campus and associated Research Park are located east of the study area. The primary access is from Stone Road.

The study area also includes two churches (Priory Park and Kingdom Hall) and a senior's home (Stone Lodge).

5.3.5 Emergency Services

Beginning in 2009, the Emergency Medical Service system within the City of Guelph and the County of Wellington has been managed by Guelph-Wellington Emergency Medical Service, the Cambridge Central Ambulance Communications Centre, the Waterloo Region-Wellington-Dufferin Base Hospital Program, Wellington-Dufferin-Guelph Public Health, local fire services, including Puslinch Fire, and local hospitals. Puslinch Fire and Rescue is run by volunteer firefighters.

During this study, local residents in Puslinch Township, west of Highway 6, and Puslinch Fire expressed concern regarding the potential for increased emergency response times to the Forestell Road area.

Residents in the Shadybrook neighbourhood also indicated concern regarding winter access since Shadybrook Road has a steep grade that is not easily accessible during winter storm events.

5.3.6 Recreation

The City of Guelph *Trail Master Plan* (2005) is a long-term planning document that outlines a network of pedestrian and bicycle trails (both on and off-road) in the City of Guelph. The goal of the plan is to '*develop a cohesive city wide trail system that will connect people and places through a network that is off-road wherever possible and supported by on-road links where necessary*'. The plan provides access to major employment, retail and cultural destinations. Highway 6 is identified as a north-south barrier to pedestrian and cyclist movement. Pedestrian and cyclist access across Highway 6 is currently provided at the existing Laird Road, Kortright Road/Downey Road, Stone Road and College Avenue intersections.

A pedestrian sidewalk is provided on the south side of the existing Highway 6 Hanlon Creek culvert.

During the study, both the City and local residents indicated that the provision of safe pedestrian/cyclist access across Highway 6, and maintaining existing trail connections, is important.

Existing and future planned trails are identified on Exhibit 5 There is an off-road trail link connecting Hanlon Creek to Teal Drive, west of Highway 6 and an informal pedestrian link from Stone Road to Old Colony Trail, in the southwest quadrant of the Highway 6/Stone Road intersection.

Recreation areas are also identified in Exhibit 5 and include the Kortright Waterfowl Park (west of Highway 6) and the Hanlon Creek Conservation Area (east of Highway 6).

The YMCA-YWCA is a major recreational destination located on Woodland Glen Drive, northwest of the Highway 6/Downey Road intersection. Health and recreation programs are available from the YMCA-YWCA, which is located northwest of the Highway 6/Downey Road intersection. The YMCA currently has a membership of approximately 9,000 people, with an estimated 4,000 vehicle trips per day (2,000 in, 2,000 out).

5.3.6.1 Neighbourhood Parks

There are also neighbourhood parks within the study area, including John Gamble Park (an off-leash dog park), Preservation Park, and parklands associated with local schools, including Mary Phelan School and College Heights Secondary School.

During the study, local residents indicated that John Gamble Park was an important neighbourhood resource. John Gamble Park is one of Guelph's designated leash-free zones. Research provided by a local resident indicates that the Park was named after a Guelph parks activist and lawyer who practiced in Guelph in the early-mid 1900's.

There are a number of mature black walnut trees in the park. In this region, black walnut trees were traditionally grown on land that was considered to be highly fertile.

John Gamble Park

5.3.7 Noise

A noise assessment study has been carried out in accordance with the *MTO Noise Guide* (2006). The *Noise Impact Study* analyzed existing noise conditions and compared them to future noise levels expected from the proposed improvements under future 'do-nothing' and future 'Recommended Plan' scenarios. The *Noise Impact Study* is provided in Appendix G and was updated during the study to reflect changes in the Preferred Plan.

The dominant source of ambient noise in the study area is vehicular traffic movements on the existing Highway 6 and the intersecting local roads. Existing sound levels were calculated to range from 45 to 64.6 decibels (dBA).

In response to concerns from local residents, noise monitoring was carried out for a 72-hour period at eight locations in the study area. Traffic monitoring was also carried out simultaneously to confirm traffic volumes and noise sources. The noise monitoring indicated that:

- Traffic volumes are consistent with the data used in the Noise Model
- Measured sound levels at all eight locations were consistent with the originally predicted sound levels, in terms of acoustic significance

There is an existing developer built noise barrier along the rear yard of properties on Milson Crescent.

Noise impacts and mitigation are discussed in Section 7.11.2.10.

5.3.8 Air Quality

This study has included an *Air Quality Assessment* to quantify air contaminant emissions from vehicular traffic along, entering, exiting, and crossing the highway and to determine how these emissions will affect air quality in the vicinity of the highway. The *Air Quality Assessment* is provided in Appendix H and was updated during the study to reflect changes to the Preferred Plan.

Contaminants studied in the assessment were selected based on representation of both tailpipe and roadway dust emissions and those typically of interest from a human health perspective. The methodology undertaken was consistent with other roadway projects and generally accepted by both provincial and federal agencies.

The assessment was undertaken for a future no-build (2031) and a future build alternative (with improvements for the year 2031) and used maximum emission rates (winter condition), worst-case meteorological conditions, and reasonable worst-case background concentrations. Results of the assessment are discussed in Section 7.11.2.11.

5.4 Cultural Environment

5.4.1 Archaeology

A Stage 1 Archaeological Assessment was carried out as part of this study.

The Archaeological Assessment which included an archival search was conducted using the Ontario Ministry of Culture Archaeological Sites Database in order to determine the presence of any registered archaeological sites located in the vicinity of the study area. Seven registered sites were identified within one kilometre of the study area. Two of the sites are located within the study area.

The archaeological potential of the study area was assessed in accordance with current practice, using its soils, hydrology and landforms as considerations. Based on the assessment of archaeological potential and the areas of potential archaeological resources identified in the City's *Official Plan*, the Stage 1 assessment indicated that a Stage 2 Archaeological Assessment should be carried out during the next stage of the study, detail design.

The *Stage 1 Archaeological Assessment Report* has been submitted to the Ministry of Culture for *Concurrence* and is on file with MTO.

5.4.2 Built Heritage and Cultural Landscape

A *Built Heritage and Cultural Landscape Study* was carried out as part of this study. The report has been submitted to the Ministry of Culture for *Concurrence* and is on file with MTO.

A total of twelve cultural heritage resources were identified in the study area, eleven of which are built heritage elements. Three of these are designated under Part IV of the *Ontario Heritage Act* (1990).

- The Guelph Limestone Quarry is considered to be a significant cultural landscape because of its long-time operation in the Guelph area, economic contribution to the community, high visibility from the Hanlon Expressway, and as an example of intense human modification of the natural environment.
- The property at 204 College Ave W is designated as having significant historical and architectural interest. The two-storey limestone farmhouse was built circa 1870. It was probably built for Simon Smith, a well-known and respected gentleman in Guelph at that time.
- The property at 366 College Ave W, often referred to as "Janefield", is of significant architectural interest and has important historical associations with the Day and McCrae families of Guelph. The two-storey neo-classical farmhouse was built sometime between 1854 and 1865 by noted Guelph builder William Day, and then purchased by Thomas McCrae in 1863. His grandson is the noted Lt. Col. John McCrae, author of "In Flander's Fields". The house was rehabilitated in the 1970s, and has been well maintained in recent decades. It is noted for its high quality masonry and woodwork, symmetrical design, hipped roof form, the five monumental double chimneys, and front entrance with transom and sidelights of stained and etched glass.
- The property at 35 Niska Road, known as the Hanlon Farm, is listed on the City of Guelph's Inventory of Heritage Structures (Stokes & Burcher 1993). This property and was settled and farmed by the Hanlon family, one of the pioneering settlers to the area, and the family after which the Hanlon Expressway was named.
- There is no historical information on file with the City of Guelph regarding the structure at 146 Downey Road. The two-storey brick house with a hipped roof is of an architectural style typical of the so-called "Four-Square" farmhouse that was popular in the early 1900s. The house and landscaping around the structure has historical interest as it has been well maintained, and provides an example of an early twentieth century farmstead. The structure continues to be used as a residence, and in recent years it has been surrounded by residential subdivisions.
- The property at 475 McWilliams Road is listed on the City of Guelph Inventory of Heritage Structures. The house and other buildings on the property are in poor condition, and were demolished following a fire in 2008.
- The property at 341 Forestell Road is designated as having cultural heritage value and interest. It was built circa 1866 and is considered to be one of the oldest brick houses in what was then the Puslinch Township. The Parker family who owned it were one of the original pioneering families in the Township, arriving in the area as early as 1843. The house is well preserved, and is overall an excellent example of the typical vernacular nineteenth century farmhouse in Ontario. Also notable is the local hand made bricks it is constructed with making it an example of local craftsmanship.
- The property at 264 Crawley Road, once known as "Willowgrove" and more recently, "Glencal Acres", is included on the City of Guelph's Heritage Inventory. Built circa 1870 by Edward Crawley Jr, the residence is

noted as being an early example of two-storey stone farmhouse construction, and for having ties with a prominent Puslinch family.

- The property at 372 Crawley Road is included on the City of Guelph's Inventory of Heritage Structures (Stokes & Burcher 1993). The farmhouse was completed in a neo-classical vernacular style, likely built circa 1890. The residence was built with red pressed bricks, has a front gable, inset entrance, modern windows and porch.
- The farmstead at 4599 20th Sideroad in Puslinch Township consists of several agricultural outbuildings and a 1 ½ storey stone house. It likely dates to the mid-nineteenth century as both the 1877 and 1906 historical county maps show a structure in the subject lot at the present position.
- The property at 7067 Maltby Road in Puslinch Township is known on the Puslinch Heritage Inventory as the McDonald House. The two-storey stone house with hipped roof is also known as the Borthwick House.
- 6674 – 8148 Maltby Road West, Part Lot 21, Concession 3. This stone agricultural building is included on the City of Guelph Heritage Inventory (Stokes & Burcher 1993). It is described as a one storey outbuilding used either for agricultural storage or perhaps as a shearing shed.

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6.0 Preliminary Design

This section of the report provides a description of the process that was followed to identify a Preferred Plan for the Highway 6 corridor between Maltby Road and the Speed River.

6.1 Potential Interchange Locations

To assess potential future interchange locations, Highway 6 was divided into three sections—south, central, and north—based on the existing primary land use for each area. The south section, from Highway 401 to north of Maltby Road is predominantly rural in land use; the central section, from north of Maltby Road to north of Laird Road is predominantly commercial/industrial; and the north section, from north of Laird Road to the Speed River, is predominantly residential. Exhibit 6 illustrates the three sections of Highway 6 along with the interchange locations considered.

6.1.1 South Section—Highway 401 to North of Maltby Road

A portion of the south section has been previously assessed as part of the *Highway 6, Freelton to Guelph Environmental Assessment Study* (as discussed in Section 1.1.2.1). The 'mid-block' interchange (between Wellington Road 34 and Maltby Road) in the south section in Exhibit 6 has received Environmental Clearance from the Ministry of the Environment as part of the *Highway 6 Freelton to Guelph* study and is shown only to illustrate the footprint of the interchange. The location or configuration of the mid-block (Wellington Road 34) interchange was not reconsidered as part of this study. The study also includes a grade-separated crossing of Highway 6 at Wellington Road 34.

A potential interchange location was considered at Maltby Road during this study but was not carried forward for the following reasons:

- An interchange cannot be provided at Maltby Road because of its proximity to the approved future interchange between Wellington Road 34 and Maltby Road
- Entrance/exit ramps from both interchanges would overlap without sufficient space for weaving areas between the interchanges (weaving area is the space required for accelerating vehicles from one interchange and decelerating vehicles from the other interchange to safely complete their manoeuvres)
- Overlapping interchange ramps are not acceptable because highway safety is compromised
- Maltby Road can be closed at Highway 6 since an extension of Southgate Drive through the proposed Southgate Industrial Park, the adjacent interchange (between Wellington Road 34 and Maltby Road), and an interchange in the Central Section of the study area would provide future access to the area

A single interchange between Wellington Road 34 and Maltby Road is recommended for the south section of Highway 6, from Highway 401 to north of Maltby Road. The design of this interchange was part of the *Highway 6, Freelton to Guelph Environmental Assessment Study*. No further consideration of alternatives or evaluation is required for the South Section since an additional interchange cannot be provided.

6.1.2 Central Section—North of Maltby Road to North of Laird Road

Two potential interchange locations were considered for the central section—the first at Clair Road, and the second at Laird Road. As discussed in Section 5.3.3, extensive commercial and industrial development is planned east and west of Highway 6 near Clair Road and Laird Road. As such, this area has been the subject of several planning studies to determine future access to the planned commercial developments.

Previous planning studies and the *Hanlon Creek Business Park Draft Plan* (City of Guelph Subdivision 23T-03501), along with the City of Guelph's *Official Plan*, have identified a future interchange location at Laird Road. This current planning and preliminary design study has confirmed the need for a future interchange at this location.

A potential interchange location was considered at Phelan Road/Clair Road but was not carried forward for the following reasons:

- An interchange cannot be provided at Phelan Road/Clair Road because of its proximity to an interchange at Laird Road, which is more central to the developing industrial areas
- The interchange entrance/exit ramps to the north would overlap with proposed ramps at the Laird Road interchange without sufficient space for weaving areas between the interchanges (weaving area is the space required for accelerating vehicles from one interchange and decelerating vehicles from the other interchange to safely complete their manoeuvres)
- Clair Road can be closed at Highway 6 since an extension of Southgate Drive through the proposed Southgate Industrial Park and the adjacent interchange at Laird Road would provide future access to the area
- Phelan Road can be closed at Highway 6 since it will be connected to the Hanlon Creek Business Park road network

A single interchange at Laird Road is recommended for the central section of Highway 6, from north of Maltby Road to north of Laird Road. Interchange alternatives at this location are discussed in Section 6.2.

6.1.3 North Section—North of Laird Road to the Speed River

Potential interchange locations were considered at each of the three existing at-grade intersections in the north section—Kortright Road/Downey Road, Stone Road, and College Avenue.

Based on the comparative analysis that was undertaken, **a single interchange location is recommended at Stone Road for the north section of Highway 6, from north of Laird Road to the Speed River. A partial interchange at Kortright Road/Downey Road was also considered to address municipal needs.** Interchange alternatives at these locations are discussed in Section 6.3.

An interchange at Stone Road is recommended for the following reasons:

- A full interchange can be provided at Stone Road
- Stone Road is a major east-west arterial road in the City of Guelph road network and has a vital role in the urban and regional transportation system
- Stone Road provides access to a major commercial area east of Highway 6
- Property for this interchange has been protected in most of the intersection quadrants

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Ontario

Stantec

HIGHWAY 6 (HANLON EXPRESSWAY)
Maltby Road to the Speed River

100m
1:10000

Potential Interchange Locations

6a

Ontario

Stantec

HIGHWAY 6 (HANLON EXPRESSWAY)
Maltby Road to the Speed River

100m
1:10000

Potential Interchange Locations

FIGURE 6b

An interchange at College Avenue was considered but not carried forward for the following reasons:

- An interchange cannot be provided at College Avenue because it is too close to the existing Wellington Street interchange
- The interchange entrance/exit ramps to the north would overlap with the existing ramps at the Wellington Street interchange, without sufficient space for weaving areas between the interchanges (weaving area is the space required for accelerating vehicles from one interchange and decelerating vehicles from the other interchange to safely complete their manoeuvres)
- Overlapping interchange ramps are not acceptable because highway safety is compromised – a Road Safety Assessment was carried out to investigate a potential interchange at College Avenue. The results of the Road Safety Assessment concluded that predicted accidents could increase if the ramps overlap with the Wellington Street ramps, which is not desirable. This was subsequently confirmed by an independent peer review study that was completed for the City of Guelph.
- Interchange entrance/exit ramps to the south would also overlap with ramps at a possible Stone Road interchange
- An interchange at College Avenue would have significant property requirements

An interchange at Kortright Road/Downey Road was considered, but a full interchange was not carried forward for the reasons listed below. A partial interchange (to and from the south) was carried forward to provide improved access to the municipal road network.

- Kortright Road and Downey Road are residential collectors in the City of Guelph road network
- A full interchange cannot be provided at Kortright Road because of the proximity of a possible interchange at Stone Road
- The entrance/exit ramps to the north would overlap with the ramps at a possible Stone Road interchange, without sufficient space for weaving areas between the interchanges (weaving area is the space required for accelerating vehicles from one interchange and decelerating vehicles from the other interchange to safely complete their manoeuvres)
- Overlapping interchange ramps are not acceptable because highway safety is compromised
- A full interchange at Kortright Road would have significant property impacts

6.2 Central Section Interchange Alternatives and Evaluation

As discussed in Section 6.1.2, the preferred location for an interchange in the central section is Laird Road. Central Section alternatives, evaluation criteria, and evaluation process were presented at the first Public Information Centre in May 2007, and the Preferred Plan was presented at the second Public Information Centre in December 2007.

6.2.1 Evaluation Criteria

An evaluation process was developed to provide an objective approach to the analysis and evaluation of access alternatives that would form a justifiable tool for the selection of a Preferred Plan. The goal of the evaluation process was to select an improvement plan that provides safe operations and convenient local access to the surrounding area, while minimizing the impacts to the environment, and is cost effective.

In accordance with the *Class EA for Provincial Transportation Facilities (2000)*, Ministry of Transportation projects are required to consider a wide range of potential impacts to the natural, social, cultural and applied environments in the study area. Some environmental factors that are relevant to this study are potentially impacted to the same degree or in the same way with all of the alternatives being considered. Although these factors are relevant to the study area, they do not affect one alternative more than the others and were, therefore, not explicitly considered in the evaluation that led to the selection of a Preferred Plan. Unavoidable impacts are addressed through the identification of mitigation measures, which are discussed in detail in Section 7.11.

Evaluation criteria that address the key issues related to the decision-making process of selecting a suitable improvement plan for this project were identified. The evaluation criteria are summarized in Table 10 and were presented to the public for comment at PICs 1 and 3.

The evaluation criteria are independent variables, each of which may contribute a positive or negative influence on the overall suitability of an alternative. Although it was important to explicitly consider the suitability of an alternative in terms of each criterion, it was also useful to establish an overall composite score by determining appropriate weight (relative importance) among the criteria. Each evaluation criterion was assigned a weight that represented its relative importance to the other criteria. The judgments on the relative importance of the evaluation criteria are based on a comparison of each criterion to each other criterion to assess which criterion is more important and by how much. Determining the importance of each criterion was based on engineering judgment, environmental significance, input received from external agencies, and input received from the public. The relative importance of each evaluation criterion, as applied for this study, is also included in Table 10.

Table 10: Initial Evaluation Criteria and Weighting

Evaluation Criterion	Indicators	Weight	Rationale for Weight
Traffic Operations	• Accommodates projected traffic demand • Supports and enhances provincial highway function • Reduces the number of collisions • Overall design standard consistent with Geometric Standards for Ontario Highways, Interchanges and Connecting Roads	5	• Overall purpose of the project is to determine a plan that accommodates the future traffic volumes and provides improved safety • Public concern
Access	• Supports existing and future growth and development • Supports the municipal road network • Complements future municipal road improvements	5	• Preferred Plan must provide adequate access throughout the study area • A large number of residents and business rely on convenient access to Highway 6 on a daily basis
Constructability	• Existing traffic flow and operations accommodated during construction • Uses conventional construction techniques	1	• All of the alternative use conventional construction techniques • Typical type of construction project • All of the alternatives will have similar impacts to traffic with respect to construction staging and detours

Evaluation Criterion	Indicators	Weight	Rationale for Weight
Natural Environment	• Ecological features, including wetlands, greenbelts, watercourses, wildlife habitat, surface water and groundwater	3	• Natural environment impacts generally not expected to be significant given that proposed improvements are located primarily within a developed urban setting, with some property already set aside for proposed improvements • However, important to consider potential impacts to Hanlon Creek • Also important to consider impacts to Kortright Waterfowl Park and potential impacts to Speed River Wetland Complex associated with possible College Avenue extension • Vegetation displacement would occur during construction with potential for mitigation in some areas • Public and agency concern
Social Environment	• Residents and businesses displaced • Property requirements • Compatible with City of Guelph and Wellington County Official Plans • Views of highway / landscape for adjacent residents • Noise and air quality • Community and recreational facilities, including trails	4	• Displacement of an existing land use is permanent, however, impact may vary by type and nature of land use; desirable to minimize displacement of residents and businesses • Desirable to minimize property requirements and potential impacts on adjacent residents and properties • Compatibility with municipal planning policies is considered important • Noise impacts has been raised as a public concern • Public has indicated that minimizing community and land use impacts are important
Cultural Environment	• Registered and identified Built Heritage Features and Cultural Landscapes • Archaeological resources	2	• Impacts on built heritage features and cultural landscapes not expected to be significant due to location of these features relative to proposed improvements • Potential to mitigate impacts on built heritage features and cultural landscapes during construction; negligible impacts on built heritage and cultural landscapes during operation • Potential impacts to archaeological resources may occur during the construction phase and would be mitigated, as per Ministry of Culture requirements
Applied Environment	• Waste disposal sites or potentially contaminated sites	1	• Limited potential to affect waste disposal sites or potentially contaminated property within study area • While there may be costs associated with the clean-up of a waste disposal site or contaminated property, considered to be less important than other criteria including traffic operations, access, natural and social environments
Cost	• Cost, including construction, utility relocation and property	2	• A cost-effective plan that improves traffic operations and provides access to the local area while minimizing environmental impacts is required

6.2.2 Central Section Alternatives

Three alternatives were developed for an interchange at Laird Road. The alternatives, as shown in Exhibit 7, include closing the existing at-grade intersections at Maltby Road, Clair Road, and Laird Road, and providing a full-movement interchange at Laird Road. The alternatives have been developed to connect to the Laird Road realignment proposed as part of the Hanlon Creek Business Park Draft Plan of subdivision.

The three interchange alternatives are common interchange types used on similar highway facilities in Ontario. Based on discussions with the City of Guelph, a six lane (three lanes in each direction) cross-section for Laird Road is required.

Table 11 provides a summary of the advantages and disadvantages associated with each of the central section interchange alternatives.

Table 11: Advantages and Disadvantages of Central Section Interchange Alternatives

Interchange Alternative		Advantages	Disadvantages
1	Parclo A Configuration	• Accommodates the freeway exits on large radius ramps located in advance of the structure • Interchange configuration provides high traffic capacity and minimal traffic conflicts • Interchange is a standard configuration with inherent safety features • No left turns from Laird Road are required – left turns are from the freeway ramp terminals only • Exits from Laird Road to the freeway are free-flow movements that are consistently to the right • Freeway ramp terminal locations allow for adequate sight-distance across the structure • Preferred interchange configuration for design consistency along the Highway 6 (Hanlon Expressway) corridor • The Parclo A-4 configuration is compatible with the approved Draft Plan of Subdivision for the Hanlon Creek Business Park located on the west side of the highway	• Traffic exiting from the freeway must stop at an intersection (ramp terminal) before entering Laird Road • Requires more property than a diamond interchange configuration • Higher construction cost than a diamond interchange

1 Laird Road Parcel A Configuration

Clair Road Closed

Possible Work by City of Guelph:
Laird Road Realigned
Southgate Drive Extension

The possible municipal road extensions are illustrated schematically. The City of Guelph has identified these road extensions in its Official Plan. The city will undertake further study and a Municipal Class Environmental Study for each of these possible road extensions.

2 Laird Road Parcel B Configuration

Clair Road Closed

Possible Work by City of Guelph:
Laird Road Realigned
Southgate Drive Extension

The possible municipal road extensions are illustrated schematically. The City of Guelph has identified these road extensions in its Official Plan. The city will undertake further study and a Municipal Class Environmental Study for each of these possible road extensions.

3 Laird Road Diamond Configuration

Clair Road Closed

Possible Work by City of Guelph:
Laird Road Realigned
Southgate Drive Extension

The possible municipal road extensions are illustrated schematically. The City of Guelph has identified these road extensions in its Official Plan. The city will undertake further study and a Municipal Class Environmental Study for each of these possible road extensions.

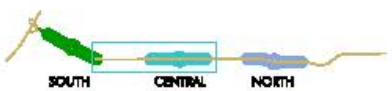
Ontario

Stantec

HIGHWAY 6 (HANLON EXPRESSWAY)

Maltby Road to the Speed River

100m
1:15 000



Central Interchange Alternatives

As shown at PIC 1 (May 10, 2007)

SHEET 7

Interchange Alternative		Advantages	Disadvantages
2	Parclo B Configuration	• The interchange configuration is a standard configuration • The interchange configuration has minimal traffic conflicts • All freeway traffic destined for Laird Road enters on a free-flow ramp (i.e. no stop is required at Laird Road)	• The freeway exits require successive and closely spaced decision points to separate westbound and eastbound traffic • Freeway traffic exits from the freeway on a small radius loop ramp, which reduces the capacity and safety of the interchange • Drivers from both directions on Laird Road are required to share the entrance ramps, which increases the number of conflict points and reduces the capacity of the interchange • Left-turn storage lanes are required on Laird Road • Requires more property than a diamond interchange configuration • Higher construction cost than a diamond configuration • The Parclo B-4 configuration is not compatible with the approved Draft Plan of Subdivision for the Hanlon Creek Business Park located on the west side of the freeway • Development lands located in the northeast quadrant are impacted by the loop ramp
3	Diamond Configuration	• The interchange is a standard configuration • The freeway exits are on large radius ramps located in advance of the structure • Exits from Laird Road are simple and exit moves are in the same direction as the freeway destination direction • Speed change lanes through the structure are not required	• All connections between Laird Road and the exit and entrance ramps must be accomplished as turning movements at intersections • Drivers from both directions on Laird Road are required to share the entrance ramps, which increases the number of conflict points and reduces the capacity of the interchange • Left-turn storage lanes are required on Laird Road • The diamond interchange configuration has less capacity than a Parclo B-4 configuration and a Parclo A-4 configuration • The diamond interchange configuration is not compatible with the approved Draft Plan of Subdivision for the Hanlon Creek Business Park located on the west side of the freeway • Development lands located in the northeast quadrant are impacted by the entrance ramp

6.2.3 Central Section Evaluation

Based on the advantages and disadvantages of the three interchange alternatives identified in Table 11 and a more comprehensive assessment of each alternative (as presented in Appendix I-1), a comparative evaluation of the alternatives was completed based on the evaluation criteria. A summary of the results of the evaluation is provided in Table 12. The circles in the evaluation table identify whether the alternative fulfills the evaluation criteria. A full circle represents the best or most preferred option, while an empty circle represents an alternative that has significant impacts to the identified criterion.

Table 12: Central Section Interchange Evaluation Summary

Evaluation Criterion	Weight	Alternative 1	Alternative 2	Alternative 3
Traffic Operations	5 (22%)			
Access	5 (22%)			
Constructability	1 (4%)			
Natural Environment	3 (13%)			
Social Environment	4 (17%)			
Cultural Environment	2 (9%)			
Applied Environment	1 (4%)			
Cost	2 (9%)			
Rank	(100%)	1st	3rd	2nd

Legend:

Most Preferred

Least Preferred

As shown in the previous table, Alternative 1, a Parclo A interchange is the highest ranked alternative. The alternative scored favourably for all of the evaluation criteria. Alternatives 2 and 3 did not score as well for traffic operations and have more property impacts (social environment) on the Hanlon Creek Business Park. All of the alternatives had similar impacts to the natural environment and required the closure of the Maltby Road and Clair Road intersections.

A Parclo A interchange was selected as the Preferred Plan for the Central Section because:

- It accommodates the freeway exits on large radius ramps located in advance of the structure
- The interchange configuration provides high traffic capacity and minimal traffic conflicts
- The interchange is a standard configuration with inherent safety features
- No left turns from Laird Road are required – left turns are from the freeway ramp terminals only
- Exits from Laird Road to the freeway are free-flow movements that are consistently to the right
- The ramp terminal locations allow for adequate sight-distance across the structure
- Preferred interchange configuration for design consistency along the Highway 6 (Hanlon Expressway) corridor
- The configuration is compatible with the approved Draft Plan of Subdivision for the Hanlon Creek Business Park located on the west side of the freeway

6.3 North Section Alternatives and Evaluation

As described in Section 6.1.3, the preferred interchange location for the north section of Highway 6 is Stone Road.

The process to identify a preferred plan for this section was an iterative process to balance the needs of all stakeholders involved, including the Ministry of Transportation, the City of Guelph, and local residents. As the study progressed, additional information was gathered and several components of the plan were refined as a result of the consultation process. This section of the report describes the process that was followed to determine the North Section Preferred Plan.

6.3.1 Initial Alternatives and Evaluation

Interchange alternatives (described in Section 6.3.1.1) were initially developed at Stone Road. The interchange alternatives were developed with consideration for planned or potential municipal road network improvements (described in Section 6.3.1.2) to complement the interchange alternatives.

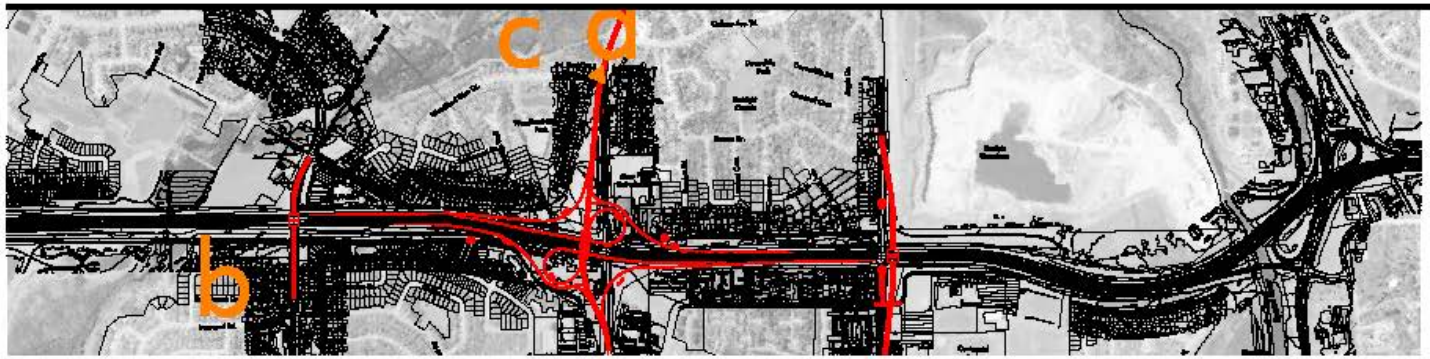
6.3.1.1 Interchange Configuration Alternatives

Three interchange alternatives were initially developed at Stone Road. These alternatives are illustrated on Exhibit 8 and discussed in the following sections. The interchange alternatives are shown with the possible municipal road connections that are described in Section 6.3.1.2. The three alternatives provide a full-movement interchange at Stone Road and grade-separated crossings of Highway 6 at Kortright Road/Downey Road and College Avenue. The interchange alternatives were originally developed with a six-lane cross-section for Stone Road and four-lane cross-sections for Kortright Road/ Downey Road and College Avenue, based on future projected traffic volumes provided by the City of Guelph.

Table 13 provides a summary of the advantages and disadvantages associated with each of the initial north section interchange alternatives.

Table 13: Advantages and Disadvantages of North Interchange Alternatives

Interchange Alternative		Advantages	Disadvantages
1	Parclo A Configuration	• Accommodates the freeway exits on large radius ramps located in advance of the structure • Interchange configuration provides high traffic capacity and minimal traffic conflicts • Interchange is a standard configuration with inherent safety features • No left turns from Stone Road are required – left turns are from the freeway ramp terminals only • Exits from Stone Road to the freeway are free-flow movements that are consistently to the right • Freeway ramp terminal locations allow for adequate slight-distance across the structure • Preferred interchange configuration for design consistency along the Highway 6 (Hanlon Expressway) corridor • The Parclo A-4 configuration is compatible with property that has been previously acquired by the ministry and the city to protect for a possible interchange at Stone Road	• Traffic exiting from the freeway must stop at an intersection (ramp terminal) before entering Stone Road • Requires more property than a diamond interchange configuration • Higher construction cost than a diamond configuration • Existing residential lands located in the northwest quadrant are impacted by the interchange ramps
2	Parclo B Configuration	• The interchange is a standard configuration • The interchange configuration provides high traffic capacity with minimal traffic conflicts • Freeway traffic from the south destined for Stone Road west enters on a free-flow ramp (i.e. no stop is required at Stone Road) • Freeway traffic from the north destined for Stone Road east enters on a free-flow ramp (i.e. no stop is required at Stone Road) • Accommodates a possible future Hanlon Road Extension on the east side of the freeway, between Kortright Avenue and Stone Road	• The freeway traffic must exit from the freeway on a small radius loop ramp, which reduces the capacity and safety of the interchange • Freeway traffic from the north and south must stop at an intersection (ramp terminal) before entering Stone Road east • Drivers on Stone Road are required to share the entrance ramps, which increases the number of conflict points and reduces the capacity of the interchange • Left-turn storage lanes are required on Stone Road • The Parclo B-2 configuration has less capacity than a Parclo B-4 configuration and a Parclo A-4 configuration • Requires the displacement of Priory Park Baptist Church and the Holiday Inn • Higher construction cost than a diamond interchange configuration • Existing residential lands located in the southwest quadrant are impacted by the interchange ramps

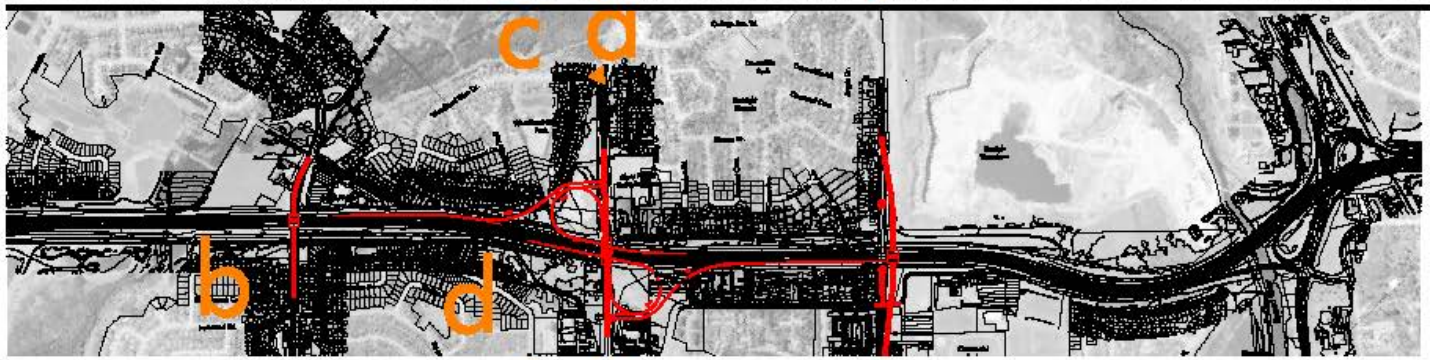


1 Stone Road Parcle A Configuration

Grade Separations at:
Kortright Avenue
College Avenue

Possible Work by City of Guelph:
a: Stone Road Extension
b: Kortright Avenue Partial Interchange
c: College Avenue Extension

The possible municipal road extensions are illustrated schematically. The City of Guelph has identified these road extensions in its Official Plan. The city will undertake further study and a Municipal Class Environmental Assessment Study for each of these possible road extensions.

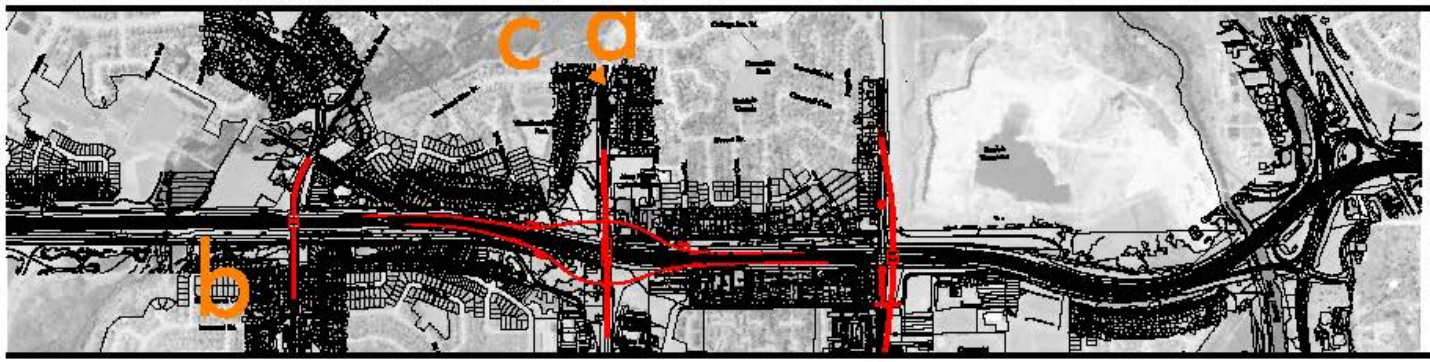


2 Stone Road Parcle B Configuration

Grade Separations at:
Kortright Avenue
College Avenue

Possible Work by City of Guelph:
a: Stone Road Extension
b: Kortright Avenue Partial Interchange
c: College Avenue Extension
d: Hanlon Road Extension

The possible municipal road extensions are illustrated schematically. The City of Guelph has identified these road extensions in its Official Plan. The city will undertake further study and a Municipal Class Environmental Assessment Study for each of these possible road extensions.



3 Stone Road Diamond Configuration

Grade Separations at:
Kortright Avenue
College Avenue

Possible Work by City of Guelph:
a: Stone Road Extension
b: Kortright Avenue Partial Interchange
c: College Avenue Extension

The possible municipal road extensions are illustrated schematically. The City of Guelph has identified these road extensions in its Official Plan. The city will undertake further study and a Municipal Class Environmental Assessment Study for each of these possible road extensions.

Ontario

Stantec

HIGHWAY 6 (HANLON EXPRESSWAY)

Maltby Road to the Speed River

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1:15000

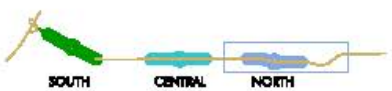

EXHIBIT 8

North Interchange Alternatives

As shown at PIC 1 (May 10, 2007)

Interchange Alternative		Advantages	Disadvantages
3	Diamond Configuration	• The interchange is a standard configuration • The freeway exits are on large radius ramps located in advance of the structure • Exits from Stone Road are simple and exit moves are in the same direction as the freeway destination direction • Speed change lanes through the structure are not required	• All connections between Stone Road and the exit and entrance ramps must be accomplished as turning movements at intersections • Drivers in both directions on Stone Road are required to share the entrance ramps, which increases the number of conflict points and reduces the capacity of the interchange • Left-turn storage lanes are required on Stone Road • The diamond interchange configuration has less capacity than a Parclo B-4 configuration and a Parclo A-4 configuration • Existing residential lands located in the northwest quadrant are impacted by the interchange ramps

A traffic operations analysis carried out following the first Public Information Centres determined that a diamond interchange could not adequately accommodate the anticipated traffic demands at Stone Road. A diamond interchange requires all traffic entering and exiting the highway to use four ramps (as opposed to six ramps for a Parclo A4 or Parclo B4 interchange). Given the high volumes of traffic predicted to be using the interchange at Stone Road, significant traffic delays would be experienced, including long delays at the ramp terminal intersections, and long queues that could potentially back onto Highway 6. The main ramp of concern was the southbound exit ramp, where high left-turn movements were expected at the ramp terminal intersection.

The Parclo A and Parclo B configurations were carried forward to the development of the North Section alternatives that are discussed in Section 6.3.1.4.

6.3.1.2 Municipal Road Alternatives

Municipal road network connection alternatives were identified in consultation with City of Guelph transportation staff to complement the interchange alternatives. The alternatives were presented at the first PIC as schematically illustrated on Exhibit 9 and were included as identified in the City of Guelph's *Official Plan* and based on the *Guelph-Wellington Transportation Study* (2005).

The four alternative municipal road connections are summarized in Table 14.

Table 14: Municipal Road Alternatives

Alternative	Municipal Road	Description
A	Stone Road Extension	• Stone Road Extension improves access from the west to the Stone Road interchange • Requires a new crossing of the Speed River PSW
B	Kortright Road Partial Interchange	• Additional municipal road access to Highway 6 is provided at a partial interchange (oriented to and from the south) at Kortright Road/Downey Road • Reduction in through volume traffic on municipal roads that parallel Highway 6 • Potential minor impacts to Hanlon Creek during construction
C	College Avenue Extension	• New municipal road connection is provided on the west side of Highway 6 between Niska Road and Stone Road • Improved municipal road connectivity on the west side of Highway 6 • Reduction in through volume traffic on municipal roads that parallel Highway 6 • Requires a new crossing of the Hanlon Creek PSW
D	Hanlon Road Extension	• New municipal road connection is provided on the east side of Highway 6 between Kortright Road and Stone Road • Improved municipal road connectivity on the east side of Highway 6 • Reduction in through volume traffic on municipal roads that parallel Highway 6 • The Hanlon Road Extension connection at Stone Road reduces capacity at the intersection

Significant concerns regarding the College Avenue, Stone Road, and Hanlon Road municipal road network connections were identified by the public and City Councillors. The City of Guelph also passed a resolution requesting that the College Avenue be removed from the City's *Official Plan*. As a result, the College Avenue and Stone Road alternatives were not carried forward for further consideration after PIC 2.

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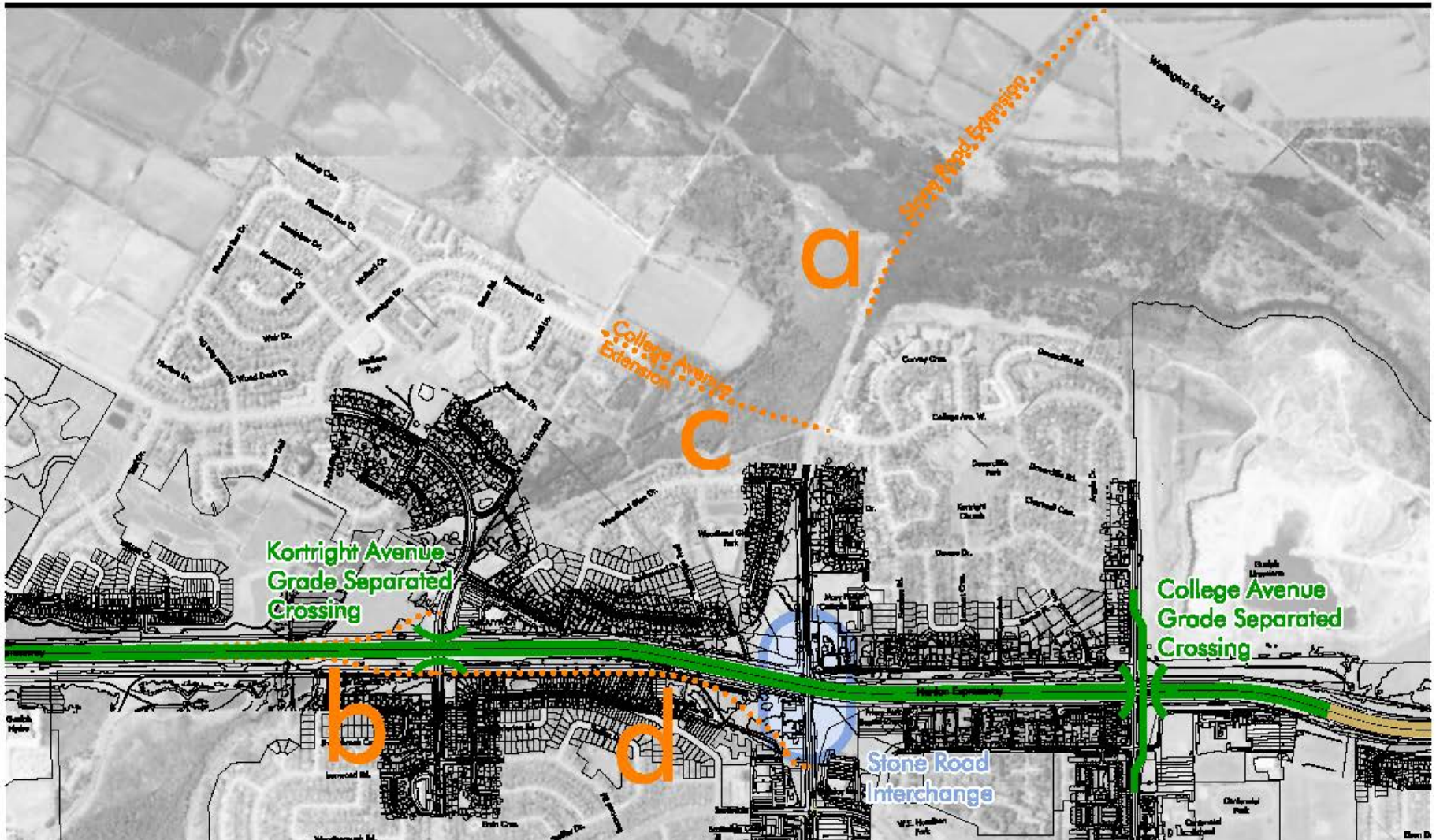


Ontario

Stantec

HIGHWAY 6 (HANLON EXPRESSWAY)

Maltby Road to the Speed River

100m
1:10 000

Note: The possible municipal road extensions are illustrated schematically. The City of Guelph has identified these road extensions in its Official Plan.

Schematic Municipal Road Improvements

- a: Stone Road Extension
- b: Kortright Avenue Partial Interchange
- c: College Avenue Extension
- d: Hanlon Road Extension

Municipal Road Alternatives

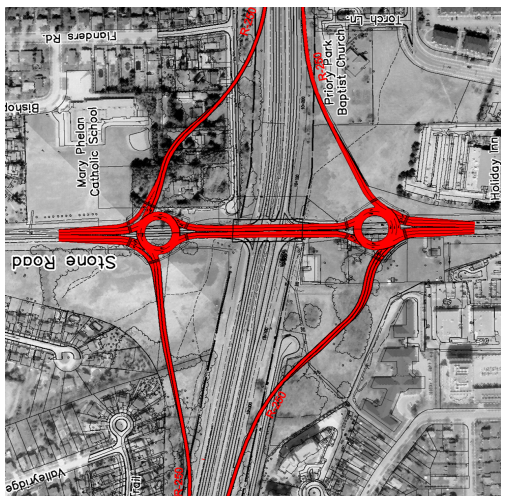
POSSIBLE IMPROVEMENTS TO COMPLEMENT INTERCHANGE ALTERNATIVES
As shown at PIC 1 (May 10, 2007)

SHEET 9

6.3.1.3 Roundabouts

Following PIC 1, the public and City Council requested that roundabouts be considered on both Highway 6 and at ramp terminal intersection locations.

Roundabouts are a traffic control measure that is gradually being implemented across North America. MTO is actively considering possible locations for a modern roundabout and has recently implemented a single-lane roundabout at an intersection on Highway 33 west of Kingston (expected to be operational in the summer of 2009). A Roundabout Innovation Team has been established to share expertise, research, experience and best practices with other jurisdictions to further the implementation of roundabouts on provincial highways. There is limited experience with high volume, multi-lane roundabouts in North America and research is currently being completed to determine their safety benefits for all road users, including drivers, pedestrians, and cyclists.



Stone Road Ramp Terminal Roundabouts

The project team carried out a brief assessment to consider the traffic operations of roundabouts on the Highway 6 mainline or at interchange ramp terminals.

Roundabouts were not considered a feasible option on mainline Highway 6 for the following reasons:

- A three-lane roundabout does not provide adequate operations on Highway 6 (queue lengths on Highway 6 would be greater than 1000 m and average delays would be greater than 5 minutes)
- Roundabouts with three or more circulating lanes are not considered to be as safe as smaller roundabouts and essentially prohibit the movement of pedestrians through the roundabout
- High volumes on Highway 6 (over 50,000 vehicles per day in the future)
- High number of left-turn movements reduce the overall capacity of the roundabout
- High percentage of large trucks on Highway 6 (~10-15%)
- A reduction of the posted speed on Highway 6 would be required, which is not consistent with the overall transportation function of the facility
- A roundabout on Highway 6 does not promote a free-flow movement for Highway 6, which is a provincial facility with the function of connecting Highway 401 and Highway 7

Roundabouts were not considered feasible at the interchange ramp terminal intersections for the following reasons:

- Multi-lane roundabouts would be required at the ramp terminals
- The ramp terminal roundabouts do not operate as well as the signalized intersection ramp terminals, and the roundabouts would be approaching their theoretical capacity by the year 2021
- High left-turn volumes (~ 1,000 vehicles per hour in the peak hour) reduce the overall capacity of the roundabouts
- There are safety concerns for pedestrians at multi-lane roundabouts

6.3.1.4 Initial Alternatives (PIC 1)

The Stone Road interchange alternatives and the municipal road alternatives were carried forward to develop seven complete alternatives for the north section. All North Section alternatives include an interchange at Stone Road, grade-separated crossings at Kortright Road/Downey Road and College Avenue, municipal road connection, and provision for a possible future Stone Road Extension. The North Section alternatives are displayed in Exhibit 10 and are summarized in Table 15.

Table 15: North Section Alternatives

Alternative	Interchange Configuration	Municipal Road Connections
1	Parclo A	• None
2	Parclo A	• Kortright Road Partial Interchange
3	Parclo A	• College Avenue Extension
4	Parclo B	• Hanlon Road Extension
5	Parclo B	• Hanlon Road Extension • Kortright Road Partial Interchange
6	Parclo B	• Hanlon Road Extension • Kortright Road Partial Interchange • College Avenue Extension
7	Parclo A	• Hanlon Road Extension • Kortright Road Partial Interchange

6.3.1.5 Initial Evaluation

A comprehensive evaluation of each alternative was undertaken. The evaluation process and criteria used for the north section alternatives was the same process that was used for the central section interchange alternatives described in Section 6.2.1. The evaluation process was developed to provide an objective approach to the analysis and evaluation of access alternatives that would form a justifiable tool for the selection of a Preferred Plan.

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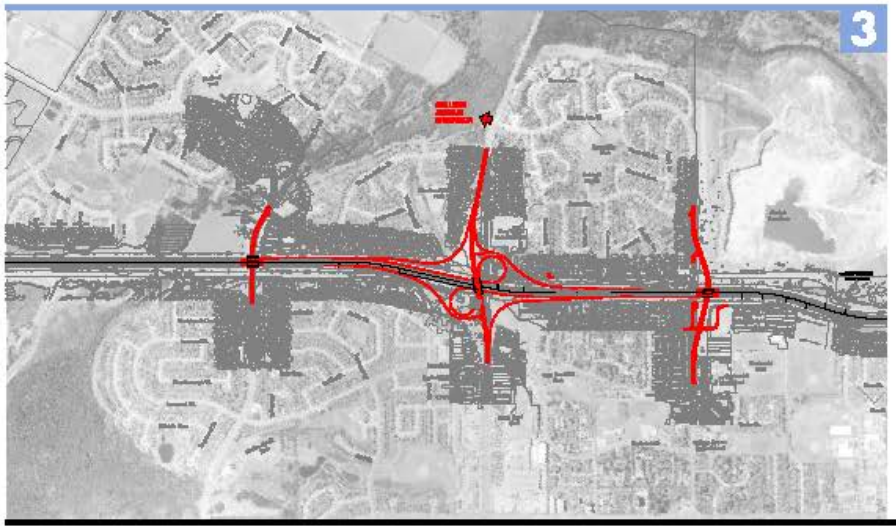

Ontario

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HIGHWAY 6 (HANLON EXPRESSWAY)
Maltby Road to the Speed River

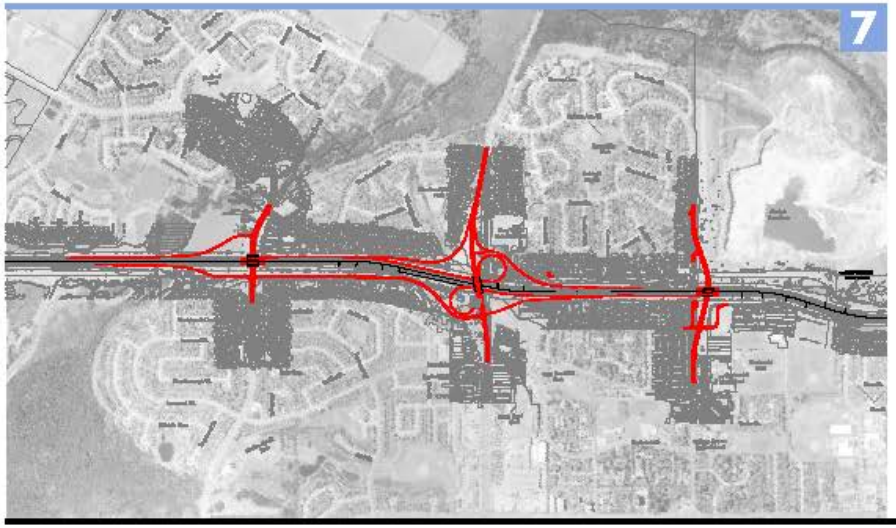
GW 2013-03-03

INITIAL NORTH SECTION ALTERNATIVES

North Alternatives 1, 2, 3, and 4

As Shown at PIC 2 (December 5, 2007)

EXHIBIT 10a



Ontario

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HIGHWAY 6 (HANLON EXPRESSWAY)
Maltby Road to the Speed River

GW 2013-03-03

INITIAL NORTH SECTION ALTERNATIVES

North Alternatives 5, 6, and 7

As Shown at PIC 2 (December 5, 2007)

EXHIBIT 10b

Additional details of the evaluation are provided in Appendix I. A summary of the evaluation is provided in Table 16.

Alternative 2, a Parclo A interchange with a partial interchange at Kortright Road was the highest ranked alternative for the North Section. This alternative scored favourably for all of the evaluation criteria.

Table 16: North Section Evaluation Summary

Evaluation Criterion	Weight	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7
Traffic Operations	5							
Access	5							
Constructability	1							
Natural Environment	3							
Social Environment	4							
Cultural Environment	2							
Applied Environment	1							
Cost	2							
Rank		2nd	1st	4th	6th	5th	7th	3rd

Legend: Most Preferred … Least Preferred

6.3.1.6 Initial Preferred Plan (PIC 2)

Based on the evaluation of the central section interchange alternatives and the north section alternatives, the initial Preferred Plan was determined and presented for public review at Public Information Centre 2. The plan, as shown on Exhibit 11, included the following features:

- Closure of the intersection at Maltby Road – access will be provided at the proposed mid-block Wellington Road 34 interchange to the south (as part of the *Highway 6, Freelton to Guelph Environmental Assessment Study*)
- Closure of the intersection at Clair Road/Phelan Road – access will be provided at the Laird Road interchange
- A full interchange (Parclo A configuration) at Laird Road – Laird Road crosses over Highway 6
- A partial interchange (diamond configuration oriented to the south) at Kortright Road/Downey Road – Kortright Road/Downey Road crosses under Highway 6
- A full interchange (Parclo A configuration) at Stone Road – Stone Road crosses over Highway 6
- Grade-separation at College Avenue – College Avenue crosses under Highway 6
- Maintaining the existing four-lane cross-section with an open median on Highway 6
- Signalized intersections at all of the interchange ramp terminals
- Potential future noise barriers on the east side of Highway 6 between Kortright Road and College Avenue, and on the west side of Highway 6 from north of the YMCA to Stone Road
- Full illumination of the highway and interchanges using conventional lighting, from Kortright Road/ Downey Road to Wellington Street
- Partial illumination of the interchange at Laird Road using conventional lighting

The initial Preferred Plan provided the following benefits:

- The removal of the existing at-grade intersections and traffic signals will significantly improve safety and operations on the Hanlon Expressway
- The removal of at-grade intersections and traffic signals will provide free-flow traffic on Highway 6, which will reduce vehicle idling, trucks stopping, etc., and will facilitate future transit opportunities
- The Preferred Plan provides reasonable local access and minimizes the amount of out-of-way travel
- The Preferred Plan accommodates the potential for a future extension of Stone Road subject to a separate EA for Municipal Roads undertaken by the City
- Direct access to the Kortright Hills area is provided to and from the south from Highway 6 via the partial interchange at Kortright Road/Downey Road
- The improvements will support planned development and provide economic opportunities adjacent to Highway 6
- The Preferred Plan will maintain and enhance the existing connections across Highway 6 for cyclists and pedestrians by providing grade-separated crossings and provision for dedicated bicycle lanes and sidewalks

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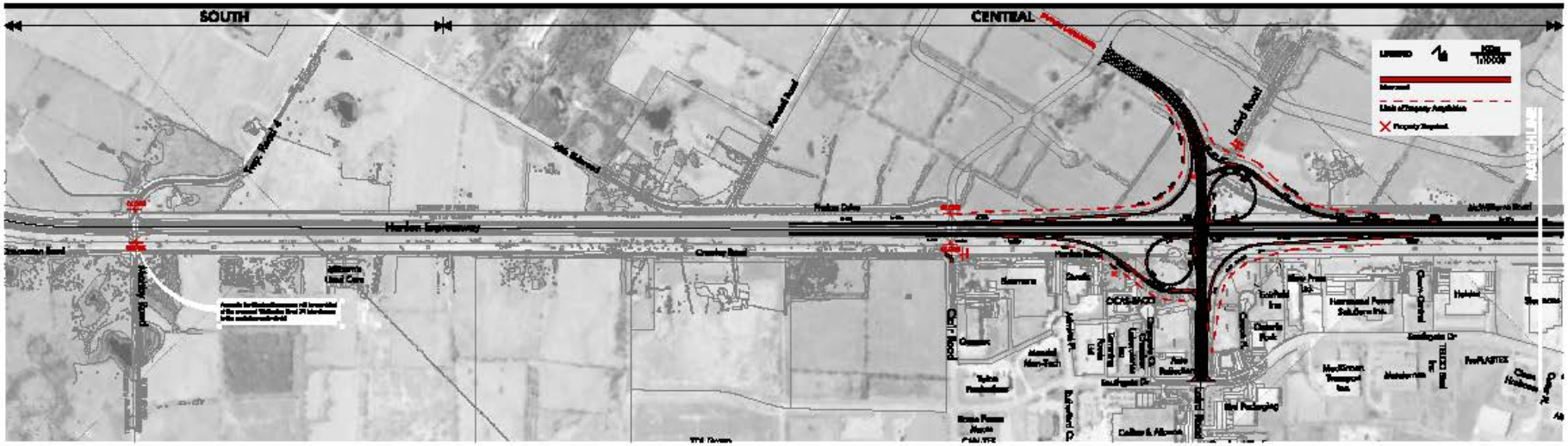

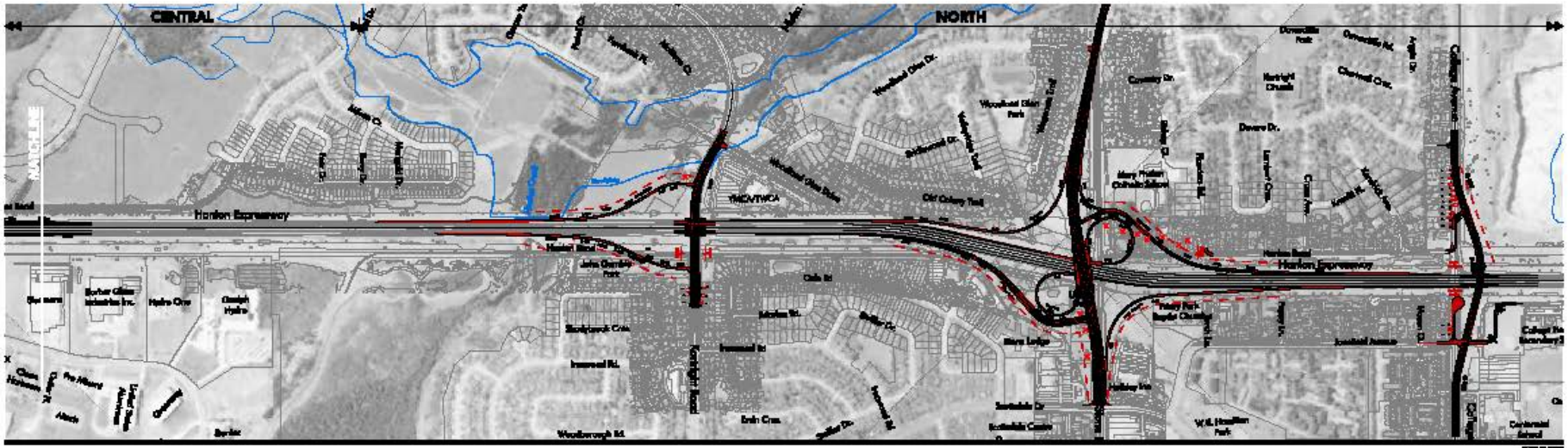

Ontario

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HIGHWAY 6 (HANLON EXPRESSWAY)

Maltby Road to the Speed River

GWP 3093-00-00

Initial Preferred Plan

As shown at PIC 2 (December 8, 2007)

SHEET 11

- The Preferred Plan utilizes the existing highway corridor, which minimizes additional environmental and property impacts
- It utilizes lands in the SW, SE, and NE quadrants at Stone Road that are owned by the City of Guelph and MTO for future Highway 6 improvements
- The Laird Road interchange configuration is compatible with the approved Draft Plan of Subdivision for the Hanlon Business Park located on the west side of the highway
- Highway 6 improvements will increase the overall capacity of the local transportation network, which could divert vehicle and truck traffic from City Roads such as Edinburgh Road and Gordon Street

6.3.2 Additional Alternatives and Evaluation

Following the second Public Information Centre, there was considerable opposition to the north section of the initial Preferred Plan. As a result, the Ministry of Transportation and the City of Guelph, held a Community Workshop to work with local residents, businesses, and other stakeholders to review the evaluation process and to develop additional alternatives to address the concerns with the PIC 2 Preferred Plan. Details of the Community Workshop are discussed in Section 3.4.2.

The community workshop focused on the North Section of the study area only since no significant concerns were identified for the Preferred Plan for the South and Central Sections.

6.3.2.1 Stone Road Extension

One of the concerns with the PIC 2 Preferred Plan was the size and scale of the proposed interchange at Stone Road. The interchange was designed, in part, to accommodate the Stone Road Extension that was identified in the City of Guelph's *Official Plan* and in the *Guelph-Wellington Transportation Study* (2005). Following PIC 2, the City of Guelph carried out an internal review and advised the Ministry that the requirement to accommodate traffic volumes associated with the Stone Road Extension could be removed. The following rationale was provided:

- When Highway 6 is fully upgraded, the need and justification, from a municipal network standpoint, for extending Stone Road across the Speed River, will no longer exist since it will be more convenient to access the interchange at Wellington Street to access Wellington Road 124.
- The primary reason for the Stone Road Extension was to access development lands on the west side of the Speed River, outside the City limits. The Stone Road Extension was required when Wellington Road 124 was an access controlled Provincial highway (old Highway 24). The subject lands can now be served by Wellington Road 124, which is a county road with connections to a realigned Wellington Road 124 as well as Highway 6. The lands would appear to have limited development potential given their designations as prime agricultural and core environmental in the County *Official Plan* and due to the provincial growth strategy outlined in the *Growth Plan*. This area has not been identified for future growth and is outside of the City's built boundary.
- Removing the Stone Road Extension removes the potential for impacting an environmentally sensitive area including a new crossing of the Speed River, which is a Provincially Significant Wetland.
- Removing the Stone Road Extension protects the Woodland Glen and College Heights communities from external vehicular and truck traffic. The existing Niska Road Bridge is included as a project in the City of Guelph's 10-year Capital Forecast for upgrading as a 2-lane crossing following a Municipal Environmental Assessment. The proposed improvement to the Niska Road Bridge is sufficient to accommodate the cross-river travel needs of the Kortright Road-Downey Road communities.

The City of Guelph indicated that a staff report recommending the removal of the Stone Road Extension from the *Official Plan* will be presented to Council when this study receives *environmental clearance*.

6.3.2.2 Additional Alternatives

Four alternatives were developed during the Community Workshop held in May 2008. The four alternatives had the following common features:

- Parclo A/Diamond configuration interchange at Stone Road
- A four-lane cross-section on Stone Road (no Stone Road Extension)
- A Service Road connection between Downey Road/Kortright Road and Stone Road
- A tight diamond interchange ramp on the east side of the Hanlon Expressway at Kortright Road (adjacent to John Gamble Park)

Initially, two versions of each alternative were developed: one with a full Parclo A interchange at Stone Road, and the other with a partial diamond interchange on the east side of Highway 6. Participants at the workshop preferred a partial diamond configuration because it facilitates safe pedestrian and cyclist crossing of the highway through an interchange and provided a smaller interchange footprint. Crossing an at-grade signalized ramp terminal intersection was considered to be more comfortable for pedestrians and cyclists than crossing the Parclo A loop ramps.

There was some concern with the partial diamond interchange on the east side of Highway 6 as this configuration requires turning movements between Stone Road and the exit and entrance ramps, which increases the potential for vehicle conflicts, can result in long traffic queues, and can reduce the overall capacity of the ramp terminal intersections. However, additional transportation modelling and traffic analysis determined that the partial diamond interchange configuration on the east side of Highway 6 at Stone Road could adequately accommodate future traffic projections. For this reason, the alternatives with a Parclo A configuration on the east side were not carried forward.

Following the Community Workshop, the project team refined the alternatives identified at the workshop and developed two additional alternatives for consideration: an east side service road (similar to PIC 2 Alternative 7; and no service road (similar to PIC 2 Alternative 2, the Preferred Plan). The additional alternatives were included to make sure that a full range of alternatives were considered, since none of the alternatives developed at the community workshop included a two-way service road on the east side of Highway 6.

The alternatives were presented for public review at PIC 3, and are shown in Exhibit 12, and briefly described in Table 17.

Table 17: Updated Alternatives (PIC 3)

Alternative	Elements
1A	• Partial Interchange at Kortright Road/Downey Road • One-way service road on the west side of Highway 6 intersecting with Woodland Glen Drive • One-way service road on the east side of Highway 6 • Grade-separated crossing at College Avenue
1B	• Partial Interchange at Kortright Road/Downey Road • One-way service road on the west side of Highway 6 intersecting with Downey Road • One-way service road on the east side of Highway 6 • Grade-separated crossing at College Avenue
2	• Partial Interchange at Kortright Road/Downey Road • Two-way service road on the west side of Highway 6 • Grade-separated crossing at College Avenue
3	• Partial Interchange at Kortright Road/Downey Road • Two-way service road on the west side of Highway 6 • Modified S-E/W ramp at Kortright Road to provide alternate access for Shadybrook Crescent • Grade-separated crossing at College Avenue
4	• Partial Interchange at Kortright Road/Downey Road • One-way service road on the west side of Highway 6 • One-way service road on the east side of Highway 6 • Roundabout connection between roads and ramps at Kortright Road • Grade-separated crossing at College Avenue
5	• Partial Interchange at Kortright Road/Downey Road • Two-way service road on the east side of Highway 6 • Based on initial north section Alternative 7 • Grade-separated crossing at College Avenue
6	• Partial Interchange at Kortright Road/Downey Road • No service roads • Based on initial Preferred Plan • Grade-separated crossing at College Avenue

Ontario

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HIGHWAY 6 (HANLON EXPRESSWAY)

Maltby Road to the Speed River

GWP 3013-00-00

UPDATED NORTH SECTION ALTERNATIVES

Alternatives Considered

As shown at PIC 4 (October 23, 2008)

EXHIBIT 12a

Future "Do Nothing"
Alternative 1A

Ontario

Stantec

HIGHWAY 6 (HANLON EXPRESSWAY)

Maltby Road to the Speed River

GWP 3013-00-00

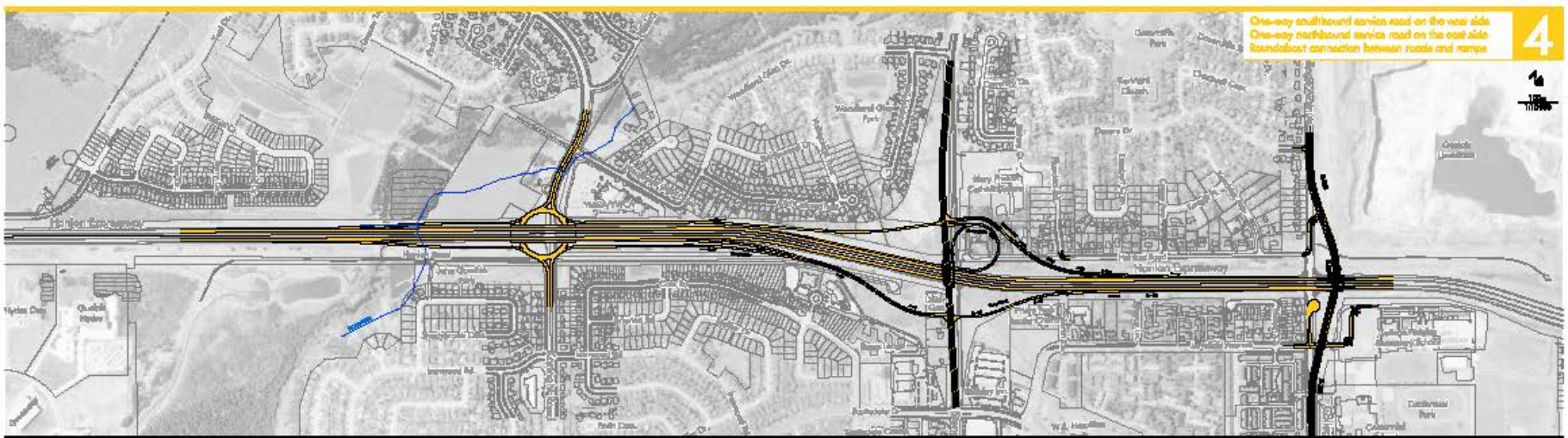
UPDATED NORTH SECTION ALTERNATIVES

Alternatives Considered

As shown at PIC 4 (October 23, 2008)

EXHIBIT 12b

Alternative 1B
Alternative 2



Ontario

Stantec

HIGHWAY 6 (HANLON EXPRESSWAY)
Maltby Road to the Speed River

GWP 3013-00-00

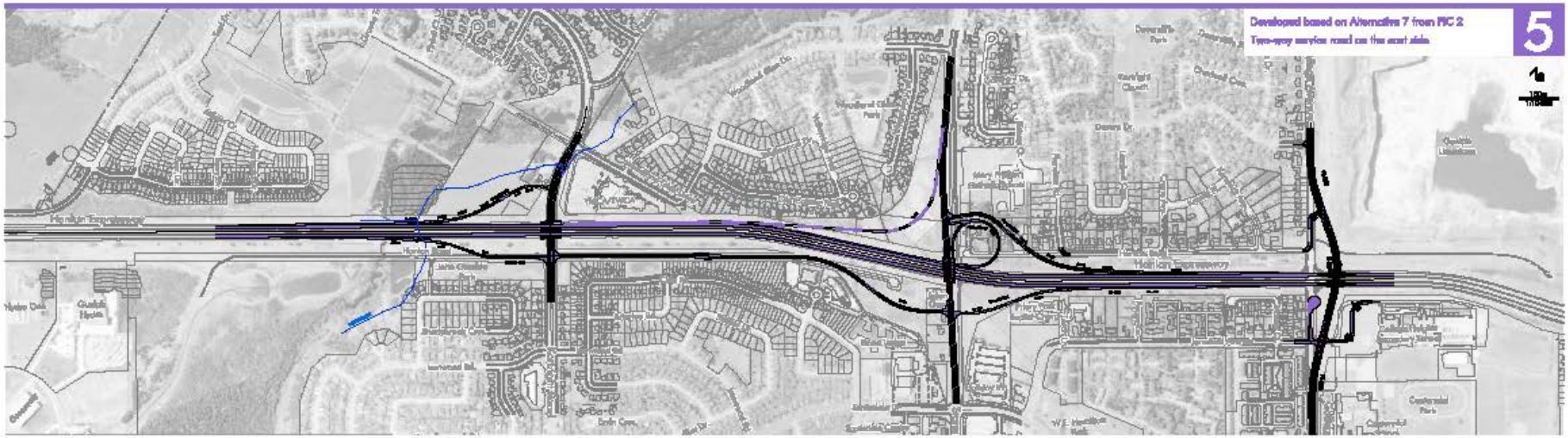
UPDATED NORTH SECTION ALTERNATIVES

EXHIBIT 12c

Alternatives Considered

As shown at PIC 4 (October 23, 2008)

Alternative 3
Alternative 4



Ontario

Stantec

HIGHWAY 6 (HANLON EXPRESSWAY)

Maltby Road to the Speed River

GWP 3013-00-00

UPDATED NORTH SECTION ALTERNATIVES

Alternatives Considered

As shown at PIC 4 (October 23, 2008)

EXHIBIT 12d

Alternative 5
Alternative 6

Advantages and disadvantages of each of the alternatives are provided in Table 18.

Table 18: Advantages and Disadvantages of Additional Alternatives (PIC 3)

Alternative	Advantages	Disadvantages
1A	• The single intersection on Downey Road with both the E/W-S Ramp and Woodland Glen Drive consolidates traffic movements at one location which is desirable • The service roads on both sides of Highway 6 provide desirable local connections between Downey Road/Kortright Road and Stone Road and direct traffic away from local neighbourhood streets • The service roads between Downey Road/Kortright Road and Stone Road would be constructed within the existing provincial and municipal right-of-ways • The noise barriers on both sides of Highway 6 provide an acoustic and visual barrier between the adjacent neighbourhoods and Highway 6 and the Service Roads	• The unusual intersection configuration between the southbound one-way service road and Woodland Glen Drive could result in wrong way traffic on the service road • The merge of the northbound service road with the S-E/W ramp at Stone Road increases the potential for vehicle conflicts on the ramp which can compromise safety • There is a minor intrusion into the Hanlon Creek floodplain • The East Service Road impacts the hydro corridor and watermain • One-way service roads east and west of the highway impact the character of the backyards of 60 properties (38 duplexes at Cole Road and 22 properties at Old Colony Trail) • Two-way service road on west side of Highway 6 impacts the character of an additional 5 properties at the west end of Woodland Glen
1B	• The single intersection on Downey Road with the E/W-S Ramp, West Service Road and Woodland Glen Drive consolidates traffic movements at one location which is desirable • The service roads on both sides of Highway 6 provide desirable local connections between Downey Road/Kortright Road and Stone Road and direct traffic away from local neighbourhood streets • The service roads between Downey Road/Kortright Road and Stone Road would be constructed within the existing provincial and municipal right-of-ways • The noise barriers on both sides of Highway 6 provide an acoustic and visual barrier between the adjacent neighbourhoods and Highway 6 and the Service Roads	• The merge of the northbound service road with the S-E/W ramp at Stone Road increases the potential for vehicle conflicts on the ramp which can compromise safety • The West Service Road has a non-conventional loop ramp connection to Downey Road • There is a significant intrusion into the Hanlon Creek floodplain • The West Service Road has minor impacts to the Hanlon Creek Provincially Significant Wetland • The East Service Road impacts the hydro corridor and watermain • One-way service roads east and west of the highway impact the character of the backyards of 60 properties (38 duplexes at Cole Road and 22 properties at Old Colony Trail)
2	• The two-way West Service Road provides a desirable local connection between Downey Road/Kortright Road and Stone Road and directs traffic away from local neighbourhood streets • The service road between Downey Road and Stone Road would be constructed primarily within the existing provincial and municipal right-of-ways • The noise barriers on both sides of Highway 6 provide an acoustic and visual barrier between the adjacent neighbourhoods and Highway 6 and the Service Road	• The two closely spaced signalized intersections on Downey Road can cause driver confusion and compromise safety – this concern can be addressed by combining the intersections at a single location, which would include a minor intrusion into the Hanlon Creek Floodplain (as identified in Alternative 1a) • Two-way service road west of the highway has potential to impact the character of the backyards of 22 properties at Old Colony Trail • Two-way service road on west side of Highway 6 impacts the character of an additional 5 properties at the west end of Woodland Glen
3	• The two-way West Service Road provides a desirable local connection between Downey Road/Kortright Road and Stone Road and directs traffic away from local neighbourhood streets • The service road between Downey Road and Stone Road would be constructed within the existing provincial and municipal right-of-ways • The noise barriers on both sides of Highway 6 provide an acoustic and visual barrier between the adjacent neighbourhoods and Highway 6 and the Service Road	• The two closely spaced signalized intersections on Downey Road can cause driver confusion and compromise safety – this concern can be addressed by combining the intersections at a single location, which would include a minor intrusion into the Hanlon Creek Floodplain (as identified in Alternative 1a) • The uncommon connection from Shadybrook to the S-E/W ramp at Kortright Road increases the potential for vehicle conflicts on the ramp which can compromise safety • There are impacts to the Hanlon Creek Provincially Significant Wetland (east side culvert extension) • The parking area adjacent to Old Hanlon Road is impacted • Two-way service road west of the highway has potential to impact the character of the backyards of 22 properties at Old Colony Trail • Two-way service road on west side of Highway 6 impacts the character of an additional 5 properties at the west end of Woodland Glen
4	• The service roads on both sides of Highway 6 provide desirable local connections between Downey Road/Kortright Road and Stone Road and direct traffic away from local neighbourhood streets • The service roads between Downey Road/Kortright Road and Stone Road would be constructed within the existing provincial and municipal right-of-ways • Noise barriers on both sides of Highway 6 provide an acoustic and visual barrier between the adjacent neighbourhoods and Highway 6 and the Service Roads	• The large roundabout is a non-conventional traffic control design in Ontario at interchanges • The merge of the northbound service road with the S-E/W ramp at Stone Road increases the potential for vehicle conflicts on the ramp which can compromise safety • There are significant and expensive construction staging and detours required to raise Highway 6 to accommodate the roundabout • There are impacts to the Hanlon Creek Provincially Significant Wetland (east and west side culvert extensions) • One-way service roads east and west of the highway have potential to impact the character of the backyards of 60 properties (38 duplexes at Cole Road and 22 properties at Old Colony Trail)

Alternative	Advantages	Disadvantages
5	• A one-way East Service Road provides a desirable local connection between Downey Road/Kortright Road and Stone Road and directs traffic away from local neighbourhood streets • The service road between Kortright Road and Stone Road would be constructed within the existing provincial and municipal right-of-ways • The noise barriers on both sides of Highway 6 provide and acoustic and visual barrier between the adjacent neighbourhoods and Highway 6 and the Service Road	• Does not adequately address the access requirements of the residents west of the Hanlon Expressway • A combined Kortright Road/Downey Road and Stone Road northbound exit can cause the driver confusion and will add a significant amount of traffic to the intersection of the ramp with Kortright Road • Presents significant operational problem since the northbound exit ramp at Stone Road can not be provided in conjunction with an east side Service Road. All northbound traffic destined for Kortright Road, Downey Road and Stone Road would be required to exit at Kortright Road to access the east Service Road which would negatively impact the long term traffic operations of the ramp terminal intersection at Kortright Road. • The two closely spaced signalized intersections on Downey Road can cause driver confusion and compromise safety – this concern can be addressed by combining the intersections at a single location, which would include a minor intrusion into the Hanlon Creek Floodplain (as identified in Alternative 1a) • The East Service Road impacts the hydro corridor and watermain • Two-way service road east of the highway impacts the character of the backyards of 38 duplexes at Cole Road • Removes Old Hanlon Road between Stone Road and Kortright Road, which is currently part of the City's trail system
6	• New municipal roads are not required	• The two closely spaced signalized intersections on Downey Road can cause driver confusion and compromise safety – this concern can be addressed by combining the intersections at a single location, which would include a minor intrusion into the Hanlon Creek Floodplain (as identified in Alternative 1a) • There would be a significant volume of additional traffic to local roads on the west side of Highway 6

6.3.2.3 Evaluation

During the study the public and City Council indicated that they would like to have more involvement in the development of the evaluation process and criteria. Comments received at PICs 1 and 2 were considered during the development of the evaluation criteria and weighting. However, to address this concern, the community workshop held after PIC 2 included an exercise to review the evaluation and weighing criteria. During the workshop, the group confirmed the same evaluation criterion as was originally determined; however, the weightings were slightly adjusted. Table 19 provides a comparison of the original evaluation criteria weighting and the weighting determined as part of the Community Workshop. The general public was also provided with an opportunity to review the evaluation criteria weighting at PIC 3. The results of the weightings provided by the general public at PIC 3 were similar to those provided by community workshop participants. Ultimately, the project team used both weightings to confirm the final Recommended Plan.

Table 19: Updated Evaluation Criteria Weighting

Evaluation Criterion	Original Weighting	Community Workshop Weighting	PIC 3 Weighting (average from submitted comment sheets)
Traffic Operations	22	17	19
Access	22	19	18
Natural Environment	13	18	15
Social Environment	17	20	21
Cultural Environment	9	7	8
Constructability	4	6	7
Applied Environment	4	6	5
Cost	9	7	7
	100	100	100

The alternatives were evaluated using a comparative analysis based on the above evaluation criteria and using the advantages and disadvantages identified in the previous section. The alternatives were given a score based on how well each alternative was judged to satisfy the evaluation criteria. The individual scores were multiplied by the criterion weight factor (relative importance) to produce a weighted score for each evaluation criterion and each alternative. The sum of the weighted scores provided a total score for each alternative. The results of the evaluation process were used to rank the alternatives with the highest weighted score representing the highest ranked alternative. This process resulted in identifying the "best" improvement plan. It also identified the advantages (high scores) and disadvantages (low scores) of each alternative.

A summary of the results of the evaluation process is provided in Table 20 for both the original weighting and the Community Workshop weighting. The detailed evaluation is contained in Appendix I.

Table 20: Evaluation of Updated Alternatives

Alternative	Traffic Operations	Access	Natural Environment	Social Environment	Cultural Environment	Constructability	Applied Environment	Cost	Original Weighting Score	Community Workshop Weighting Score	RANK	
											ORIGINAL WEIGHT	COMMUNITY WORKSHOP WEIGHT
Original Weight	22	22	13	17	9	4	4	9	100			
Community Workshop Weighting	17	19	18	20	7	6	6	7		100		
Score for each criterion												
1A	9.5	10.0	9.1	8.6	8.8	9.5	7.5	9.1	9.26	9.14	4	4
1B	9.5	9.8	9.1	7.4	8.5	9.0	7.8	8.6	8.91	8.75	6	6
2	**10.0**	**9.8**	**9.1**	**9.7**	**10.0**	**9.5**	**10.0**	**9.6**	**9.80**	**9.79**	**1**	**1**
3	9.6	9.8	9.1	8.0	9.7	9.5	10.0	9.6	9.45	9.36	3	3
4	9.0	10.0	5.5	6.9	9.1	10.0	10.0	6.9	8.75	8.59	7	7
5	10.0	9.9	10.0	9.4	9.1	9.5	7.8	9.3	9.56	9.49	2	2
6	9.1	9.6	10.0	10.0	6.2	9.5	10.0	10.0	9.00	8.96	5	5

As shown in the above table, Alternative 2, a Parclo A/Diamond interchange at Stone Road, a partial interchange at Kortright Road/Downey Road, and a two-way service road on the west side of Highway 6 between Stone Road and Woodland Glen was the highest ranked alternative. The alternative was ranked the highest using both the original evaluation criterion weighting and the weighting determined as part of the Community Workshop. All of the alternatives were ranked the same regardless of which criterion weighting was used.

It is important to note that the Preferred Plan was not identified solely on the merits of mathematical calculations. The matrices and application of weightings to data or numeric values were used as a tool to assist the project team in identifying the alternative with the greatest advantages. When the matrices were completed, the project team confirmed that the Preferred Plan that was identified through the community workshop and evaluation process was the "best" plan, with the largest number of advantages and that the decision-making process that led to its selection was rational and took into consideration information received, including public and agency input.

6.4 Preferred Plan (PIC 4)

The Preferred Plan for Highway 6 from south of Maltby Road to the Speed River was developed by combining the preferred plans for the south, central and north sections of the study area, as described in Sections 6.2.2 and 6.3.2. The Preferred Plan (as presented at the fourth Public Information Centre) is shown in Exhibit 13. The plan provides the following features and benefits:

Traffic Operations & Safety

- Closure of the intersections at Maltby Road, Clair Road/Phelan Road, Laird Road, Kortright Road/ Downey Road, Stone Road and College Avenue
- A Parclo A-4 interchange at Laird Road
- A grade-separated crossing and partial interchange at Kortright Road/Downey Road (ramps to and from the south)
- A grade-separated crossing and full interchange (Parclo A/Diamond) at Stone Road
- A grade-separated crossing at College Avenue
- Signalized intersections at all of the interchange ramps terminals
- Full illumination of the highway and interchanges from Kortright Road/Downey Road to Wellington Street
- Partial illumination of the Laird Road interchange
- Eliminates closely spaced intersections by combining the ramp to Highway 6 with the Downey Road/ Woodland Glen Drive intersection

Access

- Full access at Laird Road
- Partial access to and from the south at Kortright Road/Downey Road
- Full access at Stone Road
- A two-way service road on the west side of Highway 6 between Stone Road and Woodland Glen Drive to improve local access

Natural Environment

- A tight diamond ramp from Highway 6 northbound to Kortright Road to minimize impacts to John Gamble Park

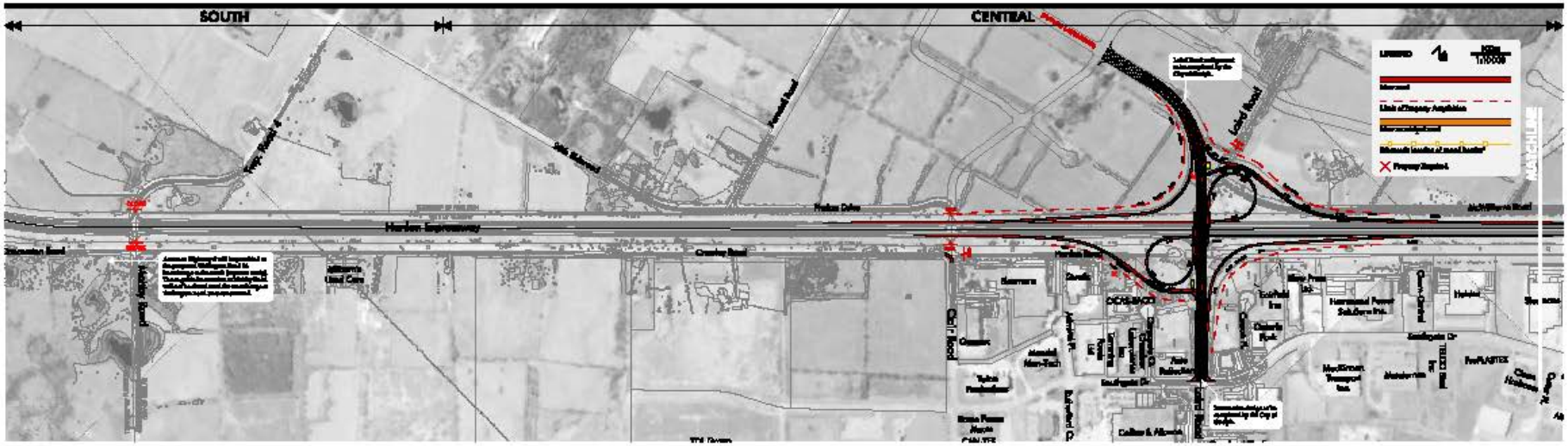
Social Environment

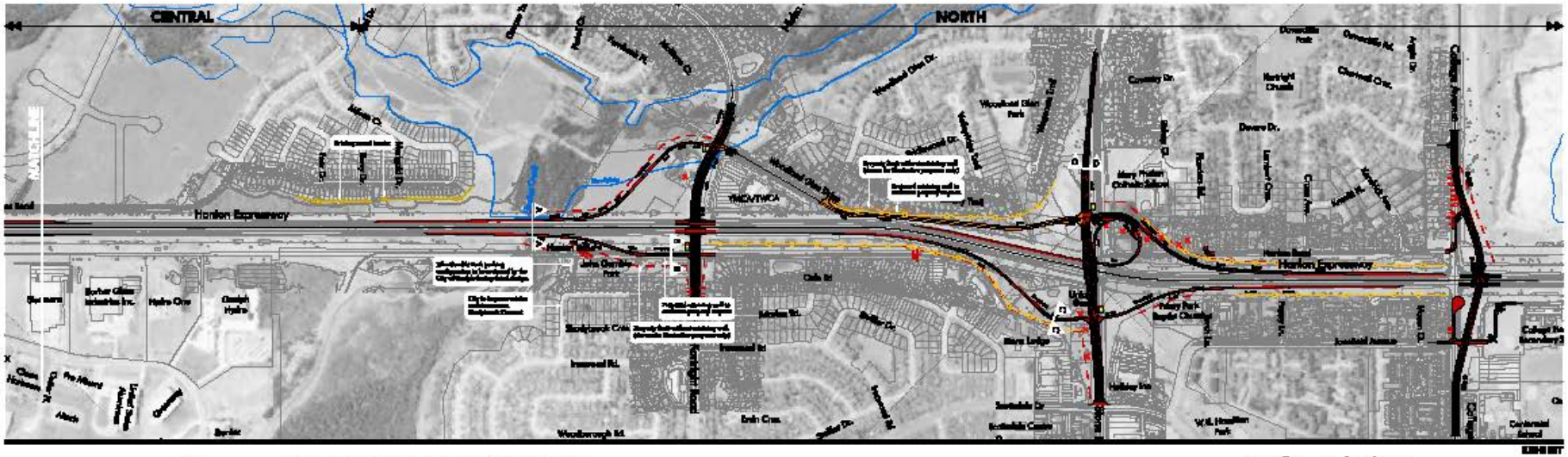
- Future noise barriers (i.e. wall or berm) east and west of Highway 6 between Kortright Road/ Downey Road and College Avenue
- A partial diamond interchange on the east side of the Stone Road interchange to improve pedestrian and cyclist comfort levels at the interchange
- Bike lanes and pedestrian sidewalks at Laird Road, Kortright Road/Downey Road, Stone Road and College Avenue
- Minor trail relocations at the proposed grade separations at Kortright Road/Downey Road, Stone Road, and College Avenue

Applied Environment

- Relocation of Union Gas facility at Stone Road
- Utility Relocations

Following PIC 4 the Preferred Plan was confirmed as the Recommended Plan. Minor modifications were made to the plan following the Public Information Centre as a result of on-going consultation and additional engineering and environmental investigations. The details of the Recommended Plan are provided in Section 7.0.





HIGHWAY 6 (HANLON EXPRESSWAY)

Maltby Road to the Speed River

GWP 3093-00-00

Preferred Plan

As shown on PIC 4 (October 23, 2008)

SHEET 13

7.0 Recommended Plan

This section of the report provides a description of the Recommended Plan for the Highway 6 (Hanlon Expressway) from Maltby Road northerly to the Speed River.

The Recommended Plan for Highway 6 (Hanlon Expressway) includes the closure of all highway at-grade intersections; the replacement of these intersections with interchanges at Laird Road, Downey Road/Kortright Road (partial interchange oriented to the south), and Stone Road; a grade-separated crossing of the highway at College Avenue; a new municipal road (West Service Road) on the west side of Highway 6 between Woodland Glen Drive and the interchange at Stone Road; and minor realignments of local roads.

Highway 6 is referenced as a north-south highway throughout this section of the report.

The Recommended Plan is illustrated on Exhibit 14.

Detailed plans that illustrate the Recommended Plan are provided at the end of the body of this report.

7.1 Highway 6

Highway 6 is a four-lane highway with a horizontal alignment with a 15 metre wide median. The existing alignment for Highway 6 will remain unchanged as part of the Recommended Plan.

In general terms, the existing profile of Highway 6 will remain unchanged from its existing condition. The profile will be modified slightly in the vicinity of the grade separation at College Avenue where College Avenue will cross under the highway, and at the partial interchange at Downey Road/Kortright Road where Downey Road/Kortright Road will cross under the highway.

7.2 Interchanges

7.2.1 Laird Road Interchange

A full Parclo A4 interchange will be constructed at Laird Road and Highway 6. The interchange connects to the realigned Laird Road west of Highway 6.

The ramp terminal intersections (i.e. the intersections of the interchange ramps with Laird Road) will be controlled by traffic signals.

The City of Guelph has determined that a six-lane cross section plus allowance for cycling lanes is required for Laird Road. The Recommended Plan includes this six-lane cross section plus auxiliary (turning) lanes and cycling lanes in each direction.

Laird Road will cross over the highway.

7.2.2 Downey Road/Kortright Road Partial Interchange

A partial interchange orientated to the south will be constructed at Downey Road/Kortright Road and Highway 6. A partial diamond interchange configuration is provided. This interchange will provide a connection between the highway and Downey Road/Kortright Road oriented toward the south. A northbound exit ramp from the highway to Kortright Road and a southbound entrance ramp from Downey Road to the highway will be provided.

The ramp terminal intersections (i.e. the intersections of the interchange ramps with Downey Road/Kortright Road) will be controlled by traffic signals.

The City of Guelph has determined that a four-lane cross section plus allowance for cycling lanes is required for Downey Road/Kortright Road. The Recommended Plan includes this four-lane cross section plus auxiliary lanes and additional lanes for cycling.

The profile for Downey Road/Kortright Road will cross under the highway.

7.2.3 Stone Road Interchange

A full interchange will be constructed at Stone Road and Highway 6. The interchange includes a Parclo A2 interchange configuration on the west side and a diamond interchange configuration on the east side.

The ramp terminal intersections (i.e. the intersections of the interchange ramps with Stone Road) will be controlled by traffic signals.

The City of Guelph has determined that a four-lane cross section plus allowance for cycling lanes is required for Stone Road on the east side of the highway and a two-lane cross section plus allowance for cycling lanes is required for Stone Road on the west side of the highway. The Recommended Plan includes these lanes plus auxiliary lanes and additional lanes for cycling.

Stone Road will cross over the highway.

7.3 Municipal Roads

7.3.1 Maltby Road and Township Road 4

Maltby Road and Township Road 4 will be closed at Highway 6. Access to Highway 6 from this area will be provided at the proposed mid-block (Wellington Road 34) interchange. Information on the location and configuration for this interchange is included in the *Highway 6, Freelton to Guelph Environmental Assessment Report*. The intersection will not be closed until the Wellington Road 34 interchange is constructed.

7.3.2 Clair Road/Phelan Drive

Clair Road and Phelan Drive will be closed at Highway 6. Access to Highway 6 from this area will be provided at the Laird Road interchange. The intersection will not be closed until the Laird Road interchange is constructed.

7.3.3 Laird Road

The Laird Road at-grade intersection with the highway will be replaced with an interchange. Laird Road east of Highway 6 is a four-lane municipal road that provides access to an existing business park (Hanlon Creek Business Park). The Recommended Plan includes an ultimate six-lane cross section plus auxiliary lanes for Laird Road. The City of Guelph will in co-operation with the Ministry of Transportation complete the design for the intersection of Laird Road and Southgate Drive.

Laird Road west of Highway 6 will be realigned to provide access to the proposed business park (Hanlon Creek Business Park). The Recommended Plan includes a six-lane cross section plus auxiliary lanes for Laird Road.

The Recommended Plan also includes provisions for pedestrian sidewalks and lanes for cycling on both sides of Laird Road. The Laird Road eastbound and westbound lanes will be separated by a raised median.

7.3.4 Downey Road/Kortright Road

The Downey Road/Kortright Road at-grade intersection with the highway will be replaced with a partial interchange (oriented toward the south).

Downey Road west of the highway is a 4-lane municipal road. The Recommended Plan includes a four-lane cross section plus auxiliary lanes for Downey Road. The existing T-intersection of Woodland Glen Drive and Downey Road is being realigned slightly to the east to form a full-intersection with the Highway 6 southbound entrance ramp.

Kortright Road east of the highway is a 4-lane municipal road. The Recommended Plan includes a four-lane cross section plus auxiliary lanes for Kortright Road.

The Recommended Plan also includes provision for pedestrian sidewalks and lanes for cycling on both sides of Downey Road/Kortright Road.

The Downey Road/Kortright Road eastbound and westbound lanes will be separated by a raised median between Woodland Glen Drive and Ironwood Road.

7.3.5 Hanlon Road (East Side of Highway 6)

Hanlon Road on the east side of Highway 6 from Kortright Road southerly to the vicinity of Hanlon Creek (adjacent to John Gamble Park) will be closed.

Hanlon Road on the east side of Highway 6 from Kortright Road northerly will remain open as a recreational trail with access at a T-intersection with the Kortright Road.

7.3.6 Stone Road

The Stone Road at-grade intersection with the highway will be replaced with an interchange. Stone Road is realigned slightly to the south from its existing location to maintain the connection between Flanders Road and Hanlon Road and to minimize impacts to Mary Phelan Catholic School.

Stone Road east of Highway 6 is a four-lane municipal road. The Recommended Plan includes a four-lane cross section plus auxiliary lanes for Stone Road east of Highway 6 and a two-lane cross section plus auxiliary lanes for Stone Road west of Highway 6.

The Recommended Plan also includes provision for pedestrian sidewalks and lanes for cycling on both sides of Stone Road.

7.3.7 Hanlon Road (West Side of Highway 6)

Hanlon Road on the west side of Highway 6 from Flanders Road southerly to the vicinity of Stone Road will be closed. The existing t-intersection of Flanders Road and Hanlon Road will be reconfigured and made into a continuous road.

The north end of Hanlon Road (in the vicinity of College Avenue) will be connected to the realigned College Avenue.

7.3.8 College Avenue

College Avenue will be realigned to the north to cross under Highway 6. Access to Highway 6 from the College Avenue area will be provided at the Stone Road interchange which is located to the south.

College Avenue east and west of Highway 6 is currently a four-lane municipal road. The Recommended Plan includes provision for a four-lane cross section plus auxiliary lanes for College Avenue. The City has indicated that this cross-section may be reduced to two lanes in the future.

The Recommended Plan also includes provision for pedestrian sidewalks and lanes for cycling on both sides of College Avenue.

Access to existing properties that front on College Avenue will be maintained with the extension and realignment of driveways.

7.3.9 Janefield Avenue

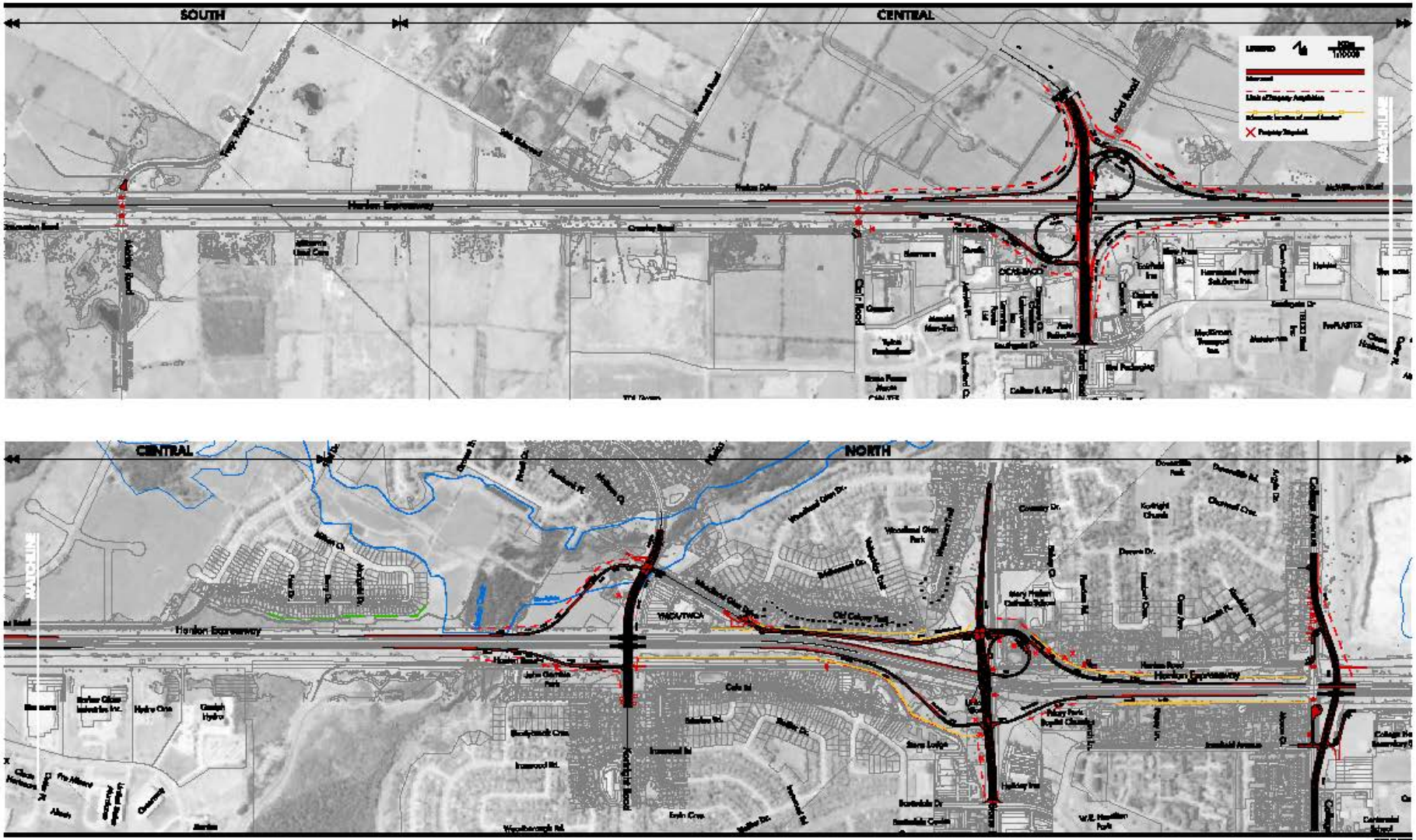
Janefield Avenue will be extended northerly to connect to the realigned College Avenue and to provide access to College Heights Secondary School.

7.3.10 West Service Road—Woodland Glen Drive to Stone Road

A new municipal road will be provided on the west side of and adjacent to Highway 6 from Woodland Glen Drive northerly to the new interchange at Stone Road. The new road will form an intersection with the east-west and north-south portions of Woodland Glen Drive. This intersection will have all-way stop control. In addition, the existing northerly access to the YMCA will be closed and relocated to align opposite the Woodland Glen Drive intersection. The new road will connect to Stone Road at the new interchange to form a full-intersection with the interchange ramp terminal.

The new road will have a two-lane cross section with provision for a pedestrian sidewalk on the west side and provision for cycling lanes if desired by the City of Guelph.

This road will be under the jurisdiction of the City of Guelph following construction of the Recommended Plan.



HIGHWAY 6 (HANLON EXPRESSWAY)

Maltby Road to the Speed River

Recommended Plan

Additional details provided at the end of the report.

7.4 Drainage

7.4.1 Drainage System

The existing highway drainage system generally consists of road-side ditches that run parallel to Highway 6 with all drainage outletting to Hanlon Creek. Between Stone Road and College Avenue, ditch drainage is directed to a storm sewer that outlets to Hanlon Creek at Downey Road.

In general terms, the Recommended Plan will maintain the existing Highway 6 drainage system. Drainage for the new interchanges will be provided by road-side ditches, while drainage for the West Service Road and College Avenue will be provided by storm sewers. All new ditches and storm sewers will outlet to the existing Highway 6 drainage system, which ultimately outlets to the Hanlon Creek.

7.4.2 Floodplain Assessment

The Downey Road southbound entrance ramp will encroach into the Regional floodplain associated with the Hanlon Creek, and the embankment fill for this ramp will result in a minor loss of available floodplain storage. However, wide, flat-bottom road-side ditches will be provided adjacent to the ramp to convey drainage and to provide additional floodplain storage. Furthermore, the area between the ramp and Highway 6 will be re-graded to provide additional floodplain storage to compensate for the loss of storage resulting from the ramp embankment; and a culvert will also be provided to convey drainage across the ramp. Final grading and drainage details will be confirmed in Detail Design.

Grand River Conservation Authority (GRCA) Policy 8.1.15 regarding Public Infrastructure allows for roads within a regulated area, such as floodplains, provided there are no feasible alternative sites outside the *Riverine Flooding Hazard* as determined through an Environmental Assessment or other comprehensive plan supported by the GRCA and where it can be demonstrated that:

a) adverse hydraulic or fluvial impacts are limited and any risk of flood damage to upstream or downstream properties is not increased or is minimized through site design and the affected landowner(s) is informed of the increased risk

b) there is no loss of flood storage wherever possible

c) where unavoidable, intrusions on significant natural features or hydrologic or ecological functions are minimized and it can be demonstrated that best management practices including site and infrastructure design and appropriate remedial measures will adequately restore and enhance features and functions

For this project, the minor intrusion into the floodplain can be justified for the following reasons:

- Intrusions into the floodplain for the construction of the ramp are unavoidable
- The ramp is proposed to be at or near existing grades, and given the distance from the watercourse, there will be minimal impacts on flood storage
- The area between the ramp and Highway 6 will be re-graded to provide additional floodplain storage
- The lands in the southwest quadrant of the intersection of Highway 6 and Downey Road will be acquired and therefore, impacts on upstream properties will not be a concern
- Upstream areas, which under existing conditions drain unimpeded to the Hanlon Creek, will be conveyed through the implementation of drainage ditches and culverts with runoff directed to the Hanlon Creek watershed as per existing conditions.

7.4.3 Stormwater Management

A *Stormwater Impact Study* has been completed for the Recommended Plan and is on file with the Ministry of Transportation. The following sections have been extracted from this report.

Runoff from the highway system is directed to the Hanlon Creek, which ultimately drains to the Speed River. Based on discussions with GRCA staff, water quantity controls for the study area consist of controlling post-development flow rates to pre-development flow rates for all storms up to and including the 100-year event. An *enhanced* level of water quality is required.

The Recommended Plan will require an additional 5.75 ha of impervious area to accommodate the new interchange ramps and municipal road connections. This represents about 4% of the existing highway drainage area.

Under proposed conditions, most catchments will continue to drain via ditches. Preliminary calculations indicate that the predicted ditch velocities and flow depths will provide sufficient water quality benefits. Two small drainage areas will outlet to a storm sewer system. However, these drainage areas represent a very small percentage of the total drainage area, and therefore no additional water quality treatment is recommended.

The GRCA has indicated that quantity controls are not required due to the proximity of the Grand River. The minor changes to impervious coverage within the study area do not result in a significant change in peak flows and therefore no water quantity controls have been specified for this project.

7.4.4 Erosion Controls

Existing drainage conditions via ditches are generally maintained under proposed conditions, and since there are no areas where erosion has been documented and flows are generally maintained, grass cover should be sufficient erosion protection. Where storm sewers (median drainage outlets) discharge to ditches or where the ditches enter Hanlon Creek, rip rap will be specified at the detailed design stage to provide local erosion protection.

7.5 Structures

The Recommended Plan includes new structures to carry Highway 6 over Downey Road/ Kortright Road and College Avenue. New structures will also be required to carry Laird Road and Stone Road over Highway 6. The structure details are discussed in the following sections. The structure cross-sections, including pedestrian and bicycle lanes, are in Exhibit 15.

7.5.1 Laird Road

A new structure is required to carry Laird Road over Highway 6. The structure accommodates three 3.5 metre wide lanes and one variable width ramp lane in each direction. The structure also accommodates a bicycle lane and sidewalk in each direction. Westbound Laird Road traffic is separated from the eastbound traffic by a raised concrete median. The structure will be a two-span structure, approximately 70 metres long. It will require a pier in the Highway 6 median. The structure span accommodates future widening of Highway 6 to eight lanes.

7.5.2 Downey Road/Kortright Road

Twin structures are required to carry Highway 6 over Downey Road/Kortright Road. Each structure accommodates two 3.75 metre wide lanes and standard width shoulders. The structures will be single-span structures, approximately 35 metres long. The structure span accommodates four 3.5 m lanes of Downey Road/Kortright Road traffic. The span also accommodates a bicycle lane and sidewalk in each direction, if required.

7.5.3 Stone Road

A new structure is required to carry Stone Road over Highway 6. The structure accommodates two 3.5 metre wide lanes and one variable width ramp lane for westbound traffic; and two 3.5 metre wide lanes and a variable width left turn lane for eastbound traffic. The structure also accommodates a bicycle lane and sidewalk in each direction. Westbound and eastbound Stone Road traffic is separated by a raised concrete median. The structure will be a two-span structure, approximately 80 metres long and will require a pier in the Highway 6 median. The structure span accommodates future widening of Highway 6 to eight lanes, when required.

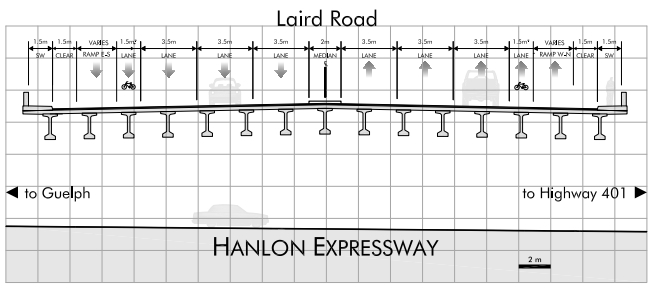
7.5.4 College Avenue

Twin structures are required to carry Highway 6 over College Avenue. Each structure accommodates two 3.75 metre wide lanes and standard width shoulders. The structures will be single-span structures, approximately 30 metres long. The structure span accommodates four 3.5 m lanes of College Avenue traffic. The span also accommodates a bicycle lane and sidewalk in each direction.

7.5.5 Retaining Walls

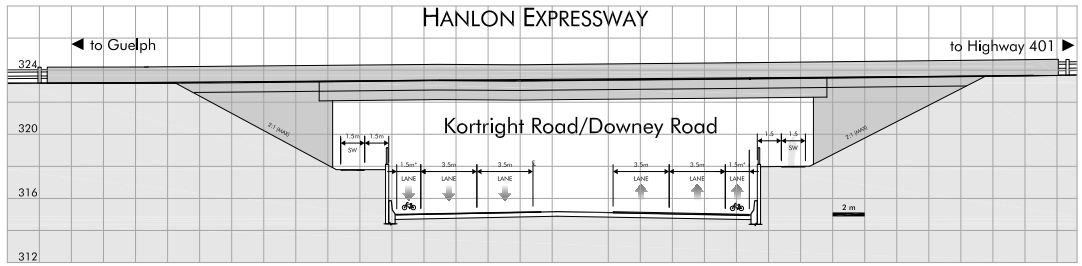
Retaining walls are recommended along a portion of the West Service Road and the N-E/W ramp at the Kortright Road/Downey Road partial interchange. The retaining walls are required to minimize property impacts to the backyards of residential units on Old Colony Trail and to John Gamble Park, respectively.

LAIRD ROAD UNDERPASS



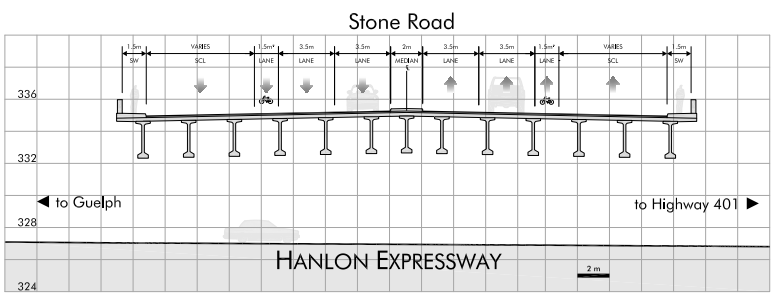
Laird Road travels over Hanlon Expressway
* Provision for future municipal bicycle lanes

DOWNEY ROAD / KORTRIGHT ROAD OVERPASS



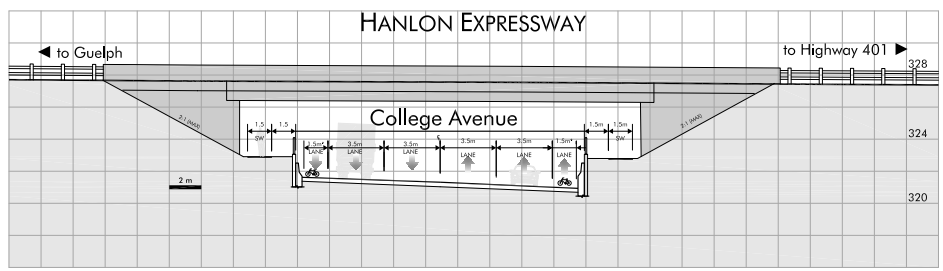
Kortright Road travels under Hanlon Expressway
* Provision for future municipal bicycle lanes

STONE ROAD UNDERPASS



Stone Road travels over Hanlon Expressway
* Provision for future municipal bicycle lanes

COLLEGE AVENUE OVERPASS



College Avenue travels under Hanlon Expressway
* Provision for future municipal bicycle lanes

Ontario

Stantec

HIGHWAY 6 (HANLON EXPRESSWAY)
Maltby Road to the Speed River

GWP 3002-05-00

EXHIBIT 15

Structure Cross Sections
As shown at PIC 4 (October 23, 2008)

7.6 Illumination

Highway 6 will be fully illuminated between the Stone Road interchange northerly to the existing Wellington Street interchange, including the Stone Road interchange. Partial illumination (at entrance and exit ramps only) will be provided at the Laird Road interchange and the partial interchange at Kortright Road/Downey Road.

The West Service Road will be illuminated in accordance with City of Guelph standards. The final design of illumination will be confirmed during detail design in consultation with the City and the Citizens Liaison Committee.

7.7 Traffic Signals

New traffic signals will be provided at the ramp terminal intersections at the interchanges at Laird Road, Kortright Road/Downey Road, Stone Road, and the Stone Road/Service Road intersection.

7.8 Utilities

Utility relocations (Guelph Hydro, Hydro One, Union Gas, Bell Canada, Atria Networks (cable) and municipal services (watermain, sanitary sewer and storm sewer) will be required to accommodate the Recommended Plan. Final utility relocations will be determined during Detail Design.

7.9 Property

Ten residential property acquisitions are required to accommodate the Recommended Plan. Throughout the study area several portions of properties are also required, which includes about 12 ha at Laird Road (5.4 ha are currently owned by the City of Guelph); about 4.1 ha at Downey Road/Kortright Road (2.3.ha are currently owned by the City of Guelph); about 7 ha at Stone Road (4.8 ha are currently owned by the City of Guelph/MTO); and about 1 ha at College Avenue.

The preliminary property requirements are illustrated on the preliminary design plans, which are included at the end of the body of the report.

7.10 Construction Staging and Traffic Management

Construction staging will be required for the construction of the Recommended Plan. In order to construct the interchange structures at the existing highway, single-laning of the highway (i.e. one lane of traffic in each direction) will be required. It is also anticipated that the at-grade intersections will be closed during construction of the grade-separated crossings. However, the closure of the at-grade intersections will be staged to maintain reasonable access during construction. Details of the construction staging and traffic management will be confirmed in Detail Design.

7.11 Environmental Impacts and Mitigation

This section of the report describes the expected environmental impacts associated with the Recommended Plan, and appropriate mitigation at a Preliminary Design level of detail, in accordance with the *Class EA for Provincial Transportation Facilities* (2000) and the *Environmental Reference for Highway Design* (2006). During the study, the project team followed the principles of the *Class EA* document, including but not limited to:

- Transportation engineering principles – providing for the efficient movements of people and goods; addressing the identified transportation problems and opportunities, and maximizing the opportunity to satisfy existing and future provincial travel demand; reflecting sound engineering judgement and ensuring consistency with other transportation facilities in the vicinity.

The Recommended Plan addresses the transportation problems identified in Section 4.2 by providing a fully-controlled access freeway with access at interchanges only, meets projected future (2031) provincial travel demand, is consistent with adjacent facilities, and meets the design standards provided in the *Geometric Design Standards for Ontario Highways* (1994).

- Environmental protection principles – avoiding or minimizing environmental impacts through consideration of alternatives, balancing environmental protection considerations with transportation considerations, and providing mitigation efforts in proportion to environmental significance and ability to reasonably mitigate.

The Recommended Plan avoided impacts to the significant environmental features, including the Hanlon Creek PSW, and minimizes impacts to adjacent environmental features, where possible, through design considerations including retaining walls and sound barriers.

- Evaluation principles – providing an evaluation process that is *traceable*, *replicable*, and *understandable*, providing both *subjective* and *objective* processes, and refining factors from one stage to the next.

The evaluation process was presented to the public at each stage in the study, and further refined following the Community Workshops and Public Information Centre 3. Details of the evaluation process are discussed in Section 6.0.

- Consultation principles – placing an emphasis on consulting with stakeholders *most directly affected*, using the consultation process to assist in the identification of data requirements, showing how consultation received in earlier stages of a study *affected a project*, and making *reasonable efforts to resolve concerns*.

As discussed in Section 6.0, the study process evolved to meet the needs of local residents, municipal Councils and staff, and changing priorities. Early in the study the project team heard that the original Preferred Plan did not meet the needs of the municipal road network and that the municipal transportation alternatives (i.e. the College Avenue Extension) had significant impacts to the environment and the community. The study process was revised to develop a new range of project alternatives to address the identified issue.

Where possible, the project team arranged meetings with directly affected property owners and attempted to resolve concerns. Additional noise, traffic modelling, and air quality studies were added to the project to provide information requested by the public and stakeholders.

7.11.1 Natural Environment

The Recommended Plan was selected, in part, because it avoids impacts to significant natural features, including the Speed River and Hanlon Creek PSW, and does not adversely impact the larger watershed or ecosystems. Impacts and mitigation for components of the ecological system and the watershed are described in the following sections.

7.11.1.1 Physiography and Soils

The Recommended Plan does not impact the physiography in the general study area beyond the future highway right-of-way. The study area will still exhibit its current range of landscape characteristics and features.

The partial interchange ramps and underpass at Kortright Road, interchanges at Stone Road and Laird Road, and underpass at College Avenue will have a minor impact on the landscape. However, since the proposed improvements are within or adjacent to the existing highway, it is not expected that the new ramps or structures will significantly change the landscape.

The Recommended Plan does not require impacts to or construction on lands that are part of the Paris-Galt Moraine.

Potential impacts on surficial soils include increased soil erosion due to changes to embankments, ditches, and slopes. A *Preliminary Foundation Assessment Report* carried out for this study indicated that the existing soils will provide a competent surface for the construction of embankments and ramps. Soil settlements will be within tolerable limits. The study indicates that embankment slopes of 2:1 will be acceptable for all embankments and cut locations. The study recommends that earth cuts and embankments can be constructed according to MTO standard procedures.

Mitigation Measures

Erosion protection should be provided on the cut and fill slopes during and after construction in accordance with current Best Management Practices outlined in the *Environmental Guide for Erosion and Sediment Control during construction of Highway Projects*.

The following measures will be incorporated during detail design and included in the final contract to mitigate the above noted impacts:

- Maintain temporary erosion control measures until vegetation is re-established to a sufficient degree to provide adequate protection to disturbed work areas
- Inspect slope areas regularly during construction to identify erosion problems and seepage areas and plan for appropriate temporary stabilization and drainage measures
- Direct runoff and overland flow away from working areas and areas of exposed soils
- Clean up all spills immediately and dispose of contaminated materials in an approved manner. Appropriate sections of the Ministry of the Environment will be informed of reportable spills

7.11.1.2 Geology and Groundwater

The Recommended Plan includes a partial interchange ramp in the southwest quadrant of the Highway 6/Downey Road intersection. The ramp is approximately 80 metres from the Downey Well at its closest point. Local residents indicated that they were concerned that the construction and proximity of the ramp could potentially affect the quality and quantity of groundwater at the Downey Well.

In response to residents concerns, the project team carried out a localized groundwater overview to identify potential impacts to the Downey Well.

As noted in Section 5.2.2, the Downey Road Well is sourced from the Guelph and Amabel bedrock formations. The Guelph and the Amabel formation aquifers are used extensively across the City of Guelph for municipal groundwater supply. The primary water producing zone is within the deep Amabel Formation, which is located approximately 53 to 67 m below ground surface (BGS) at the Downey Road Well. A pumping test carried out in 1995 demonstrated that shallow wells did not show a clear response to pumping of the Downey Road Well. Only those wells screened in bedrock (the Guelph and Amabel formations) demonstrated a clear hydraulic response to pumping. This indicates that groundwater supplying the Downey Road Well does not have a significant hydraulic connection to the shallow groundwater system. As a result, roadway construction activities at Kortright Road/Downey Road and Highway 6, including dewatering of the overburden aquifer, will not affect the quality or quantity of water available at the Downey Road Well.

A search of the MOE Water Well Information System (WWIS) in 2007 identified 77 domestic water wells within 0.25 kilometres of the study area. Several additional abandoned wells, and several commercial observation wells were also identified in the study area. Any wells that are impacted by the Recommended Plan will be abandoned in accordance with Ontario Reg. 903.

A stormwater management overview was carried out as part of the Drainage Study. Details of the preliminary stormwater management plan are discussed in Section 7.4.

A hydrogeological site assessment of the College Avenue and Kortright Road/Downey Road overpasses will be carried out during detail design to quantify the impact (to the adjacent watercourses and groundwater) of construction and confirm if a Permit to Take Water (PTTW) will be required from the Ministry of the Environment in advance of construction.

Potential impacts on groundwater include:

- Groundwater contamination from disturbance of contaminated soils, leaks and accidental spills
- Changes in groundwater levels in aquifers and yields of wells due to dewatering, changed flow patterns that may disrupt groundwater supplies for drinking water, irrigation, or commercial uses
- Damage to groundwater wells from blasting or vibration

During construction there is some potential for spills of operational fluids from vehicles, equipment and other sources. Spills can result in the contamination of soils and contribute to surface and groundwater degradation. The potential for a spill is greatly reduced by managing these materials according to regulations and implementing appropriate mitigation.

Mitigation Measures

The following measures will be incorporated during detail design and included in the final contract to mitigate the above noted impacts:

- Minimize impacts at approaches to sensitive watercourse crossings, including installation of sediment control fencing, slope restoration and stabilization during and after construction.
- Inspect slope areas regularly during construction to identify erosion problems and seepage areas and plan for appropriate temporary stabilization and drainage measures
- Direct runoff and overland flow away from working areas and areas of exposed soils
- Store all oils, lubricants and other chemicals in suitable containers and handle them in accordance with applicable regulations
- Do not permit refuelling near watercourses
- Clean up all spills immediately and dispose of contaminated materials in an approved manner. Appropriate sections of the Ministry of the Environment will be informed of reportable spills
- Select appropriate construction techniques near residential water wells (i.e. blasting)
- Wells and septic systems within the proposed right-of-way that are no longer required, including monitoring wells, will be properly abandoned/decommissioned.

Hanlon Creek Floodplain

The Recommended Plan requires minor encroachment in the Hanlon Creek Floodplain. As discussed in Sections 7.4 and 3.7.2.4, there are no significant concerns associated with the minor encroachment.

7.11.1.3 Fisheries and Aquatic Resources

Potential impacts to fish habitat can be realized as direct habitat loss (i.e., the addition of piers, or culvert extensions into fisheries waters) or indirect impacts to habitat. During construction, problems can arise with management of continuous flows and the onset of inclement weather that could raise flow levels and potentially flood the work site. Sediment introductions from adjacent graded areas can also cause potential impacts to fish habitat. These potential indirect effects to fish habitat can be mitigated through the use of standard sediment and erosion control measures.

The federal *Fisheries Act* is the primary piece of environmental legislation governing the protection of fisheries and aquatic habitat, including the harmful alteration, disruption or destruction (HADD) of fish habitat (Section 35), and the deposition of deleterious substances into fisheries waters (Section 36). The DFO's Risk Assessment Matrix is a key tool in the determination of the risk of project to fish and fish habitat. The potential for HADD is greatest if any Highway 6 improvements are in close proximity to known fisheries waters. The Recommended Plan has been selected, in part, since it avoids work in the vicinity of Hanlon Creek, the only location in the study area where fish habitat is present. Based on the Risk Assessment Matrix (available in Appendix F), the risk of the project to fish habitat is Low, therefore DFO approval would not be required.

Provided there are no future changes to the Preferred Plan in the Hanlon Creek area, the field data collected during this Preliminary Design phase would not require updating under the 2006 Fisheries Protocol. Additional data collection may be warranted if changes to the Hanlon Creek culvert (eg. replacement or lengthening) were proposed at the Detail Design stage.

Sediment introduction from graded areas adjacent to streams has the potential to affect fish habitat. Suspended sediments increase stream turbidity, which can impair vision and subsequent feeding by fish that are sight-hunters, abrade gill membranes leading to physical stress, and impact prey organisms. Heavier sediments can deposit on the stream bottom and clog coarser substrates that may be used for spawning, incubation of juvenile fish, or food production. These potential indirect effects to fish habitat can be mitigated through the use of standard sediment and erosion control measures, outlined below.

Sediment and Erosion Control at Watercourses

Various mitigation techniques will be employed during construction to reduce the risk of impacts to natural environment features. Mitigation measures for sedimentation, erosion, and dust control will be implemented to prevent sediment and dust from entering sensitive natural features, including work in the vicinity of Hanlon Creek or within the Hanlon Creek floodplain.

The primary principles associated with sedimentation and erosion protection measures are to:

- Minimize the duration of soil exposure;
- Retain existing vegetation, where feasible
- Encourage re-vegetation
- Divert runoff away from exposed soils
- Keep runoff velocities low
- Trap sediment as close to the source as possible
- No equipment will be permitted to enter any natural areas during construction;
- Snow fencing (barrier for tree protection) will be used along all construction areas adjacent to natural areas and the boundaries of the site;
- All materials requiring stockpiling (fill, topsoil, etc.) will be stabilized and kept a safe distance from any sensitive natural features. The perimeter of the stockpiles will be encircled with silt fencing;
- All exposed soil areas will be stabilized and re-vegetated, through the placement of seed and mulching or seed and an erosion control blanket or sod, promptly upon completion of construction activities;
- Refueling of equipment will be carried out away from any sensitive natural features to avoid potential impacts, in the event that an accidental spill occurs;
- Straw bale dams will be placed in front of sewer (catchment) inlets;
- In addition to any specified requirements, additional silt fence, straw bales, and rip-rap should be moved on site, prior to grading operations, to provide a contingency supply in the event of an emergency;
- All sediment and erosion controls should be monitored regularly and properly maintained, as required. Controls are to be removed only after the soils of the construction area have been stabilized and adequately protected as cover is re-established;
- The limits of construction adjacent to all natural features to be retained will be flagged and fenced prior to construction, and monitored during construction (along with sediment and erosion control measures) to ensure the limits are maintained with respect to vehicular traffic and soil or equipment stockpiling; and
- The Contractor is required to restore any disturbed natural areas to pre-construction conditions.

Construction Timing Restrictions

The Recommended Plan does not require any in-water work. However, any grading in proximity to Hanlon Creek will be reviewed during Detail Design to consider the application of the timing window for a coldwater watercourse.

Approvals

Provided the principles listed above are met, it is expected that a No HADD notification form can be submitted to the Department of Fisheries and Oceans (DFO) during Detail Design to approve any grading work required in proximity to Hanlon Creek.

7.11.1.4 Terrestrial Ecosystems

Vegetation removal associated with the Recommended Plan is limited to areas adjacent to the existing highways. No vegetation removal is required adjacent to Hanlon Creek. However, minor vegetation removal is required for the construction of the ramp from Downey Road to Highway 6 southbound. Hanlon Creek is strongly linked to large areas of contiguous natural cover, so that the removal of the proposed vegetation will have little impact on terrestrial habitat in the regional context.

Vegetation and Wetlands

There are no impacts to significant vegetation or wetlands identified during this study or as part of the City of Guelph *Natural Heritage Strategy* (2009). City of Guelph recently confirmed that vegetation in the Highway 6 corridor between Downey Road and College Avenue is not considered to be locally, regionally or provincial significant.

Construction will be required adjacent to the Hanlon Creek PSW for the partial interchange ramp in the southwest quadrant of the Highway 6/Downey Road intersection. This will result in the removal of approximately 0.08 ha of the edge of early successional woodland consisting primarily of a mix of coniferous and deciduous trees, with no clear dominant species. In all other areas, the required clearing consists of individual specimen trees and cultural meadow, dominated by common shrubs and herbaceous plants.

The following construction practices should be applied for work adjacent to the wetland and vegetated areas:

- During construction adjacent to vegetated areas, heavy equipment could damage peripheral vegetation from contact, excavation, and/or soil compaction
- Vegetation impacts will be limited to where removal is required by installing barriers for tree protection at the dripline of retained vegetation, where possible
- The Hanlon Creek PSW will be marked as an Environmentally Sensitive Area on construction drawings and the contractor will not be permitted to enter this area, which will be fenced during construction
- During detail design, it is recommended that the project team avoid fill placement into wetlands and vegetated areas, and implement edge plantings that are tolerant of edge effects, where possible, along the newly created edges of woodlands/wetlands

A retaining wall has been included on the east limit of the partial interchange ramp from Highway 6 northbound to Kortright Road to minimize impacts to John Gamble Park and the black walnut trees.

A tree removal and landscape plan will be developed during Detail Design.

Dust and silt generated from construction activities can also harm natural areas. These potential effects can be mitigated through the use of standard sediment and erosion control measures, outlined above.

Wildlife Habitat and Open Space Linkages

In the regional context, the removal of small areas of vegetation adjacent to the existing highways will not have a significant impact on terrestrial habitat. There are no impacts to areas identified for protection under the City's updated *Natural Heritage Strategy* (2009).

Local residents indicated that wildlife, including, deer, have been observed in the open space between Old Colony Trail/Wagoners Trail and Highway 6. The area has been identified as cultural (i.e. previously cleared and now supporting early successional grasslands.

The Recommended Plan does not change the current wildlife travel and open space linkages in the Hanlon Creek Corridor. No changes are required to the existing Highway 6 or Downey Road Hanlon Creek culverts. The NHS indicates that the areas identified as deer crossing areas are intended to be flagged for future identification of mitigation measures to facilitate wildlife crossings. The Ministry will consider wildlife crossing mitigation measures on Highway 6 in the vicinity of Hanlon Creek when the replacement of the existing Highway 6 culvert is required.

For this study, the majority of wildlife-related impacts from the proposed development would be caused by the potential for increased noise and increased lighting. Depending on the level and duration/frequency of the activity, an increase in noise can have detrimental effects on wildlife through agitation and flushing responses. However, given the existing traffic on Highway 6, it is likely that resident wildlife have either adapted to periodic daily noise or have already relocated to areas beyond their individual noise impact threshold.

Significant Wildlife Habitat

In September 2008, a new *Endangered Species Act* came into effect. The new Act provides broader protection for the habitat for species at risk (classified as endangered) and their habitats. During detail design, a detailed survey for the habitat for the Species at Risk listed in Section 5.2.4 should be carried out to confirm that the Recommended Plan does not directly impact the habitat of Species at Risk. Habitat for eastern milksnake and the potential for habitat for eastern ribbonsnake is present in the study area. If these species are observed during construction, activities in the vicinity of the sighting should cease and MNR should be contacted immediately for advise.

Based on the fieldwork carried out for this assignment, and on updated information available in the City's Natural Heritage Strategy (2009) there are currently no known direct impacts to the habitats of Species at Risk or species protected by the Province of Ontario's Provincial Policy Statements, including the *Jefferson salamander, blanding's turtle, northern ribbonsnake, eastern milksnake*, or *western chorus frog*.

Proposed mitigation that could be used to reduce impacts of the Recommended Plan to reptiles and snakes could include:

- Education of construction staff to identify and avoid SAR
- Speed restrictions on trucks in the construction area
- A survey of an area for species at risk before blasting or vegetation clearing
- Facilitating safe movement of species at risk through the construction zone, if required

Migratory Birds

During detail design, all culverts, bridges and impacted trees should be checked for the nests of nesting migratory or protected bird species that are protected under the *Migratory Birds Convention Act* (1994). If required measures to protect Migratory Birds will be developed during detail design.

7.11.1.5 Potential Contamination

A review of potential environmental contamination and environmental risk was carried out during this study. No significant issues were identified. However, there were historic spills were identified in the vicinity of the Highway 6/College Avenue intersection and the Highway 6/Laird Road intersection. There is no evidence of ongoing contamination from spills at these locations.

In accordance with current MTO practice, is recommended that Preliminary Site Screenings will be carried out, where required, during Detail Design for all property to be acquired.

Findings of the Preliminary Site Screenings and the Environmental Site Assessment will determine if remediation is required for any properties. Special measures would be included in the final contract if there is a need to remove soil from a contaminated property.

7.11.1.6 Management of Excess Materials

The potential impacts to soil or groundwater from the use of de-icing activities along provincial highways represents a potential environmental concern with respect to soil and groundwater quality. The *Environmental Protection Act* (EPA) has identified road salt as a contaminant. Typically a portion of road salts applied on roadways for de-icing purposes will remain within the soil, and the salt content can exceed the allowable limit for inert fill. Updated EPA standards (2004) placed new limits on salt-related contaminants in soil and ground water and the definition of "inert fill" now excludes soils with modest salt contamination. Typically, these soils do not pose a risk to human health, to wildlife or to the natural environment.

Should excess fill be generated during construction activities, any soils that do not meet the Standards listed in Table 1 of the *Soil, Ground Water and Sediment Standards for Use Under Part XV.1* of the *Environmental Protection Act* cannot be considered inert fill upon excavation, and off-site management options for excess soils that cannot be reused within the site will be limited. Every attempt will be made to manage (re-use) soils within the existing right-of-way, where feasible.

Excess materials will be managed in accordance with *Ontario Provincial Standard Specification* (OPSS) 180. This standard deals with the responsible management, stockpiling and disposal of excess materials (including earth, rock, pavement, concrete, etc.) during construction on Ministry projects.

7.11.2 Social/Economic Environment

As discussed in Section 3.0, during the study, the City of Guelph, Township of Puslinch, business owners, and local residents indicated that social issues, including access, safety, traffic on municipal roads, noise, air quality, pedestrian/cyclist access, visual impacts, construction impacts, and land use, were important to the community. This section of the report describes impacts and potential mitigation measures for the social and economic environments.

7.11.2.1 Provincial Growth Policy

The Recommended Plan supports Regional and Provincial Growth Planning policies by providing the transportation infrastructure required to maintain a high level of service on the provincial highway system for the movement of people and goods.

Expansions/improvements to the provincial highway system and particularly freeways are unavoidable and necessary to support the anticipated growth, mobility of people and movement of goods. Optimizing existing highway corridors is consistent with the *Provincial Policy Statement* (PPS 2005), which indicates that '*efficient use shall be made of existing…infrastructure*'. The Recommended Plan supports goods movement between Highway 401 and Highways 6 and 7, which include employment areas with manufacturing and distribution businesses, by providing improved traffic operations, and links the City's growth areas with Highway 401.

The Recommended Plan also supports Places to Grow legislation which directs investments in highways as a priority for goods movement.

7.11.2.2 Land Use

Land use designations in the study area are not expected to change. In general, the Recommended Plan is consistent with the City and County *Official Plans*.

7.11.2.3 Community – Residential

The Recommended Plan results in the displacement of ten residential properties for the Stone Road interchange. Property impacts of the ramp from Highway 6 northbound to Kortright Road and the Service Road have been minimized or eliminated by providing retaining walls, where possible. Property negotiations with the property owners will be carried out in accordance with standard MTO property purchasing processes.

Community impacts and mitigation measures are discussed below in two separate sections since different issues were identified for each section.

South Section

Property owners in the South Section were primarily concerned about the proposed closure of the Maltby Road intersection and future access to Highway 6. Future access from Maltby Road to Highway 6 will be via the mid-block interchange between Maltby Road and Wellington Road 34 recently approved in the *Highway 6 Freelton to Guelph study*. Residents on Forestell Road will also be able to access Highway 6 via the mid-block interchange. The City has recently identified interim improvements to Maltby Road, Gordon Street, and Wellington Road 46 to improve the condition of roads in this area.

North Section

Although the City and local residents indicated that they desired access at College Avenue, Stone Road, and at Kortright Road, interchanges could not be provided at all of these locations since the interchange ramps would overlap with one another. The Recommended Plan includes a partial interchange (with ramps to and from the south) at Kortright Road/Downey Road, combined with a Service Road between Downey Road and Stone Road to provide adequate access to and from Highway 6 without the need for significant travel on local residential roads.

In addition, since the Recommended Plan includes a Service Road to provide municipal road network connectivity, the City will be able to remove the College Avenue extension from the Official Plan since the need for a municipal north-south road connection west of Highway 6 is addressed by the West Service Road.

During the study, the project team arranged several neighbourhood and property owner meetings to discuss specific impacts.

In the early stages of the study, residents on Woodland Glen Drive identified significant concerns regarding external traffic on this residential road and the potential for increased traffic if no additional municipal road network connections were included in the study. Woodland Glen Drive residents and Downey Road residents both requested additional municipal studies to implement traffic calming on their roads to minimize external traffic volumes. Since the PIC 2 Preferred Plan resulted in some increased traffic past the frontages of residential properties, and due to significant concerns from the public and the City of Guelph, the project team carried out additional consultation (discussed in Section 3.0) and ultimately identified the West Service Road to address local concerns.

Additional concerns identified by the public included noise, lighting, impacts to John Gamble Park, out-of-way travel, vegetation and air quality impacts from the proposed service road, and general concerns regarding noise levels in the study area. These issues have been addressed, as identified in this section of the report.

The Service Road impacts the character of the backyards of approximately 22 residential properties on Old Colony Trail, and the frontages of an additional 5 properties on Woodland Glen Drive, adjacent to the YMCA-YWCA. The Old Colony Trail community's concerns with the Service Road were addressed at two neighbourhood meetings as discussed in Section 3.6.3.

Additional concerns regarding the location of the Service Road have also been noted and were addressed in detail in the staff reports to City Council available in Appendix D. A plan showing the cross-section of the Service Road is provided in Exhibit 16.

Concerns regarding the visual impact of the Stone Road interchange have been addressed by modifications to the interchange configuration, the reduction of lanes on Stone Road to four lanes (i.e. two in each direction), and shifting the alignment of the future Stone Road as close as possible to the existing Stone Road alignment. Residents in the southeast quadrant of the proposed Stone Road interchange have also identified concerns regarding the proximity of the proposed ramp. Property impacts have been minimized, where possible, by maximizing the separation between highway improvements and residential properties.

In response to concerns regarding the loss of trees that currently create a buffer between residential properties on Old Colony Trail and Highway 6, a detailed tree inventory will be undertaken during Detail Design to identify trees that can be retained or protected. A tree transplanting and re-vegetation plan will also be developed during Detail Design, including the potential for advance transplantation of trees, where feasible.

Local residents have also requested that vegetation be planted in front of the proposed noise barriers to minimize the visual impact of noise barriers. The potential for screening of sound barriers will be confirmed during detail design, in consultation with adjacent property owners and the Citizens Liaison Committee to be established during Detail Design.

Residents in the study area may experience temporary delay or disruption during construction.

7.11.2.4 Traffic Volumes on Municipal Roads

The City of Guelph has committed to minimizing external traffic on several City roads, including Woodland Glen Drive and Downey Road. This work is not part of this study. However, the City estimates that the introduction of traffic calming measures has the potential to divert approximately 300 vehicles during peak hours.

The Recommended Plan includes direct ramps to and from the south at Kortright Road/Downey Road and the West Service Road to minimize external traffic on residential roads. Furthermore, it is anticipated that external traffic from the west will use the new interchange at Laird Road; and the City has indicated that they will consider traffic calming on Downey Road to direct external traffic to the Laird Road interchange. The City has agreed that these initiatives should limit traffic volumes on the West Service Road to neighbourhood and YMCA traffic only.

Estimated 2031 traffic volumes and existing two-way traffic volumes on residential roads within the City of Guelph are provided in Table 21.

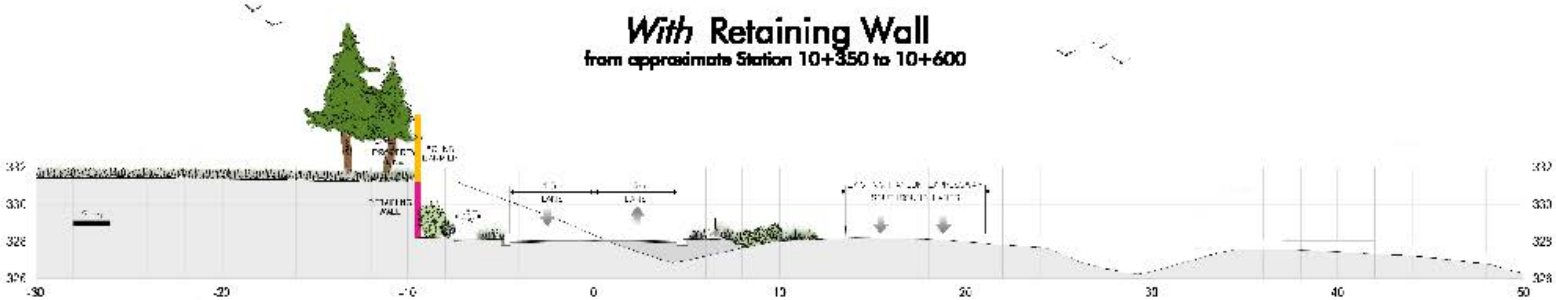
Table 21: Hanlon West Neighbourhood Traffic Volumes (City of Guelph)

Community	Dwelling Units	Daily Trips on Adjacent Roads	Daily Traffic on Adjacent Roads			
			Service Road		Woodland Glen Drive	
			Southbound	Northbound	Southbound	Northbound
College Heights	987	7,990	-	-	360	320
Woodland Glen	267	2,560	280	240	790	860
Kortright Hill	1,126	10,140	1,560	1,520	360	380
YMCA	-	4,000	680	680	90	90
One-way Traffic	-	-	2,520	2,440	1,600	1,650
Two-way Traffic	-	24,690	4,960		3,250	

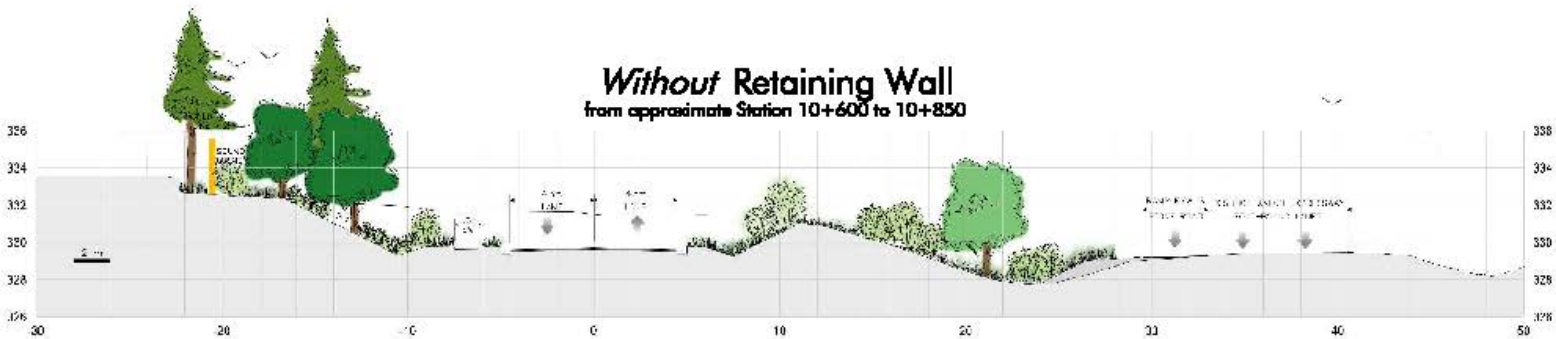
All-day, Two-way Roadway Volumes

Downey Road	8800
Woodland Glen Dr (YMCA)	5400
Woodland Glen Dr (Stone Rd)	3700
College Ave W (Stone Road)	3300
Ironwood Road	4800
Janefield Ave	3700

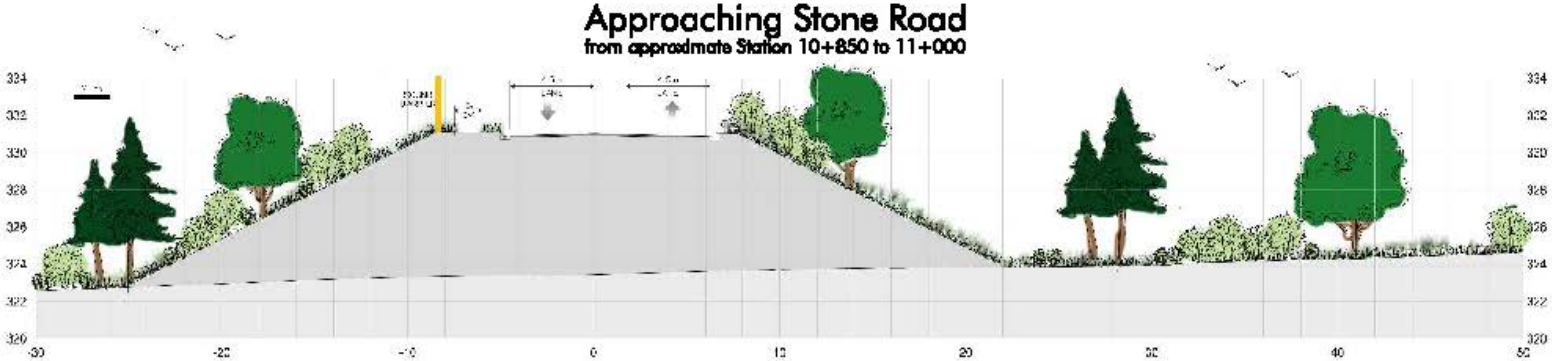
With Retaining Wall
from approximate Station 10+350 to 10+600



Without Retaining Wall
from approximate Station 10+600 to 10+850



Approaching Stone Road
from approximate Station 10+850 to 11+000



Ontario

HIGHWAY 6 (HANLON EXPRESSWAY)
Maltby Road to the Speed River

GWP 3013-00-00

West Service Road
Cross Sections
As shown at Neighbourhood Meeting (February 11, 2009)

SHEET 16

7.11.2.5 Community – Commercial/Industrial

The City of Guelph Chamber of Commerce has indicated support for the Recommended Plan at the City Council meeting held on April 27, 2009.

The Recommended Plan has minor property impacts to three business properties for the Laird Road interchange. These impacts will not affect the operation of these businesses.

The Recommended Plan provides improved traffic operations for goods movement to and from the existing Hanlon Industrial Park and future Hanlon Creek Business Park and Southgate Industrial Park. The interchange at Laird Road will permit full build-out of the Hanlon Creek Business Park. Currently, there is a restriction on the development of the Hanlon Creek Business Park based on the capacity of the existing at-grade intersection.

The Laird Road interchange maintains traffic patterns for truck travel from gravel pits, along Laird Road to Highway 6.

The Stone Road interchange maintains access in all directions for travel to and from the Stone Road Mall and association commercial developments.

A detailed construction staging and traffic management plan will be developed during the next stage of the study, detail design. Local residents and businesses will be consulted during the development of the plan, and will be advised of the timing of any required closures of disruptions in advance of the proposed work.

7.11.2.6 Community – Institutional

The Stone Road interchange has been designed to minimize property impacts to the Mary Phelan School yard and to the Priory Park church parking lot. Minor property will be required to reinstate the public trail connection from Flanders Road/Hanlon Road to Stone Road.

The entrance road to College Heights Secondary School will be realigned to maintain the baseball diamond between College Avenue and the school. Modifications will be required for school bus routes to and from schools in the College Avenue area. Local school boards have not identified any significant concerns. Access across Highway 6 will be maintained via the College Avenue underpass.

Access to the YMCA is maintained via the partial Kortright Road/Downey Road interchange and the Service Road. The YMCA has agreed to realign the north entrance of their parking lot to align with the future Woodland Glen Drive/Service Road intersection.

7.11.2.7 Agriculture

The Recommended Plan does not impact any agricultural properties. No concerns regarding access for farm vehicles were identified during the study.

7.11.2.8 Emergency Services

Following the emergency service providers meeting discussed in Section 3.7.2.3, no additional concerns have been identified from emergency service providers. Emergency service providers will be contacted during detail design when additional details regarding construction staging and traffic management during construction are available.

The Recommended Plan does not maintain the existing locally used winter access to the Shadybrook Area. The City of Guelph has added Shadybrook Crescent to its 'salt roads' list to provide improved winter access to the community.

7.11.2.9 Recreation and Pedestrian and Cyclist Access

The Recommended Plan improves pedestrian and cyclist connectivity in accordance with the City's *Trails Master Plan* by providing dedicated bicycle lanes on the structures on Kortright Road/Downey Road, Stone Road and College Avenue. Pedestrians will be accommodated on raised sidewalks at Kortright Road/Downey Road and College Avenue and on sidewalks on both sides of the Stone Road structure. Landscape and trail specialists consulted during this study have indicated that providing the physical space on the roads encourages a higher percentage of population to use alternative modes of transportation.

Example of a raised sidewalk at Highway 8 (City of Kitchener)

The configuration of the Stone Road interchange was selected, in part, because it minimizes conflict points (i.e. vehicle interaction) for pedestrians and cyclists.

Minor trail relocations will be required to accommodate the ramp from Highway 6 northbound to Kortright road, and at the Stone Road interchange. Trail relocations are identified on the Recommended Plan and will be constructed by the municipality.

The City has requested that MTO consider including a north-south trail connection through the study area. The Recommended Plan does not preclude a north-south trail connection and maintains the north-south link on Old Hanlon Road between Kortright Road and Stone Road as identified in the City's *Trails Master Plan*. The purchase of property and construction of trail networks are a municipal responsibility and MTO does not have the authority to purchase property for this purpose.

Impacts to John Gamble Park have been minimized through the use of a retaining wall.

Many local residents discussed the concept of 'walkability' during the study. A review of the proposed improvements by the project landscape architect indicates that the proposed change from at-grade intersections to grade-separations, particularly at Kortright Road/Downey Road and College Avenue, will be an improvement over the existing conditions since pedestrians and cyclists will not have to encounter provincial highway traffic when crossing Highway 6.

Pedestrian access at Hanlon Creek will be maintained. Access to the parking area in the vicinity of Hanlon Creek, south of John Gamble Park will be via Shadybrook Crescent. The parking area will be reconfigured by the City during detail design to make sure that the off-leash park remains functional.

Residents on Woodland Glen Drive have indicated concern regarding pedestrian access across Woodland Glen Drive in the vicinity of the Service Road. The intersection of the Service Road with Stone Road will be signalized and will

include pedestrian signals. In addition, the all-way stop control at the Woodland Glen Drive/Service Road intersection will provide opportunities for pedestrian crossing at this location.

7.11.2.10 Noise

A *Noise Impact Study* was carried out for the Recommended Plan. The *Noise Impact Study* is in Appendix G. The *Noise Impact Study* was carried out for the Preferred Plan identified at PIC 2. The study was subsequently updated at several points in the study to include:

- Results of the noise monitoring carried out in September 2008
- The Recommended Plan, including the West Service Road and modifications to the Stone Road interchange
- Updated 2031 traffic volumes obtained during the update of the City's traffic model
- Inclusion of a receptor on Milson Crescent

Updates to the initial noise study are provided as appendices to the original Noise Study.

Thirty-nine (39) Noise Sensitive Receptor (NSR) locations were selected to represent the Noise Sensitive Areas (NSAs) within the study area. NSRs were selected east and west of Highway 6, and were selected to represent NSAs that may be potentially affected by noise due to their proximity and exposure to Highway 6. The selected receptors represent the worst case noise assessment locations, beyond which the predicted sound levels are lower due to increased distance setback and reduced exposure to Highway 6.

Increased sound levels, in general, were due to a predicted future increase in traffic volumes on Highway 6, and were not generally as a result of the Recommended Plan.

Noise Study Results

All sound levels in the study area were predicted using the noise prediction model known as ORNAMENT, which is endorsed by MTO and was developed by the Ministry of the Environment. As discussed in Section 5.3.7, the results from the noise model were verified though noise monitoring carried out in September 2008.

Detailed results of the noise study are available in Appendix G.

Proposed Mitigation Measures

Current noise policy indicates that a receiver experiencing an increase of 5 decibels or more at its outdoor living area (OLA) or noise levels in excess of 65 dBA as a result of highway improvements would qualify for the consideration of noise mitigation by investigating possible noise control measures on the right-of-way and mitigating noise levels where administratively, economically, and technically feasible. A minimum reduction of five decibels averaged over the first row receivers must be achieved to justify the installation of noise barriers.

Areas where noise barriers will be provided in accordance with the MTO Noise Guide are described below and identified on the Recommended Plan available at the end of this report:

- Highway 6 from Kortright Avenue to Stone Road (east of Highway 6 and west of the Service Road)
- Highway 6 from Stone Road to College Avenue (east and west of Highway 6)
- An additional section of sound barrier between Highway 6 and the Service Road from the YMCA to the future Woodland Glen/Service Road intersection to protect the Old Colony Trail area. This barrier will also benefit the outdoor play area at the YMCA-YWCA

Preliminary sound barrier locations are identified on the Recommended Plan and will be between 3 and 5 metres in height. In the vicinity of the Stone Road interchange, sound barriers are proposed to be located at the top of the interchange ramp embankment to provide the best sound attenuation.

Although the Shadybrook neighbourhood south of Kortright Road does not meet MTO requirements for noise mitigation, the City of Guelph has indicated that they will consider alternatives for minimizing noise in the Shadybrook Community due to significant concerns from residents. MTO is in support of the initiative and will assist the City, where possible.

Potential Noise Barrier Type and Locations

Noise barriers in the study area are proposed to be between 3 metres and 5 metres in height.

Noise barrier locations are based on current Ministry of Transportation practice for sound barrier locations and are generally located where highway sound will be best absorbed. The sound barriers can be a combination noise berm/wall, where space permits and are normally placed just inside of the highway right-of-way where they provide good acoustical value and allow for maintenance of the barrier and the right-of-way without creating a 'dead zone' behind the barrier.

A preliminary review of opportunities for alternative noise wall locations and the potential for a noise wall/berm combination between the proposed West Service Road and Old Colony Trail/Wagoners Trail was carried out in April 2009 in response to requests from property owners. The review indicated that sufficient property is not available for the construction of a berm between the Service Road and the south end of Old Colony Trail. However, a berm/wall combination would be possible from approximately 47 Old Colony Trail northerly. The review also indicated that noise walls located on the MTO property limit, at the edge of the shoulder of the Service Road, and the berm/wall combination could all provide the same noise attenuation.

Alternative noise wall locations, the potential for a noise wall/berm combination and additional details, such as height, colour, and landscape treatments, will be determined during detail design in consultation with adjacent property owners and the Citizens Liaison Committee.

The upgrading of the highway to a fully controlled-access facility will mean that trucks will no longer be required to decelerate or stop at each of the existing signal-controlled intersections, reducing the need for, and the noise associated with truck engine brakes.

7.11.2.11 Air Quality

An Air Quality study was carried out to quantify air contaminant emissions from vehicular traffic along, entering, exiting, and crossing the highway and to determine how these emissions will affect air quality in the vicinity of the proposed improvements.

The assessment was undertaken for a future no-build (2027) and a future build alternative (with improvements for the year 2027) and used maximum emission rates (winter condition), worst-case meteorological conditions, and

reasonable worst-case background concentrations. This type of assessment is consistent with other Air Quality studies for highway projects in the province of Ontario.

The results of the air quality study indicate that air quality levels in the study area (at nearby sensitive receptors such as residential properties) will be within provincial standards.

The *Air Quality Study* was updated following PIC 3 to reflect the changes to the Recommended Plan, including the inclusion of the Service Road and 2031 traffic volume predictions. A copy of the updated *draft Air Quality Study* is provided in Appendix H.

Construction dust and noise impacts will be controlled during construction. The contractor will be required to adhere to standard noise restrictions (i.e. proper maintenance of equipment, no unnecessary idling). Standard dust suppressants (i.e. water, calcium chloride) will be used to minimize dust.

Provincial Air Quality Initiatives

The Province of Ontario has set a provincial target to reduce greenhouse gases from 60 megatons to 54 megatons in 2014. For 2020, the greenhouse gases are targeted to be reduced by another 10 megatons to 44 megatons. In order to achieve these targets, the Province is moving forward with a number of initiatives. The Province implemented new legislation in January 2009 to limit truck speeds to 105 km/hr. This legislation is being implemented to increase safety and reduce greenhouse emissions.

Other provincial initiatives include continuing increased emphasis on integrated approaches to land use planning and transportation planning.

Municipal Air Quality Initiatives

The City of Guelph carried out a Greenhouse Gas (GHG) Assessment in April 2009 to compare the existing (2009) CO_2 emissions and predicted future (2031) emissions with the improvements and without the Recommended Plan.

The study predicted that retaining the intersections along the Hanlon Expressway at-grade until 2031 would result in a 14% decrease in the average travel speed in the corridor, a 40% increase in the travel time in the corridor and a doubling of the fuel consumption and GHG's experienced during the PM peak hour compared to today's conditions.

The study also indicated that conversion of the intersections to fully-grade separated crossings would result in an increase in the average operating speed of about 32% with a 24% decrease in travel time, an 8% decrease in fuel consumption and a 5% decrease in GHG emissions.

The City of Guelph intends to carry out a comprehensive air quality monitoring program which could include the installation of air quality monitors to assess the existing air quality in the City. A staff report proposing the design/content of the study was presented to the City's Community Development and Environmental Services Committee (CDES) in November 2008. Results of the City's GHG Assessment and information about the City's Air Quality Monitoring study are available in the City Staff Reports provided in Appendix D and additional information may be available from the City of Guelph.

7.11.3 Cultural Environment

7.11.3.1 Archaeology

A Stage 1 Archaeological Assessment was carried out by Archaeological Research Associates for the Recommended Plan. This study is on file with the Ministry of Transportation and has been sent to the Ministry of Culture for review and concurrence.

It is recommended that a Stage 2 Archaeological Assessment be carried out, where required, during Detail Design. Archaeological Clearance will be obtained in advance of construction. A small area of Stage 3 investigations may be required to confirm the boundaries of a 19th Century archaeological site identified during the Ministry of Transportation's *Highway 6 Intersection Improvements study* (2009).

Should human remains be identified during any construction, all work in the vicinity of the discovery will be suspended immediately. Notification will be made to the Ontario Provincial Police, or local police, who will conduct a site investigation and contact the district coroner. Notification will also be made to the Registrar of Cemeteries, Ministry of Consumer and Commercial Relations (416-326-8404).

Should other cultural heritage values (archaeological or historical materials or features) be identified during operations, all activity in the vicinity of the discovery will be suspended and the Ministry of Culture archaeologist contacted for advice.

7.11.3.2 Built Heritage and Cultural Landscape

There are no buildings of significant historical, architectural, or cultural importance impacted by the Recommended Plan, nor significant impacts to any high quality cultural landscapes.

7.12 Summary of Environmental Effects, Proposed Mitigation and Commitments to Future Work

7.12.1 Future Commitments

Future consultation will be required during Detail Design to deal with all outstanding issues, including permits/approvals from external agencies, detailed environmental investigations regarding impacts and mitigation and engineering investigations to develop the final design.

Future consultation is expected to include notification of the start of Detail Design to the public and external agencies and a Public Information Centre near the completion of Detail Design to display plans, and to answer questions about the design. A *Design and Construction Report* (DCR) and/or a *TESR Addendum* will be submitted during Detail Design, as required, and submitted for public review.

Future consultation with external agencies is described in Table 22.

Table 22: Future Consultation with External Agencies

External Agency	Subject of Consultation
Ministry of Natural Resources/Department of Fisheries and Oceans	• Confirm avoidance of fisheries impacts and culvert recommendations • Submit 'No HADD' form in accordance with MTO/DFO/MNR Fisheries Protocol (2006), if applicable • Include timing restrictions and other fisheries mitigation in contract package, as warranted
Ministry of Natural Resources	• Confirm that habitat for Species at Risk are not negatively impacted by the Recommended Plan
Ministry of Culture	• Include appropriate wording in contract to deal with archaeological resources during construction • Obtain Ministry of Culture Clearance
Emergency service agencies (i.e. OPP, Fire, ambulance, etc.)	• Notify them of Detail Design (i.e. staging etc.) and construction phases to minimize impacts to emergency response times during and after construction
City of Guelph	• Consultation and meetings during Detail Design and construction phases • Confirm final design of service road, trail connections, and pedestrian/bicycle access • Confirm Highway 6 posted speed • Involvement in Citizens Liaison Committee
Township of Puslinch/Wellington County	• Consultation and meetings during Detail Design and construction phases
Neighbourhood Groups/Community Associations, including West Hanlon Neighbourhood Group, Kortright Hills Community Association, Mill Creek Community, and Old Colony Trial/Woodland Glen Drive residents	• Consultation and meetings during Detail Design and construction phases • Involvement in Citizens Liaison Committee • Confirm design of landscaping, tree removal and transplanting, and sound barriers
All other agencies/groups involved in planning and preliminary design study (i.e. school boards, etc.)	• Notify and consult during Detail Design and construction phases, for information purposes
Utility companies	• Notify of start of Detail Design to confirm that potential conflict areas are property identified and dealt with

7.12.1.1 Citizens Liaison Committee

The MTO has agreed to set up a Citizens Liaison Committee comprising of MTO staff, City staff, and area residents to coordinate the implementation of the proposed improvements and mitigation of impacts during detail design. The Citizens Liaison Committee will be formed at the start of the detail design stage and will be consulted regarding:

- Minor alignment shifts to the Service Road between Woodland Glen Drive and Stone Road
- Vegetation removal, tree transplantation, and landscape plans
- Aesthetics, location, and landscape treatment for proposed sound barriers/berms

7.12.1.2 Additional Consultation

Other issues to be dealt with through consultation during Detail Design include:

- Finalize design for noise mitigation, illumination, and landscaping in consultation with adjacent property owners
- Property acquisitions and entrance realignments through negotiations with individual property and business owners
- Carry out Stage 2 Archaeological Assessments, where required
- Confirm that requirements of the *Endangered Species Act* (2008) have been met before issuing Eligibility for Environmental Clearance – Construction Start letter

7.12.2 Summary of Environmental Effects, Proposed Mitigation and Commitments to Future Work

A summary of environmental effects, proposed mitigation and commitments to future work, as identified at the end of this study, is provided in Table 23. It includes future consultation with the public, municipality and ministries/agencies, as well as a summary of environmental effects and proposed mitigation. The table forms a comprehensive 'checklist' of outstanding issues identified at the end of planning and preliminary design and will serve as a starting point for Detail Design.

Table 23: Summary of Environmental Effects, Proposed Mitigation and Commitments to Future Work

ID #	Issue/Concerns and Potential Effects	Source	ID #	Mitigation or Commitment to Future Work
Consultation				
1	Citizens Liaison Committee	MTO City Public	1.1 1.2	• Form Citizens Liaison Committee • Consult with to determine final design of noise mitigation, illumination, and landscaping
Natural Environment				
2	Ground/Surface Water • Potential for increased pollutant to enter receiving watercourses • Increased downstream run-off from recommended improvements • Potential impacts to water quality/quantity • Potential impacts to Downey Well and Hanlon Creek Floodplain	MTO Public GRCA	2.1 2.2 2.3 2.4 2.5 2.6	• Design drainage system to address stormwater quality and quantity, in accordance with current Best Practices • Carry out hydrogeological assessment for structures and foundations studies • Finalize Stormwater Management and Drainage design • Determine location of existing wells that may be impacted during construction • Identify well water monitoring program, if required • Obtain Permit To Take Water, if required to dewater any excavations, in advance of construction
3	Erosion and Sedimentation • Potential for sediment laden runoff to impact downstream resources during construction • Erosion of steep banks prior to stabilization • Potential fisheries impacts at fisheries habitat for work within 30 metres of waterbodies	MTO GRCA Public	3.1 3.2	• Develop erosion and sediment control measures to avoid or mitigate impacts to downstream resources in accordance with MTO Best Management Practices • Contract package to include techniques for erosion prevention and sedimentation control such as temporary rock flow checks, silt fence barriers and use of erosion control blankets or rip-rap on steep slopes and along drainage features (i.e. ditches)
4	Fisheries and Aquatic • Potential for impacts to fisheries habitat • Submit No HADD form in accordance with MTO/DFO/ OMNR Fisheries Protocol	MTO MNR/DFO GRCA Public	4.1 4.2 4.3 4.4	• Review proposed work near Hanlon Creek and obtain all fisheries approvals and authorizations as determined by the MTO/DFO/MNR Protocol, in accordance with the Fisheries Act • Involve MNR/DFO and GRCA in future study phases as required to resolve fisheries issues • Contract package to include appropriate timing restrictions and mitigation design elements identified in the Fisheries and Aquatic Ecosystems Report • Include Special Provisions for work near watercourses in contract
5	Vegetation and Wetlands • Loss of vegetation and wetlands due to construction • Potential impacts to adjacent vegetation • Impacts to Hanlon Creek PSW	MTO MNR GRCA Public	5.1 5.2 5.3 5.4 5.5 5.6 5.7	• Investigate tree salvage and transplanting opportunities during Detail Design • Areas impacted by grading will be top soiled, seeded and covered with erosion control blanket or mulch • Sensitive areas (Hanlon Creek PSW) are to be identified as Environmentally Sensitive Areas (ESAs) in contract • Minimize vegetation removal and protect retained vegetation during construction • Prepare grading and stormwater management plan to make sure locally significant wetland is not adversely affected (quantity and quality) • Undertake Landscape Plan during Detail Design • Protect Hanlon Creek PSW by placing silt fencing, etc. during construction adjacent to the PSW

ID #	Issue/Concerns and Potential Effects	Source	ID #	Mitigation or Commitment to Future Work
6	Wildlife and Birds • Potential for impacts to breeding birds in study area • Impact to SAR or SAR habitat	MTO MNR GRCA Public	6.1 6.2 6.3 6.4 6.5 6.6	• Check existing structures for bird nests during detail design • Check culverts for presence of nesting migratory or protected birds to identify presence of any nests prior to construction • Confirm absence of Species at Risk by carrying out additional field survey during detail design • Include effective means of reducing impacts to reptiles in final contract package (i.e. education of construction staff, speed restrictions on trucks in construction areas, safe movement for SAR, stop construction if species are observed) • Any actively nesting birds and their young that may be impacted by the project operations, shall be protected between May 1 and August 15 • If construction timing requires tree removal between May 1 and July 31, an avian biologist should be retained to inspect for nests prior to removal
7	Potential Contamination • Potential for soil contamination on properties being acquired	MTO MOE	7.1 7.2	• Avoid disturbance to areas of identified concern or take appropriate mitigation measures • Carry out Site Screenings during Detail Design for properties to be acquired
8	Management of Excess Material • Potential impacts to sensitive areas	MTO	8.1 8.2 8.3	• Excess material reused, where feasible, for slope flattening or noise berms • Contractor to dispose of material in accordance with standard MTO specifications and provincial regulations • Manage excess materials in accordance with OPSS 180
Social and Economic Environment				
9	Land Use • Disruption to residents	Property owners City MTO	9.1 9.2 9.3 9.4 9.5	• Maintain access to private entrances and side roads during construction • Maintain liaison/coordinate construction with responding agencies (including school boards and businesses) • Negotiate individual agreements for temporary encroachment with property owners and restore properties to existing condition after construction • Do not close Maltby Road until the Highway 6 Freelton to Guelph study mid-block interchange is constructed • City to implement traffic calming on municipal roads and parking area for dog park in vicinity of John Gamble Park
10	Property • Commercial and residential buyouts, partial property requirements, change to access, indirect impacts, etc.	MTO Property Owners Business Owners	10.1 10.2 10.3 10.4	• Confirm property requirements at outset of Detail Design • Contact general public through newspaper notices and directly affected property owners through correspondence at start of Detail Design • Hold PIC during Detail Design to display and seek input on detailed plan and property impacts • Address property issues through negotiations with individual property owners and standard MTO procedures
11	Highway and Construction Noise • Increased noise from highway • Potential noise increase during construction	MTO City Property Owners	11.1 11.2 11.3 11.4	• Include standard construction noise mitigation in contract package (i.e. minimize idling, maintain equipment) • Obtain exemption from local noise bylaw, if required for night work • Confirm final design and location of noise barriers in consultation with adjacent property owners • Investigate potential for advance construction of noise barrier to reduce construction noise impacts, especially at West Service Road
12	Illumination • Light spillage on adjacent properties	MTO Property Owners	12.1 12.2	• Include light screening, where possible, to minimize light trespass on private property • Meet MTO guidelines for intensity of stray lighting on adjacent properties

ID #	Issue/Concerns and Potential Effects	Source	ID #	Mitigation or Commitment to Future Work
13	Air Quality • Dust during construction	MTO City Property Owners	13.1	• Provide dust control/suppression during construction
14	Recreation • John Gamble Park • City trails	MTO City Public	14.1 14.2	• Design retaining wall to minimize impacts to John Gamble Park, where possible • City to confirm relocation of trails in vicinity of proposed interchanges and adjust trail system, where required, in advance of construction
15	Transportation • Potential for temporary delay during construction	MTO City	15.1 15.2	• Develop traffic management plan using standard measures (i.e. signage, flag people, reduced speeds, etc.) • Develop construction staging and detour plan in consultation with local businesses
Cultural Environment				
16	Archaeology • Potential impacts to archaeological resources	MTO MCUL	16.1 16.2 16.3	• Carry out Stage 2 investigations during Detail Design, where required • Contract package to include special wording to deal with archaeological resources discovered during construction • Obtain Ministry of Culture Clearance in advance of construction

The future work described in Table 23 should be carried out subject to updating property ownership information and environmental requirements.

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8.0 Monitoring

The preliminary design phase of the project has been completed. Specific mitigation measures identified in this report will require confirmation during Detail Design and monitoring during construction.

The Ministry of Transportation currently uses Contract Administrators for construction projects to oversee, monitor, and enforce contract provisions.

The Contract Administrator makes sure that environmental protection measures, as outlined in the final contract package, are implemented.

In the event that protective measures do not address concerns identified or if major problems develop, the appropriate agency will be contacted to provide additional input.

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