



**CITY OF BRANTFORD  
ENVIRONMENTAL STUDY REPORT  
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT  
FOR IMPROVEMENTS TO SHELLARD LANE  
FROM COLBORNE STREET WEST TO THE WEST CITY LIMITS**

Submitted to:  
**City of Brantford**

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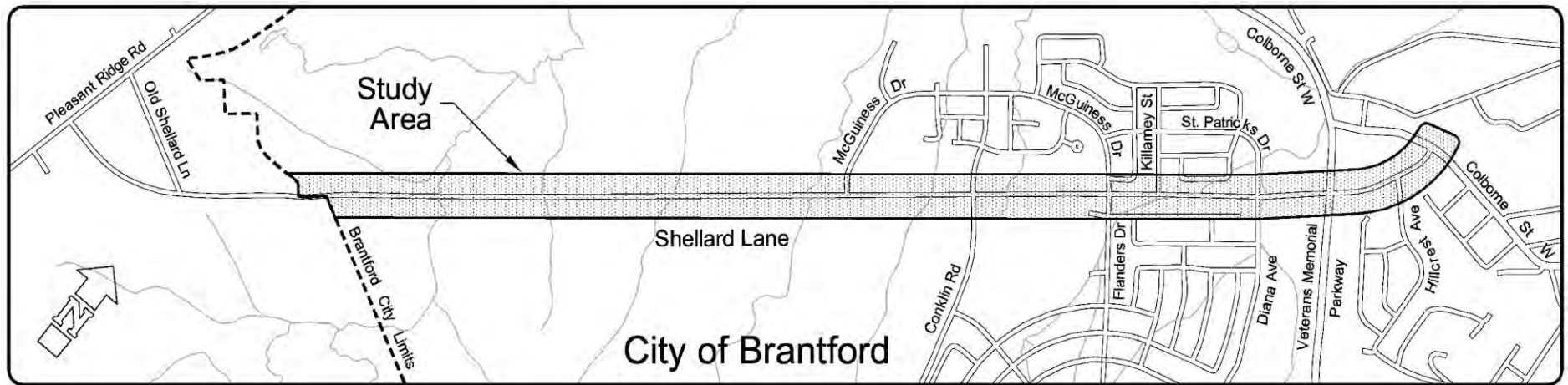
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**Figure 1.1: Study Area / Key Plan**



## EXECUTIVE SUMMARY

### Environmental Study Report

The City of Brantford has completed a Municipal Class Environmental Assessment (Class EA) Study to investigate potential improvements to Shellard Lane, from Colborne Street West to the City Limit, in the City of Brantford (ref. Figure 1: Study Area / Key Plan). AMEC Environment & Infrastructure (AMEC) has been retained by the City of Brantford to complete the study. This Environmental Study Report documents the background to the study, existing and future conditions within the study area, the need and justification for the project, the planning, design and consultation process leading to the preferred alternative, anticipated positive and negative impacts, and proposed mitigation.

This project is planned in accordance with the requirements of the Municipal Class Environmental Assessment (October 2000, as amended 2011), Schedule C.

### Background to the Study

Shellard Lane is an important arterial roadway link in the City of Brantford. The City of Brantford 2007 Transportation Master Plan Update identified the need to widen Shellard Lane, from two lanes to four lanes.

### Existing and Future Conditions

As part of the study, a review of existing and future conditions was completed. The objective of the review was to confirm the need and justification for improvement to and expansion of the roadway, for the planning horizon year of 2027, as well as to identify environmental constraints and sensitivities. Investigations have been completed for the following:

- land use
- roadway geometric design
- traffic volume/congestion
- utilities
- geotechnical/pavement
- natural environment
- archaeology
- pedestrian/cyclist access
- traffic noise
- structures
- stormwater drainage

### Problem/Opportunity Definition

Based on a review of existing and future conditions, as well as preliminary consultation with stakeholders, it has been determined that improvements are needed along the Shellard Lane corridor in order to:

- Accommodate existing and future (projected 2027) traffic demand;
- Accommodate pedestrian and cyclist movements through the corridor;
- Accommodate future transportation network improvements;
- Accommodate the transit system along the corridor;
- Address poor pavement condition;
- Provide for urbanization of the roadway;



- Address traffic operations and safety related to access to residential, commercial and institutional entrances;
- Accommodate pedestrian crossing safety issues at Assumption College/Assumption Plaza;
- Address a sight distance issue on Shellard Lane west of Flanders Drive, and
- Address drainage deficiencies and opportunities for stormwater management.

#### **Development and Assessment of Alternative Planning Solutions:**

Eight (8) alternative solutions were investigated to address the problems and opportunities discussed above:

**Alternative 1: Do Nothing:** Maintain Shellard Lane in its present configuration as a two-lane road. Continue regular maintenance and periodic resurfacing of the roadway.

**Alternative 2: Alternative Routes:** Improve adjacent roadways to accommodate the projected future traffic demand for Shellard Lane.

**Alternative 3: Widen to Three Lanes** with Intersection Improvements.

**Alternative 4: Widen to Four Lanes** from Veterans Memorial Parkway to Conklin.

**Alternative 5: Widen to Four Lanes** from Veterans Memorial Parkway to Street C.

**Alternative 6: Transit Service Improvements:** Improve existing public transit service within the City of Brantford to encourage a shift in modal choice from automobile to public transit.

**Alternative 7: Travel Demand Management (TDM):** Encourage a shift in travel behaviour to reduce peak hour vehicular traffic demand, by facilitating active modes of transportation such as walking and cycling.

**Alternative 8: Combine alternatives 3, 4 or 5, plus 6 and 7** to increase the overall effectiveness of individual alternatives, and reduce environmental impacts.

Based on input provided by stakeholders, including landowner representatives, technical agencies, and public participants, as well as based on a formal assessment by the study team, the preferred planning alternative is **Alternative 8: A combination of alternatives 3-7**. This alternative will address the identified needs of the Shellard Lane corridor, while minimizing environmental impacts.

#### **Assessment of Alternative Designs**

Following identification of the preferred planning solution to widen Shellard Lane with provisions for pedestrians and cyclists, the following three sub-alternatives were carried forward for further consideration:

**Alternative 1:** Widen to Three Lanes from Veterans Memorial Parkway to Conklin Road; maintain two lanes from Conklin Road to Pleasant Ridge Road.



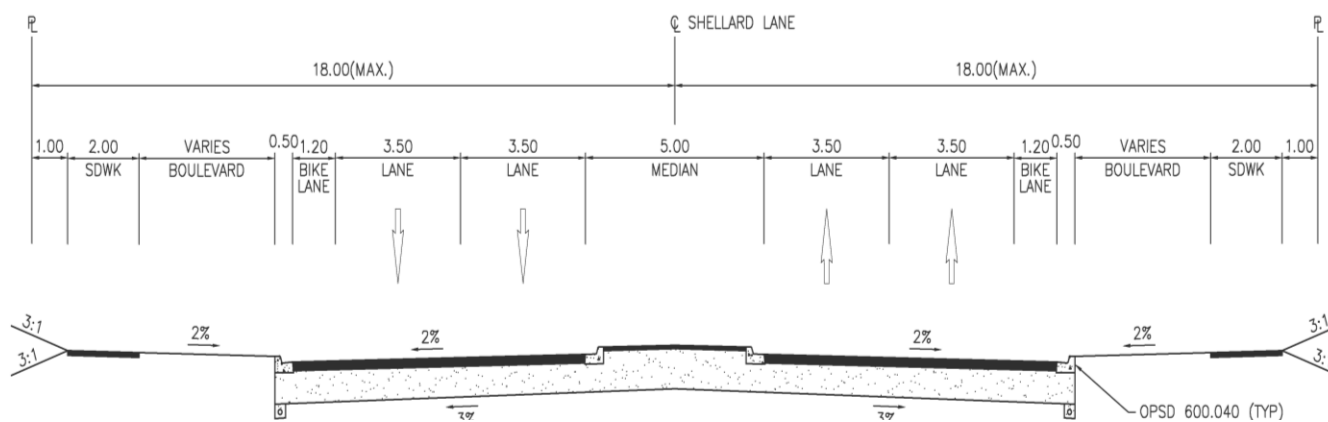
**Alternative 2:** Widen to Four Lanes from Veterans Memorial Parkway to Conklin Road; maintain two lanes from Conklin Road to Pleasant Ridge Road.

**Alternative 3:** Widen to Four Lanes from Veterans Memorial Parkway to Street C; transition to two lanes west of future Street C.

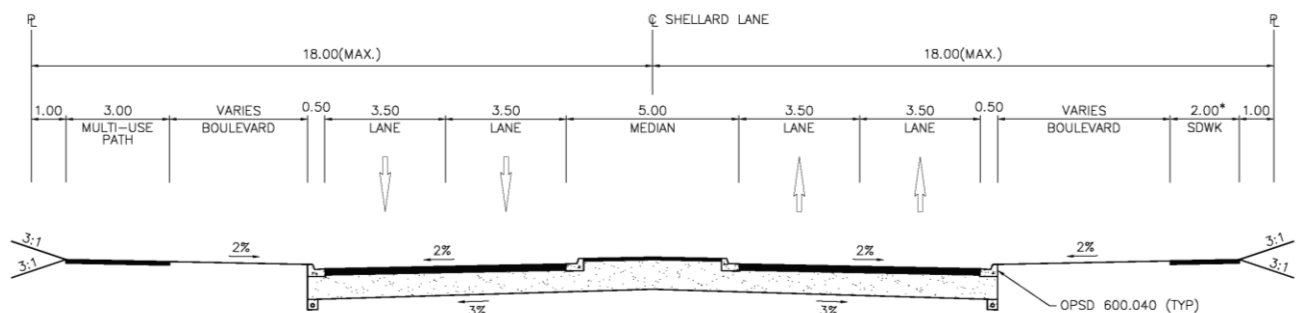
A comprehensive assessment of the alternatives considered was completed as part of the study. **Alternative 3** is preferred, as it provides adequate traffic capacity to the 2027 planning horizon, minimizing congestion and associated traffic infiltration into adjacent neighbourhoods.

From **Alternative 3**, two typical cross section alternatives were considered to implement the preferred four-lane design (ref. Figure 1.2 & 1.3).

**Figure 1.2: Alternative 3a:  
Four Lane Cross-Section with On-road Bicycle Lanes  
(for a 36m ROW)**



**Figure 1.3: Alternative 3b:  
Four Lane Cross-Section with Multi-use Path  
(for a 36m ROW)**



\*UTILIZE EXISTING 1.4m SIDEWALK WHERE POSSIBLE

**Alternative 3b:** Four Lane cross-section with multi-use path is preferred for the following reasons:

- There is insufficient width in the existing right-of-way (26m), from St. Patrick's Drive/Diana Avenue, to west of McGuinness Drive / Flanders Drive to accommodate on-road bicycle lanes, with sidewalks on both sides.
- The right-of-way width from west of McGuinness Drive/Flanders Drive to Conklin Road (31m) is constrained, and accommodating on-road bicycle lanes could not occur without purchase of private property.
- A multi-use path accommodates bicycles while maintaining separation from traffic, which is appropriate for the many casual and youth cyclists in the area, generated by local residential and school land use.

### **Description of Preferred Design**

The preliminary design is documented in detail in Section 6 of the Environmental Study Report. The following is a brief summary of some key aspects of the preferred design:

- Urbanization of the corridor, including concrete curb and gutter and storm sewer;
- Four (4) 3.5 m wide lanes through-lanes from Veterans Memorial Parkway to the West Limit. Localized reduction of the median lane to 3.3 m is proposed due to physical constraints, to provide for a continuous 3.0 m wide multi-use path;
- Median "Gateway" feature from Veterans Memorial Parkway to St. Patrick's Drive/Diana Avenue;
- 4.5 m wide raised median island from Flanders Drive to Conklin Road;
- 5.0 m wide raised median island from Conklin Road to the West Limit;
- 3.0 m wide multi-use path – north side of Shellard Lane from Veterans Memorial Parkway to West City Limits;
- New 1.5 m wide sidewalk – south side of Shellard Lane from Veterans Memorial Parkway to Conklin Road (except between Diana Avenue and Flanders Drive, where the existing 1.4 m wide sidewalk will be maintained);
- 2.0 m wide sidewalk – south side of Shellard Lane from Conklin Road to West Limit and 2.0 m wide sidewalk – north side of Shellard Lane from Colborne Street West to Veterans Memorial Parkway. Note that insufficient space exists within the right-of-way for both a sidewalk and bicycle lane on *one* side, with a sidewalk on the opposite side, as recommended in the Southwest Brantford West of Conklin Road Urban Design Guidelines, due to utility constraints;
- 3.0 m wide left turn lanes at each intersection, with the exception of at Killarny Street;
- 3.0 m wide right turn lane eastbound at Veterans Memorial Parkway;
- Widen Veterans Memorial Parkway for double left turn lanes, northbound;
- From Veterans Memorial Parkway to Conklin Road, the existing variable width right-of-way will generally be maintained, with some purchase of property required on the north side of Shellard Lane west of St. Patricks Drive and west of McGuinness Drive;
- From Conklin Road to the west limits, the existing 20 m right-of-way will be widened to a minimum of 36 m (or greater where required for drainage or grading);
- Full illumination throughout the project limits;

- New signalization at the intersections of St. Patricks Drive/Diana Avenue, Conklin Road, and proposed Street E;
- Modify/Upgrade existing signals at Veterans Memorial Parkway and McGuinness Drive / Flanders Drive;
- Streetscaping in accordance with City Urban Design Guidelines - Southwest Brantford West of Conklin Secondary Plan, in consultation with City Parks Department;
- Construction of planter island and fence from Conklin Road easterly to restrict student crossings adjacent to Assumption College and Assumption Plaza, and to direct them to the signalized intersection at Conklin Road;
- Accommodation for construction of new watermain and sanitary sewer, planned through the development process;
- Stormwater management, to be coordinated with existing or proposed development, and
- Replacement and / or extension of existing culvert crossings to meet hydraulic capacity, fisheries habitat requirements and stream morphology requirements.

### **Mitigation Measures**

- Avoidance or mitigation of natural environmental impacts in accordance with the requirements of MNR and GRCA, including mitigation of possible impacts to Barn Swallow (a Species at Risk), fisheries habitat at several watercourse crossings, and adjacent Provincially Significant Wetlands. Based on input from MNR, it is anticipated that if appropriate timing windows, impact avoidance and mitigation are followed, that the project will not require an Endangered Species Act (ESA) authorization from MNR.
- Mitigation of fisheries habitat impacts at watercourse crossings (two between Conklin and west limits, and one east of St. Patricks Drive/Diana Avenue), by appropriate open footing culvert design, in-stream timing constraints, natural channel design and erosion and sedimentation control. Flagging of evaluated and unevaluated wetland boundaries will be completed at the detailed design phase, for confirmation by GRCA staff, allowing for an accurate assessment and quantification of impacts in addition to identifying mitigation and restoration opportunities.
- New noise barrier fencing will be provided at the townhouse development west of Flanders Drive (219 Shellard Lane). Between St. Patrick's Drive/Diana Avenue and McGuinness Drive/Flanders Drive, existing noise barrier fencing in disrepair will be repaired on the south side, and replaced on the north side.

Following filing of this Environmental Study Report, subject to resolution of any issues raised during the filing period, the City intends to proceed to detailed design, property purchase, utility relocation and construction of this project.

## **1.0 INTRODUCTION AND BACKGROUND**

### **1.1 Introduction**

The City of Brantford has completed a Municipal Class Environmental Assessment (Class EA) for improvements to satisfy future travel demands on Shellard Lane from Colborne Street West to the City Limit, in the City of Brantford (ref. Figure 1 Study Area / Key Plan). AMEC Environment & Infrastructure (AMEC) was retained by the City of Brantford to complete the study.

In order to best address deficiencies along Shellard Lane, a number of road improvement alternatives were examined as part of the study, including widening of the roadway, cross-section improvements, provision for active transportation, intersection improvements, and enhancement of traffic control. In addition, the impact of such improvements on the social and natural environments was examined.

### **1.2 Environmental Study Report**

This Environmental Study Report (ESR) documents the background to the study and existing and future conditions within the study area, and examines the need for and feasibility of widening and improvements on Shellard Lane, to address short and long term issues related to planned future growth, and operational, traffic capacity, active transportation facility, pavement condition and storm drainage deficiencies. In order to best address these deficiencies, the study has explored a number of road improvement alternatives, including the widening and urbanization of the roadway, as well as the impact of such improvements on the social/cultural and natural environments. This report chronicles the planning, design and consultation process leading to the preferred alternative, anticipated positive and negative impacts, and proposed mitigation.

This project is planned in accordance with the requirements of the Municipal Class Environmental Assessment (October 2000, as amended 2011), Schedule C.

### **1.3 Purpose of the Project**

The purpose of this project is to examine existing and anticipated future deficiencies along Shellard Lane within the study limits, to identify long term improvements for the horizon year of 2027 and beyond, to meet the anticipated travel needs in the corridor and evaluate options to address the deficiencies identified. A major objective of the study is to undertake consultation with a wide range of stakeholders, in order to identify and resolve or mitigate issues of concern, while meeting the requirements of the Class EA process, permitting the City of Brantford to proceed to detail design, and ultimately, construction.

### **Problem/Opportunity Definition**

Based on a review of existing and future conditions, as well as preliminary consultation with stakeholders, it has been determined that improvements are needed along the Shellard Lane corridor in order to:

- Accommodate existing and future (projected 2027) traffic demand;
- Accommodate future transportation network improvements;
- Accommodate pedestrian and cyclist movements through the corridor;
- Accommodate a transit system along the corridor;
- Address poor pavement condition;
- Provide for urbanization of the roadway;
- Address traffic operations and safety related to access to residential, commercial and institutional entrances;
- Accommodate pedestrian crossing safety issues at Assumption College/Assumption Plaza;
- Address a sight distance issue on Shellard Lane west of Flanders Drive, and
- Address drainage deficiencies and opportunities for Stormwater Management.

The need and justification for roadway improvements are discussed in detail in Section 4.1 of this report.

### **1.4 Project Background**

Shellard Lane is an important arterial roadway link in the City of Brantford. The road provides an east – west connection from the Brantford West City Limits to Colborne Street West, providing access to the Shellard Neighbourhood.

A number of studies have been completed and related documents are available, which have significance to the study, and which have been reviewed by project team members. These include:

- The Official Plan of The City of Brantford (Official Plan)
- Transportation Master Plan Update 2007
- Review of the Archaeological Master Plan Heritage Component of the Official Plan Review Program
- Watershed Master Plan Study Phase 2
- Parks and Recreation Master Plan Final
- North of Shellard Neighbourhood and Recreation Plan
- Planning Functional Servicing Urban Design Report West of Conklin Secondary Plan
- Multi-Use Trail and Bikeway Implementation and Design Plan
- Southwest Brantford Secondary Plan Natural Heritage Existing Conditions and Assessment Report
- D'Aubigny Creek Zone B Implementation Plan
- North of Shellard Neighbourhood + Recreation Plan



The planning studies included in the list above project significant increases in population and employment in southwest Brantford and as a result the Shellard Lane corridor, in its current state, will be inadequate to support projected development and increases in traffic. The City of Brantford's Transportation Master Plan Update (2007) recommends the widening of Shellard Lane to meet the existing and future traffic demand for this corridor, as well as on road bicycle lanes, and neighbourhood connections for walking and cycling trails.

## 2.0 CLASS ENVIRONMENTAL ASSESSMENT APPROACH

The Ontario Environmental Assessment Act (EA Act) identifies two types of environmental assessment and approval processes:

- i. Individual EAs are large complex projects with extensive potential for environmental impacts, for which a Terms of Reference and an individual environmental assessment are carried out and submitted to the Ministry of the Environment for approval.
- ii. Class EAs including projects which are approved subject to compliance with an approved class EA process. Projects proceed provided that this approval process is followed and the proponent has complied with the EA Act requirements.

### 2.1 Class Environmental Assessment Process

The Class Environmental Assessment process is a mechanism by which planning and approving of municipal servicing is provided in an efficient, timely, economical and environmentally responsible manner. It represents a consistent, streamlined and easily understood process for planning and implementing municipal infrastructure projects. Under the Provincial Environmental Assessment Act, projects are classified as approved, subject to screening, subject to a Class Environmental Assessment (Class EA), or subject to a full Environmental Assessment. This project is classified as being subject to the Class EA process. It is being conducted according to the requirements outlined in the Municipal Engineers Association document titled *Municipal Class Environmental Assessment (October 2000, as amended 2011)*.

Consistent with the Municipal Class EA, the study approach has been designed to meet the following objectives:

- i. Protection of the environment, including natural, social and economic components of the environment.
- ii. Participation of a broad range of stakeholders in the study process to allow for sharing of ideas, education, testing of creative solutions and developing alternatives.
- iii. Documentation of the study process in compliance with all phases of the Municipal Class EA process.

The Class EA process classifies projects according to their level of complexity and potential environmental impacts. These are termed "Schedules" and are summarized below:

- **Schedule A and A+** projects involve minor modifications to existing facilities. Environmental effects of these projects are generally small; therefore, the projects are considered pre-approved.
- **Schedule B** includes improvements and minor expansion to existing facilities. There is a potential for some adverse environmental impacts and, therefore, the proponent is required to proceed through a screening process, including consultation with those



affected. Schedule B projects are required to proceed through Phases 1, 2 and 5 of the Municipal Class EA process.

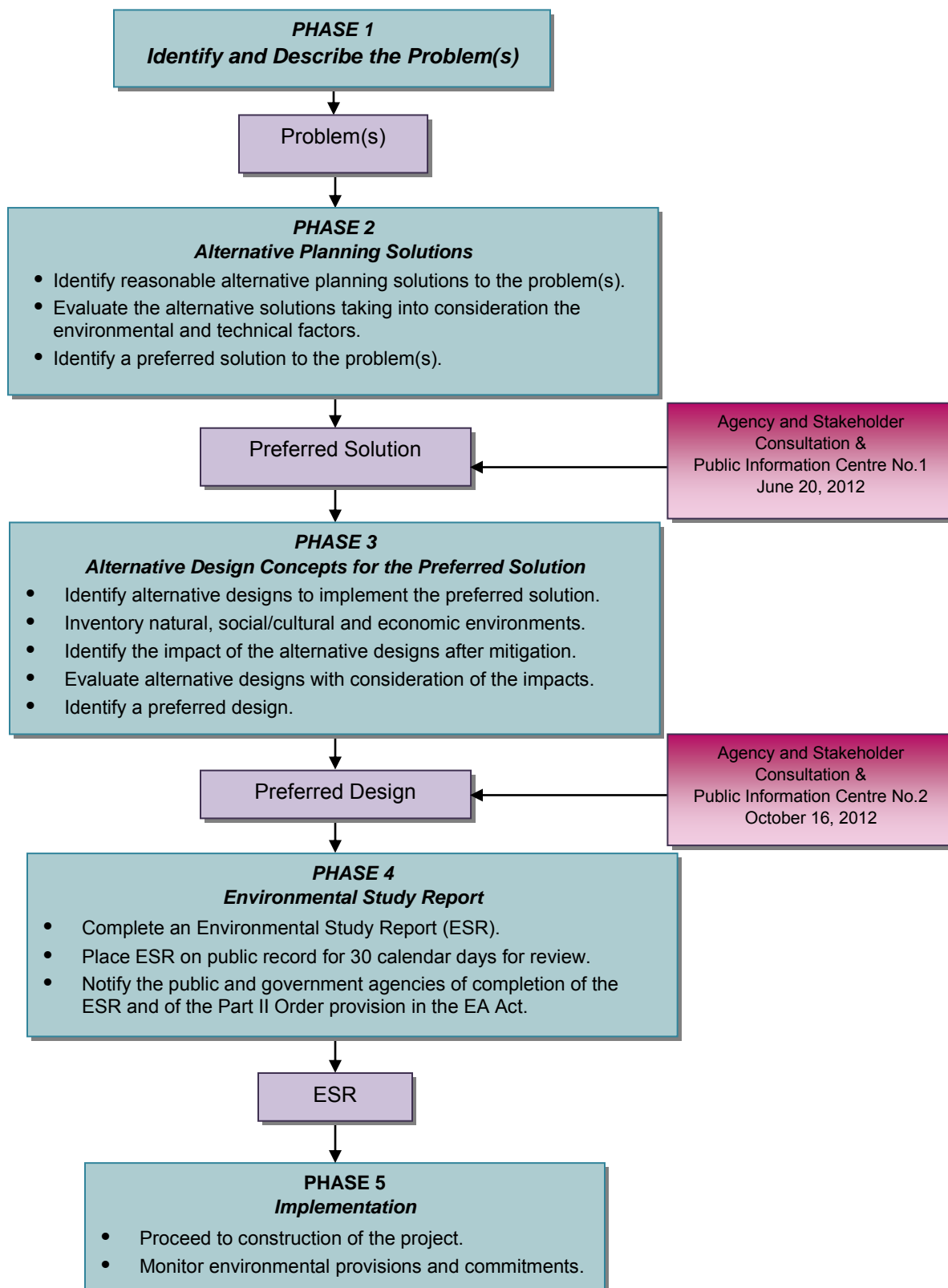
- **Schedule C** includes the construction of new facilities and major expansion of existing facilities. These projects proceed through the environmental assessment planning process outlined in the Municipal Class EA document. These projects are required to fulfill the requirements of all five phases of the Municipal Class EA process.

This project is being completed under the requirements of a Schedule C Class EA. The following Schedule C trigger applies to this project:

- Reconstruction or widening where the reconstructed road will not be for the same purpose, use or capacity or at the same location as the facility being reconstructed and the estimated cost is greater than \$2.7 million.

The Municipal Class EA requires notification of, and consultation with, relevant stakeholders. The Project Team ensured that stakeholders were notified early in the planning process, and throughout the study. Should stakeholders raise issues that cannot be resolved through discussion, these concerns would be referred to the Ministry of Environment for resolution. Figure 2.1: General Municipal Class Environmental Assessment Process illustrates a simplified version of the Municipal Class EA process for this project.

**Figure 2.1: General Municipal Class Environmental Assessment Process**



## 2.2 Schedule

The study was initiated in February 2012. Project milestones were as follows:

Table 2.1: Schedule	Date
Notice of Commencement published in newspaper (Brantford Expositor) and mailed to review agencies and affected public.	February 24, and March 2, 2012
Notice of Public Information Centre No. 1 published in newspaper (Brantford Expositor) and mailed to review agencies and affected public.	June 8 and 15, 2012
Agency meeting with Grand River Conservation Authority, County of Brant, Shellard Neighbourhood Association, Brantford Multi-Use Trail and Bikeway Advisory Committee and City of Brantford.	June 11, 2012
Hosting of Public Information Centre No. 1 at Brantford and District Civic Centre	June 20, 2012
Meeting with Brantford Power	September 20 and 28, 2012
Meeting with owners of Assumption Plaza	October 2, 2012
Notice of Public Information Centre No. 2 published in newspaper (Brantford Expositor) and mailed to review agencies and affected public.	October 5 and 12, 2012
Agency meeting with County of Brant, Grand Erie District School Board, Brantford Power, Brantford Multi-Use Trail and Bikeway A.C., Shellard Neighbourhood Association, Bell Canada and City of Brantford	October 10, 2012
Hosting of Public Information Centre No. 2 at Salvation Army Wyndfield Community Church at 33 Diana Street.	October 16, 2012
Meeting with Shellard Neighbourhood Association	October 23, 2012
Meeting with Schools and School Boards	November 12, 2012
Meeting with Grand River Conservation Authority	December 4, 2012
Documentation of Preferred Design and completion of Environmental Study Report (ESR).	Fall 2012
Meeting with Bikeways Committee	February 21, 2013
Notice of Completion and Filing Environmental Study Report (ESR), and placed on Public Record and provided for 30 day public review	March 2013

## 2.3 Project Organization

The Project Team consisted of staff from the following organizations (ref. Figure 2.2: Project Organization):

### **Proponent: City of Brantford**

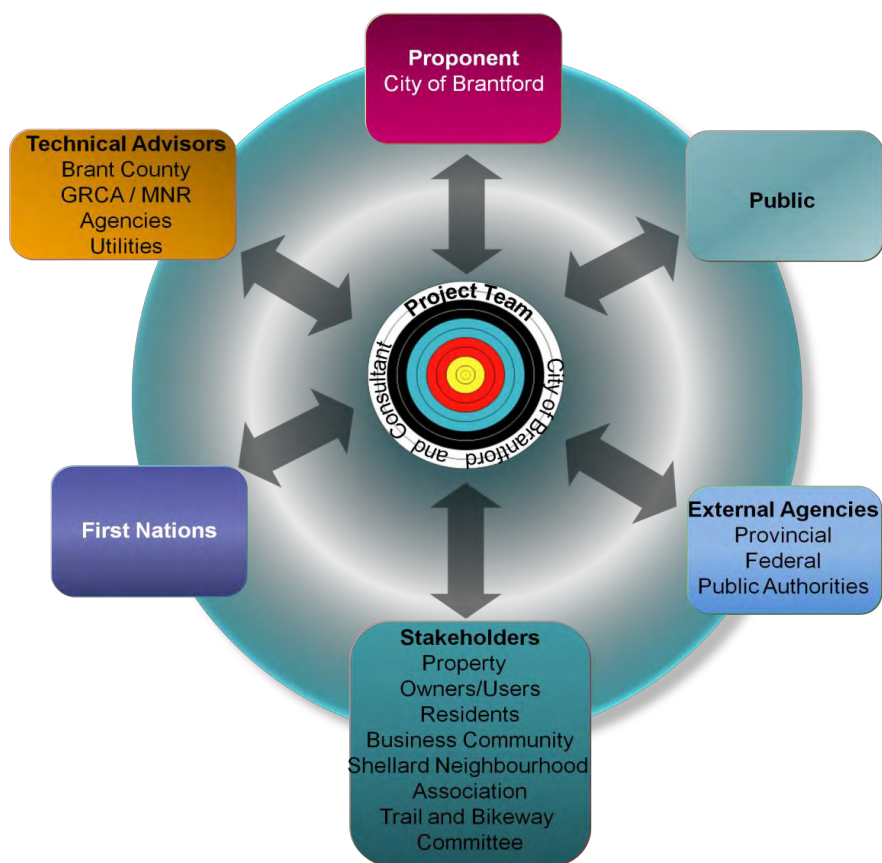
Vic Bohdanow, Project Manager  
Russ Loukes, Director, Engineering Services  
Paul Christie, Manager, Design & Construction  
Paul Moore, Manager, Policy Planning  
Norma Wood, Supervisor of Transportation & Parking Services

### **Prime Consultant: AMEC Environment & Infrastructure**

David Sinke, Project Manager  
Steve Chipps, Water Resources Engineer  
David Di Pietro, Designer  
Danny Stone, Environmental Planner  
Daryl Rideout, Environmental Biologist  
Tara Jenkins, Archaeologist

**Sub Consultant:** Paradigm Transportation Solutions Ltd.: Phil Grubb, Sr. Traffic Engineer

**Figure 2.2: Project Organization**



## 2.4 Stakeholder and Agency Consultation

### 2.4.1 Phase 1 Consultation

A Notice of Study Commencement, detailing the study area, summarizing the objectives of the study and requesting comments, was mailed and hand delivered to area residents, relevant stakeholders, property owners and organizations on February 24, 2012. In addition, a Notice of Study Commencement was published in the Brantford Expositor on February 24 and March 2, 2012 by the City of Brantford.

Responses were received from several stakeholders and agencies. Copies of the newspaper advertisement, letters to stakeholders and agencies and copies of all comments received and written responses are contained in Appendix 'A' - Notice of Study Commencement.

The following City and agency staff and stakeholders have provided comments on the study to date:

Don Boswell	Aboriginal Affairs and Northern Development Canada
Greg Picone	Assumption College School- BHNCD SB
Don Zelem	Brant Haldimand Norfolk Catholic District School Board (BHNCD SB)
Rick Weaver	Brantford Multi-Use Trail and Bikeway Advisory Committee
Craig Branton	Brantford Power
Amy Liu	Canadian Environmental Assessment Agency, Ontario Region
Larry Kings	City Councillor Ward 1
Jan Vanderstelt	City Councillor Ward 1
Russ Loukes	City of Brantford
Paul Christie	City of Brantford
Paul Moore	City of Brantford
Rob Smith	City of Brantford
Norma Wood	City of Brantford
Dan Kreze	City of Brantford
Elisabeth Van Der Made	City of Brantford
Tara Tran	City of Brantford
Paul Krysztofiak	City of Brantford
Marvin Fehrman	County of Brant
Jamie Gunn	Grand Erie District School Board
Drew Cherry	Grand River Conservation Authority
Janet Engel	Grand River Conservation Authority
Wendy Cornet	Ministry of Aboriginal Affairs
Phil Tomlinson	Principal, St. Gabriel School
Ed Long	Shellard Neighbourhood Association
Barb Walsworth	Shellard Neighbourhood Association
David Imre	Student Transportation Officer - Student Transportation Services
	Brant Haldimand Norfolk
Yvonne Huang	Union Gas Limited

## **2.4.2 Phase 2 and 3 Consultation**

Consultation with agencies and the public in Phases 2 and 3 of the Class EA process included several meetings with stakeholders and agencies and two Public Information Centres. PIC No.1 (June 20, 2012) was held at the Brantford and District Civic Centre – Auditorium, 69-79 Market Street South, Brantford and PIC No. 2, on October 16, 2012, was held at the Salvation Army Wyndfield Community Church at 33 Diana Street, Brantford. Members of the public, agencies and stakeholders were notified of the opportunity for consultation by letter and newspaper advertisement. Results of the consultation with various stakeholders are discussed in more detail in Sections 4.0 and 5.0 of this report. Minutes of meetings held in phase 2 & 3 are provided in Appendix 'K' - Meeting Minutes.

## **2.4.3 Filing of the ESR**

All parties having expressed an interest in the project, including all abutting property owners, will be notified by letter, regarding the completion of the project and filing of the ESR. In addition, a Notice of Study Completion will be placed in the local newspaper, Brantford Expositor, in accordance with the requirements of the Class EA.

Copies of the ESR will be made available at the following locations:

Engineering Desk, Brantford City Hall 100 Wellington Square, P.O. Box 818, Brantford, ON, Canada, N3T 2M3 Phone: 519-759-1350 Mon. to Fri.-8:30 a.m. to 4:30 p.m. Saturday and Sunday - closed.	Brantford Public Library - Main Library 173 Colborne Street, Brantford, ON, Canada, N3T 2G8 Phone: 519-756-2220 Mon. to Thurs. -9:00 a.m.-9:00 p.m. Friday-9:00 a.m.-6:00 p.m. Saturday-9:00 a.m.-5:00 p.m. Sunday- 1:30 p.m.-5:00 p.m.	St. Paul Avenue Branch Library 441 St. Paul Avenue Brantford, ON Tel: (519) 753-2179 Tuesday - Thursday 9:00 a.m. - 8:00 p.m. Friday 9:00 a.m. - 5:00 p.m. Saturday 9:00 a.m. - 5:00 p.m. Sunday to Monday Closed
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Online: [www.brantford.ca/ShellardLaneImprovements](http://www.brantford.ca/ShellardLaneImprovements)

A review period of not less than thirty (30) days will be provided, during which comments will be received from stakeholders and agencies. Should stakeholders raise issues that cannot be resolved through discussion with City and Consultant staff, the stakeholder may request the Minister of Environment to require the City of Brantford to complete an individual EA in accordance with Part II of the EA Act. This is known as a "Part II Order". However, it is anticipated that all concerns will be resolved through discussion between the City of Brantford and the concerned party.

### **3.0 EXISTING CONDITIONS**

The existing conditions for Shellard Lane are documented on Drawing 1.1 – Existing Conditions (rear pocket).

#### **3.1 Study Area**

The study area for this Class Environmental Assessment is located within the City of Brantford, and extends along Shellard Lane from Colborne Street West to the City of Brantford City Limit, a distance of approximately 4km (ref. Figure 1: Study Area / Key Plan).

#### **3.2 Land Use and Development Plans**

##### **3.2.1 Existing Land Use**

Within the study area, *existing* land use contiguous with Shellard Lane is a mix of urban and rural land use, as follows:

- The lands at the east end of the study area are predominantly commercial and residential land uses.
- Lands near the middle of the study area are predominantly mixed use (institutional / residential/commercial).
- Land use at the west end of the study area is predominantly agriculture and rural residential.
- Located within the study area are 3 schools:
  - Assumption College;
  - St. Gabriel Catholic School and,
  - Ryerson Heights.

##### **3.2.2 Land Use Designation/Future Land Use**

###### ***The Official Plan of the City of Brantford (October 2011)***

The City of Brantford's Official Plan designates lands within the study area as Residential (low, medium, and high density), Institutional, Commercial, Parkland & Open Space, and Natural Areas.

###### ***Secondary Plans***

The Southwest Brantford West of Conklin Secondary Plan and the North of Shellard Neighbourhood and Recreation Secondary Plan supersede the Official Plan land use designations, building upon the City of Brantford's Official Plan policies and regulations. These plans establish the land use designations and policies which will apply to the potential development of Residential (low, medium and high density), Institutional, Retail, Commercial, Greenlands, Recreational Open Space, and Natural Areas within the local area. (ref. Figure 3.1: North of Shellard Neighbourhood and Recreation Plan and Figure 3.2: Official Plan – Southwest Area Land Use).





***Natural Area Designation***

The Grand River Conservation Authority (GRCA) and the Ontario Ministry of Natural Resources (MNR) indicate that portions of the D'Aubigny Creek Swamp Provincially Significant Wetland (PSW) complex, north of Shellard Lane, occur within the study area.

**Figure 3.1: North of Shellard Neighbourhood and Recreation Plan**





Figure 3.2: Official Plan – Southwest Area Land Use





### **3.3 Transportation**

Paradigm Transportation Solutions Ltd., as sub-consultant to AMEC, has completed a Traffic Study to investigate existing and future traffic conditions in the study corridor, to assess the need for improvements to accommodate future traffic in a safe and efficient manner and to provide a traffic analysis of alternative improvements (ref. Appendix 'B' - Transportation & Traffic Report). The following sections provide a brief summary of the existing traffic and transportation conditions as presented in this report.

#### **3.3.1 Existing Roadway Network**

Shellard Lane is classified as an arterial roadway with a two-lane urban cross-section, from Colborne Street West to St. Patricks Drive / Diana Avenue. West of this location the roadway has a rural cross-section. The posted speed limit on Shellard Lane is 50 km/h throughout the study limits. Shellard Lane is a designated truck route, based on the 2007 Transportation Master Plan Update. Traffic signals are currently provided at Colborne Street West, Veterans Memorial Parkway and McGuinness Drive / Flanders Drive. Left turn lanes are provided at Colborne Street west, Hillcrest Avenue, Sobey's Plaza, Veterans Memorial Parkway and Diana Avenue(ref. Figure 3.3: Existing Lanes and Traffic Control)

#### **Sidewalks and Trails**

The City's Multi-Use Trails and Bikeway Implementation and Design Plan (MTBIDP) was developed as part of the Transportation Master Plan Update, and provides the initial plan for a City-wide bikeway and trail network.

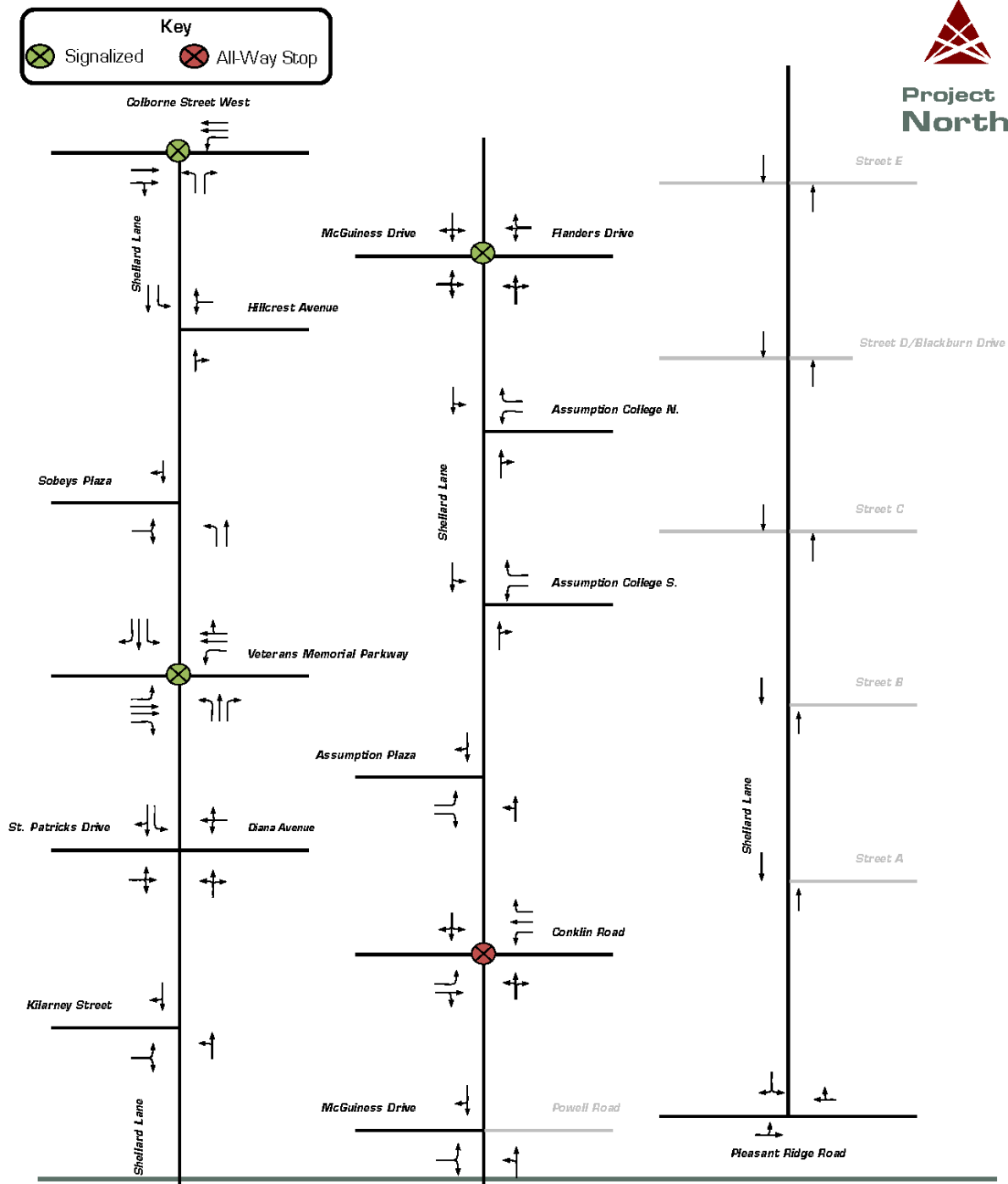
At present, along Shellard Lane, there are sidewalks from Colborne Street West to Conklin Road, intersecting to and from local roads. Two trail routes pass through the Study Area; T.H. & B. Rail Trail and Gordon Graves Memorial Pathway (along Veterans Memorial Parkway). Existing adjacent on-road facilities are designated "On-Street Cautionary Connections," and are discontinuous throughout the study area.

The current existing bicycling facilities within the study area include the following:

- Conklin Road, south of Shellard Lane – Signed On-Street Bike Route;
- Flanders Drive, south of Shellard Lane – Cautionary On-Road Connection;
- McGuinness Drive, north of Shellard lane – Cautionary On-Road Connection;
- Diana Avenue, south of Shellard lane – Cautionary On-Road Connection, and
- Veterans Memorial Parkway, north of Shellard Lane – Paved Multi-Use Trail.

The Southwest Brantford West of Conklin Urban Design Guidelines propose both a sidewalk and 3.0 m wide bicycle lane on one side of Shellard Lane, and a sidewalk on the opposite side.

**Figure 3.3: Existing Lanes and Traffic Control**



## Pedestrians and Cyclist

Pedestrian volumes were determined as part of the traffic counts completed for this study. The highest pedestrian volumes during the weekday afternoon peak hours were observed between Flanders Drive and Conklin Road, generated by the three schools present within this stretch of Shellard Lane; Assumption College, Ryerson Heights and St. Gabriel Catholic School. In general, a lower level of pedestrian activity was observed east of Killarney Street and west of Conklin Road. The relative levels of pedestrian activity at each intersection are illustrated in Figure 3.4: 2011 Pedestrian Volumes PM Peak Hour.

Data on existing cyclist volumes was derived from the City's Transportation Today Survey (TTS). Table 3.1: Existing and Projected Number of Cyclists, provides an estimation of the number of cyclists along Shellard Lane (existing and 2027) based on the assumption from TTS that 0.4% of all trips are cycling oriented. Actual data on existing cyclists was available at the intersections of Shellard Lane, with Flanders Drive and St. Patrick's Drive only. The actual volumes at these intersections indicate daily volumes of approximately 5 – 16 cyclists, as opposed to estimated volumes using the TTS data, of 27 – 35 cyclists within the roadway segment. Based on this, this section of Shellard lane has fewer cycle trips than would be expected. This is understood to be due to a lack of appropriate facilities at the present time, not due to a lack of demand. Cyclist traffic is anticipated to grow as appropriate facilities are provided.

**Table 3.1: Existing and Projected Number of Cyclists**

Roadway	Segment		2011 Number of Cyclists (Two-Way) Daily (0.4% of Daily Traffic)	2027 Number of Cyclists (Two-Way) Daily (0.4% of Daily Traffic)	2011 Two-Way Traffic Volumes AADT	2027 Two-Way Traffic Volumes AADT
Shellard Lane	Colborne Street	Hillcrest Avenue	27	42	6,800	10,510
	Hillcrest Avenue	Sobeys Plaza	27	42	6,830	10,540
	Sobeys Plaza	VMP	31	46	7,700	11,560
	VMP	Diana Avenue	47	107	11,660	26,650
	Diana Avenue	Killarney Street	35	94	8,800	23,400
	Killarney Street	McGuinness Dr./Flanders Dr.	33	91	8,160	22,660
	McGuinness Drive/Flanders Drive	Assumption College N.	27	90	6,750	22,580
	Assumption College N.	Assumption College S.	24	86	6,000	21,600
	Assumption College S.	Assumption Plaza	21	83	5,340	20,730
	Assumption Plaza	Conklin Road	19	80	4,640	19,900
	Conklin Road	McGuinness Dr. / Powell Rd.	8	56	2,110	13,990
	McGuinness Drive/Powell Road	Street E	7	55	1,750	13,670
	Street E	Street D	7	41	1,750	10,350
	Street D	Street C	7	34	1,750	8,440

**Table 3.1: Existing and Projected Number of Cyclists**

Roadway	Segment		2011 Number of Cyclists (Two-Way) Daily (0.4% of Daily Traffic)	2027 Number of Cyclists (Two-Way) Daily (0.4% of Daily Traffic)	2011 Two-Way Traffic Volumes AADT	2027 Two-Way Traffic Volumes AADT
	Street C	Street B	7	30	1,750	7,500
	Street B	Street A	7	29	1,750	7,270
	Street A	Pleasant Ridge Road	7	29	1,750	7,210

### Transit

Local transit service is provided by Brantford Transit, which is operated by the Fleet and Transit Services of the City of Brantford. The study area is currently serviced by Brantford Transit Route 6, which provides service six days a week (Monday to Saturday) and Route 12 which provides service seven days a week.

The bus stop locations along Shellard Lane are as follows:

**VMP Stop:** A southbound bus stop is located south of VMP in the curb lane of Shellard Lane, where the four-lane cross-section is present. The curb lane in the southbound direction of Shellard Lane ends, thus this lane is not expected to be utilized for automobile traffic as much as the inside lane.

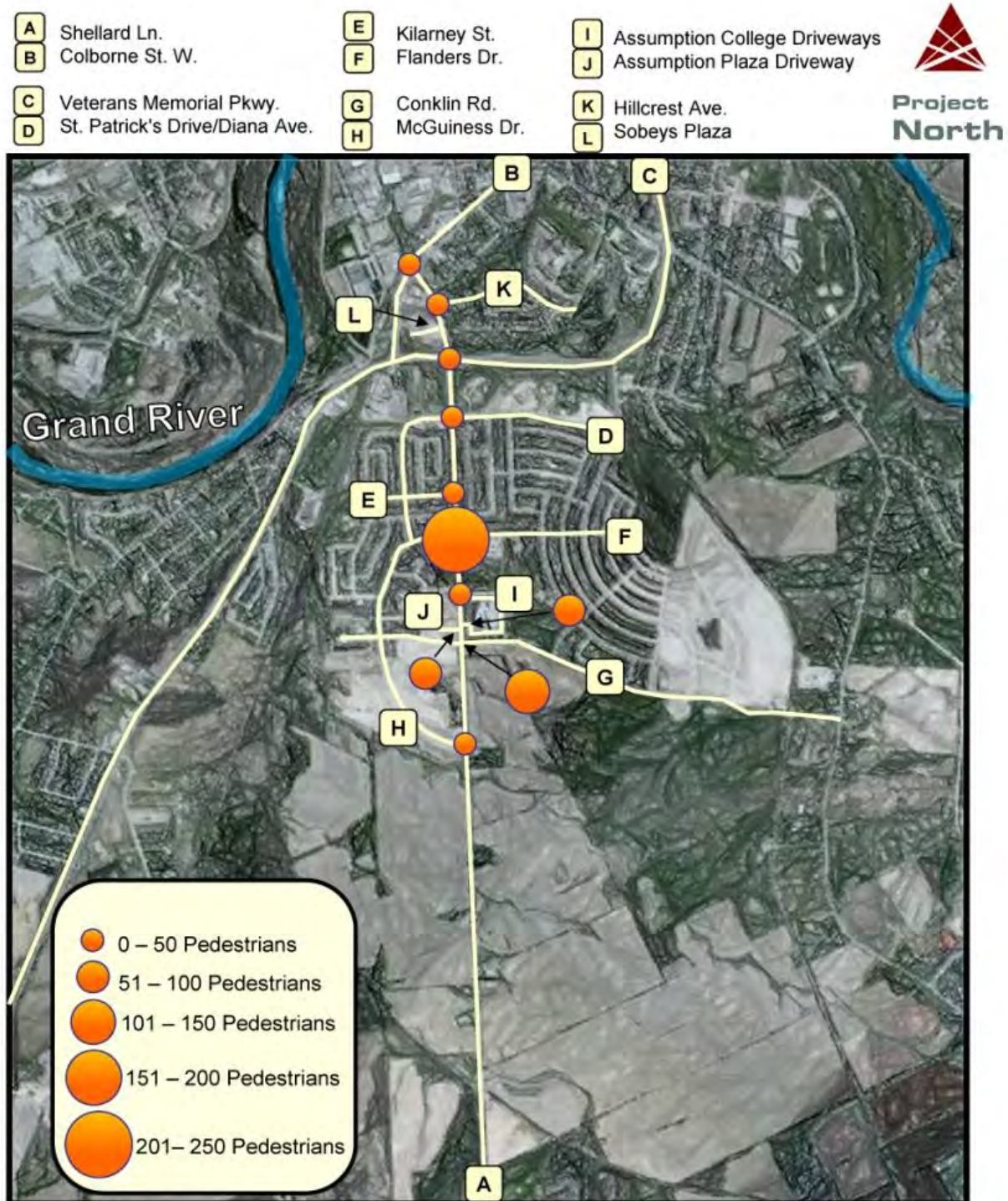
**Diana Avenue Shelter Stop:** A northbound bus stop is situated south of Diana Avenue, in an area where busses are able to use the shoulder of Shellard Lane to minimize any disruption to northbound through traffic on Shellard Lane.

**Conklin Road Stop:** A southbound bus stop is located north of Conklin Road, in an area where busses are able to use the shoulder of Shellard Lane to minimize any disruption to southbound through traffic on Shellard Lane.

**Assumption College Shelter Stop:** A northbound bus stop is located north of Assumption College North Drive in an area where busses are able to use the shoulder of Shellard Lane to minimize any disruption to northbound through traffic on Shellard Lane.



**Figure 3.4: 2011 Pedestrian Volumes PM Peak Hour**



### **3.3.2 Existing Traffic Conditions**

The existing traffic volumes (ref. Figure 3.5: 2012 Existing PM Peak Traffic Volumes) have been established using count data provided by the City of Brantford (ref. Appendix B - Transportation & Traffic Report).

The key traffic characteristics to note are as follows:

- The signalized intersection of Colborne Street and Shellard Lane is generally operating with acceptable levels of service during the AM and PM peak hours. However, it is noted that during the PM peak hour, the eastbound right turn movement operates poorly. There may be opportunity to improve operations of this movement by optimization of the signal timing.
- The unsignalized intersection of Hillcrest Avenue and Shellard Lane is operating with acceptable levels of service during the AM and PM peak hours.
- The unsignalized intersection of Sobeys Plaza and Shellard Lane is operating with acceptable levels of service during the AM and PM peak hours.
- The signalized intersection of VMP and Shellard Lane is operating with acceptable levels of service during the AM and PM peak hours.
- The unsignalized intersection of St. Patrick's Drive / Diana Avenue and Shellard Lane is operating with acceptable levels of service during the AM and PM peak hours, however, the stop controlled southbound approach on St. Patrick's Drive is operating poorly during the PM peak hour. The high delay can be contributed to the amount of through traffic on Shellard Lane.
- The unsignalized intersection of Killarney Street and Shellard Lane is operating with acceptable levels of service during the AM and PM peak hours.
- The signalized intersection of McGuiness Drive / Flanders Drive and Shellard Lane is operating with acceptable levels of service during the AM and PM peak hours.
- The unsignalized intersection of Assumption College East and West with Shellard Lane is operating with acceptable levels of service during the AM and PM peak hours.
- The unsignalized intersection of Assumption Plaza and Shellard Lane is operating with acceptable levels of service during the AM and PM peak hours.
- The unsignalized intersection of Conklin Road and Shellard Lane is operating with acceptable levels of service during the AM and PM peak hours.
- The unsignalized intersection of McGuiness Drive and Shellard Lane is operating with acceptable levels of service during the AM and PM peak hours.



**Project  
North**



### **3.3.3 Traffic Safety**

A review of collision records was completed as part of the transportation and traffic study, with the objective of identifying areas of concern (ref. Appendix „B’ – Transportation and Traffic Report). Collision data provides the core information for analyzing safety history, identifying instances where drivers, vehicles, and roadway conditions failed to function properly.

The signalized intersection of Shellard Lane and Colborne Street West was ranked as the twelfth highest collision location in 2011 out of one hundred signalized intersections within the City of Brantford. The signalized intersection of Veterans Memorial Parkway was ranked thirty-eighth within the City of Brantford. The intersections of Shellard Lane with Colborne Street West has higher than typical collision rates. Two pedestrian/vehicle collisions have occurred on Shellard Lane in the past 5 years; one collision at Shellard Lane and Colborne Street West and one collision at Shellard Lane and Killarney Street. Areas of historically high collision rates should be addressed through countermeasures in the roadway improvement plan.

Observations taken in November 2012 at the intersection of Shellard Lane and the driveway connections to the Assumption Plaza and Assumption College identified that a high number of mid-block pedestrian crossings take place. The observations also noticed that some motorists travelling in the eastbound and westbound directions had to stop abruptly as some pedestrians did not wait for a suitable gap within the traffic stream. These mid block crossings by students pose a pedestrian safety and collision risk which should be addressed by the proposed roadway improvements.

### **3.3.4 Future Traffic Conditions**

The future traffic conditions have been estimated for a study horizon year of 2027, based on forecasts developed by the City of Brantford, supplemented with estimates of the traffic that are expected to result from planned development within the study area (ref. Appendix „B’ - Transportation & Traffic Report). The projected pm traffic volumes are shown in Figure 3.5.

### **3.3.5 Future Transit and Active Transportation**

According to the 2007 Brantford Transportation Master Plan Update, Brantford is expected to provide incremental transit service expansion matching the rate of development in Southwest Brantford. Brantford Transit will ultimately determine the routing pattern and frequency of service for this area. It is estimated that the current transit modal split is 3%. The City of Brantford has begun a more aggressive „Transit Focus’ in conjunction with the realization of new growth in the downtown. The „Transit Focus’ will target improvements to key routes, through optimization and / or the addition of trunk routes along major arterials and corridors. It is envisioned that over 25 years the strategy will lead to increased transit ridership and improve the transit modal split to 6%.

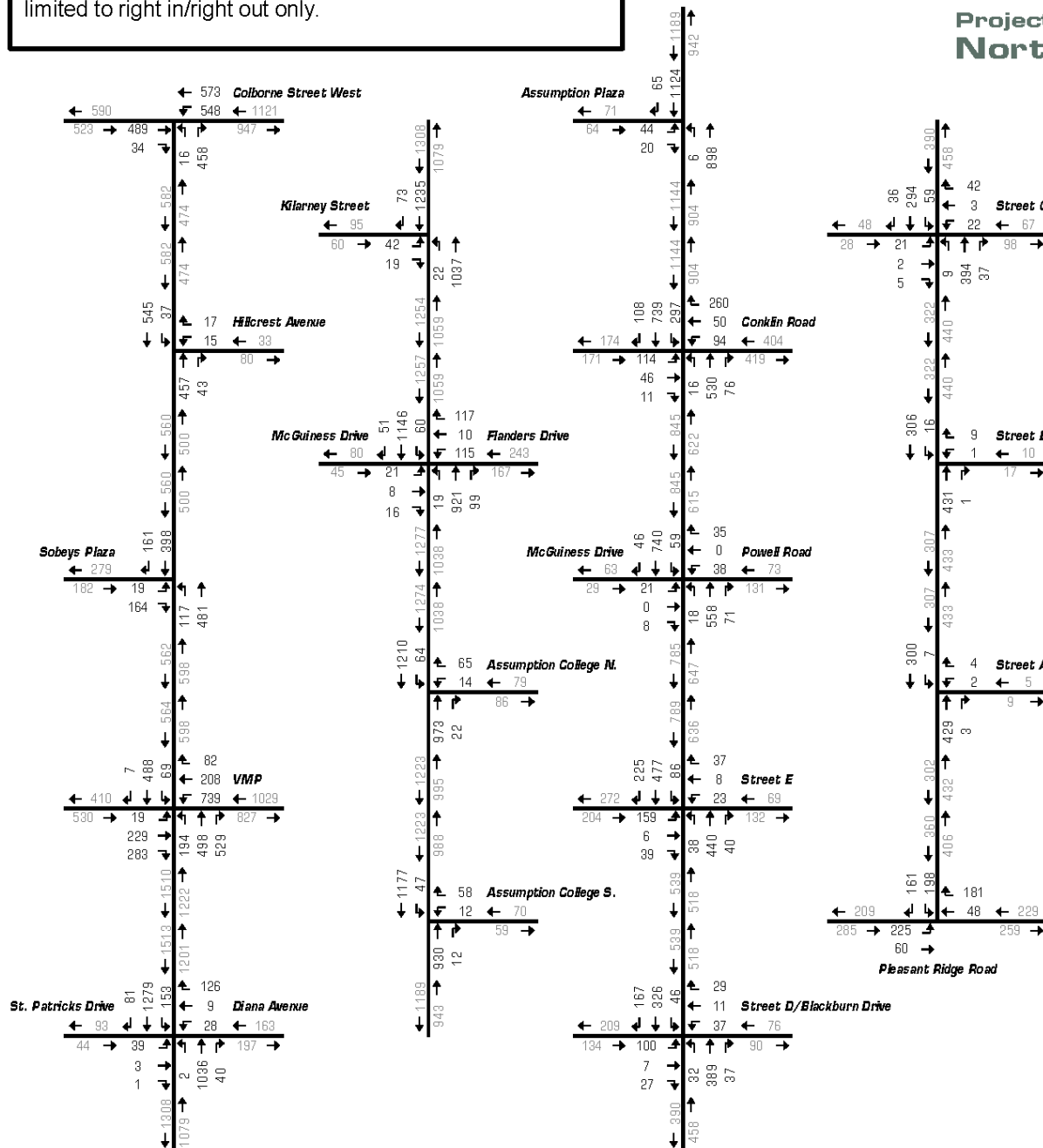


**Figure 3.6: 2027 PM Peak Traffic Volumes**

\*Refer to Appendix B for additional forecasts of Assumption Plaza and Assumption College S. Driveway Connections limited to right in/right out only.



**Project  
North**



The City of Brantford's 2000 Multi-Use Trail and Bikeway Implementation and Design Plan sets out an implementation plan for a city-wide pathway system. Active Transportation is also a key component of the City of Brantford's 2007 Transportation Master Plan Update. A key objective of the 2007 Transportation Master Plan Update is to promote bicycle use for purposes other than recreation, such as work and shopping.

### 3.3.6 Pavement Condition

AMEC completed an assessment of the existing pavement as part of the Geotechnical Investigation for Shellard Lane (ref. Appendix „C' – Geotechnical Investigation Report). The assessment found that pavement conditions from Veterans Memorial Parkway to the west limit are in poor to very poor condition except for the first 240 m west of Veterans Memorial Parkway, which is in very good condition.

### 3.3.7 Drainage Structures

There are a total of seven culvert structures along Shellard Lane, including box, corrugated steel pipe (CSP) and open footing culverts (ref Table 3.2).

**Table 3.2: Summary of Drainage Structures**

Watershed	Crossing No & Watercourse Name	Drainage Area (ha)	Existing Culvert
Grand River	C1 Sta 9+845 (D'Aubigny Creek)	486	3.6 m x 1.7 m x 18.1 m Concrete Open Footing Culvert *
	K (C2) Sta 10+208	11.4	0.6 m dia x 18.3 m CSP
	G (C3) Sta 10+685	33.4	1.5 m x 1.05 m x 16.8 m CSP Arch
	E (C4) Sta 11+155	144.1	1.8 m x 0.7 m x 11.5 m Concrete Open Footing Culvert
	D (C5) Sta 11+595	29.0	1.05 m x 0.70 m x 29.7 m HE CSP
	C (C6) Sta 12+735	NA	Enclosed in storm sewer with adjacent development
	B (C7)	NA	Enclosed in storm sewer with adjacent development
	Zone „A' Stormwater storage facility (C8)	195.0	Twin 3.05m x 1.5m x 26.4 m Concrete Open Footing Culvert

\* Ref. Appendix 'D' - D'Aubigny Creek Structure Inventory

## 3.4 Natural Environment

AMEC completed a natural environment existing conditions survey (ref. Appendix E – Terrestrial Ecosystem Existing Conditions). The natural features within the study are summarized in Figure 3.7: Significant Natural Areas. .

The study area is characterized by a high level of disturbance and fragmentation. Approximately 80% of the study area includes agricultural fields, existing roadways, and developed lands in the form of residential, commercial and institutional buildings. There is also a Storm Water Project No. TP112023



Management Pond (SWMP) and eight drainage features within the study area that fall within the Grand River watershed. Three of the drainage features provide direct fish habitat, three provide indirect fish habitat, and two do not provide fish habitat.



There is one significant natural area, the D'Aubigny Creek Swamp Provincially Significant Wetland (PSW), which is fragmented throughout the study area but is primarily north of Shellard Lane in association with the D'Aubigny Creek valley. D'Aubigny Creek is a permanent coldwater stream that provides habitat for a number of coldwater species, and the associated PSW is comprised of deciduous forest as well as Cattail marsh communities.

The most notable terrestrial areas within the project area are the forested lands. A large mature deciduous forest was identified at the west end of the study area. The forest is a relatively significant natural feature in context of the project area landscape, given that the area is characterized by a high degree of disturbance and fragmentation. Two Dry-Fresh Sugar Maple-White Ash Deciduous Forest communities were identified west of Flanders Drive/McGuinness Drive. The similarity in structure and composition suggests that the two communities were likely once one large forested tract that has now been disturbed by development and fragmented by Shellard Lane.

#### **3.4.1 Wildlife**

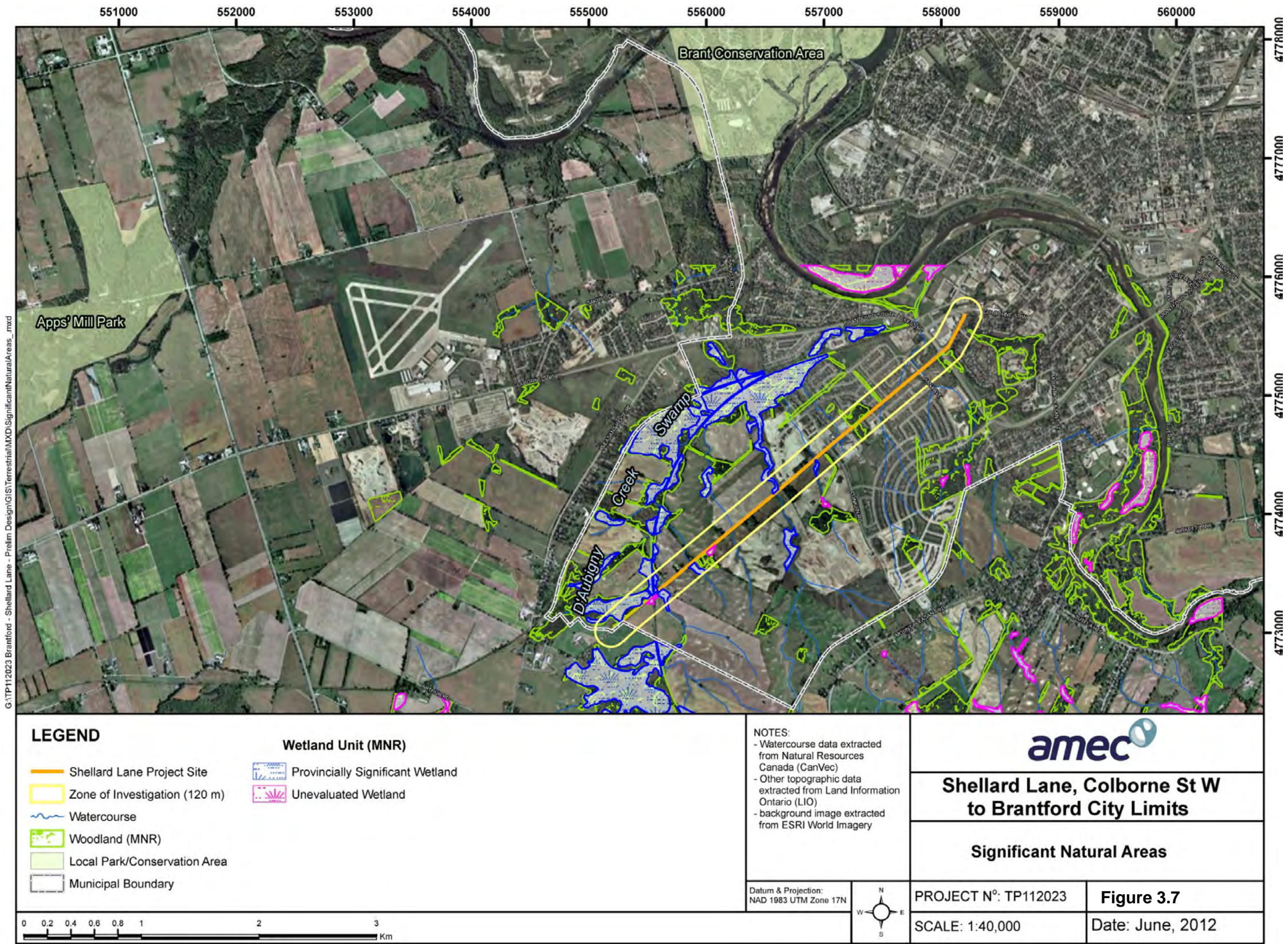
Inventories of wildlife were compiled from available literature and resources. Based on a review of background information, 118 species of birds, 36 species of mammals, and 26 species of amphibians and reptiles are known to occur within the region encompassing the study area. A compiled wildlife species list is presented in Appendix 'E' - Terrestrial Ecosystem Existing Conditions.

#### **3.4.2 Species of Conservation Concern**

A secondary source review revealed 13 plant species, 12 bird species, 3 mammal species and 6 reptile species of conservation concern documented within the vicinity of the study area. It is important to note that the exact locations of these species are not available through the reviewed databases. As a result, it is unknown if these species are present within 120 m of the project area. Probabilities of occurrence for potential species of conservation concern were derived by known habitat preferences of each potential species and distribution of existing habitat types within the study area. Further, correspondence with the MNR Guelph district did not indicate any records of Species at Risk that have been recorded within the study area (MNR 2012).



Figure 3.7: Significant Natural Areas





There are two high-level policy areas within the Shellard Lane corridor: Eastern Meadowlark, Bobolink and Barn Swallow are listed as Threatened under the ESA and are therefore protected under both the federal and provincial species at risk legislations which prohibit destroying critical or essential habitat for threatened and endangered SAR. The Species at Risk Act (SARA 2002) is federal legislation protecting designated SAR in Canada. The provincial Endangered Species Act (ESA 2007) is similar to SARA; however, it applies to provincially designated SAR, including habitat regulation for each endangered and threatened species in Ontario. Correspondence from MNR on December 14, 2012 confirmed that if the project adheres to the appropriate construction window (September 1st to February 28<sup>th</sup>) for work on culverts with Barn Swallow habitat, an Endangered Species Act (ESA) authorization from MNR is not anticipated to be required for Barn Swallow. With respect to Eastern Meadowlark and Bobolink, MNR confirmed that if suitable nesting habitat is avoided, or if disturbance is avoided until after the breeding season, ESA authorization is not expected to be required. Ongoing consultation with MNR will be required to ensure that any newly regulated SAR potentially interacting with construction activities are considered.

The Monarch butterfly was observed along the roadside adjacent to agricultural fields within the study area, and is listed under the SARA and ESA as Special Concern. As such, this species is not officially protected under the SARA or ESA; however the Monarch receives protection under the Fish and Wildlife Conservation Act (FWCA 1997) as a “specially protected invertebrate”. Monarchs exist primarily wherever milkweed (*Asclepius*) and wildflowers exist. This includes abandoned farmland, along roadsides, and other open spaces where these plants grow (Environment Canada 2010). Black Swallowtail, while not a SAR, is also listed as a specially protected invertebrate and as such receives protection under the Fish and Wildlife Conservation Act. Three Black Swallowtail individuals were observed within the study area.

#### **3.4.2.1    *Plants***

Records of 13 plant species were revealed during a review of NHIC element occurrences within 1 km of the study area (MNR 2010). All 13 plant species are provincial species of conservation concern and probability of occurrence within the study area is very low. The thirteenth species (Dwarf Chinquapin Oak, Provincial S-rank S2), have a low probability of occurring within the study area.

Butternut trees are listed as Endangered under the SARA and ESA. This species has been identified in two woodlots along Shellard Lane and within a hedgerow along the north-west side of one of those woodlots (LGL 2008). The woodlots are outside of the study area but are within 0.5 km. It is likely that other Butternut trees occur within the area.

#### **3.4.2.2    *Birds***

The majority of the bird species recorded are ranked as common to very common, however two species are provincially ranked as rare, and ten species are ranked as Endangered or Threatened under the SARA / ESA, (Appendix 'E' - Terrestrial Ecosystem Existing Conditions). The study area is largely open and agricultural, with no suitable habitat.

Species at Risk (SAR) Barn Swallow (*Hirundo rustica*; provincially listed as Threatened under the ESA and designated as Threatened by COSEWIC (Committee on the Status of Endangered Wildlife in Canada) was identified in the study area. Barn Swallow was recorded at one breeding bird point count location. Nests were also observed adhered to the inside of two water crossings (at C1) located approximately 1 km west of the Barn Swallow bird survey observation. An additional two bird species provincially listed as Threatened, Bobolink (*Dolichonyx oryzivorus*) and Eastern Meadowlark (*Sturnella magna*), were observed flying over an agricultural field within the study area.

Bobolink – Bobolink is listed as Threatened under the ESA and designated as Threatened by COSEWIC. Probability of occurrence for Bobolink is moderate.

The Acadian Flycatcher is designated as Endangered under the SARA and ESA. There is a low probability of this species occurring within the study area.

Canada Warbler is designated as Threatened under the SARA, and Special Concern under the ESA. There is a low probability of this species occurring within the study area.

The Cerulean Warbler is designated as Special Concern under the ESA, and Threatened under the ESA. There is a low probability of Cerulean Warbler occurring within the study area.

The Chimney Swift is designated as Threatened under the SARA. There is a low probability of Chimney Swift occurring within the study area.

Common Nighthawk, this species is listed as Threatened under the SARA and Special Concern under the ESA, the probability of occurrence for Common Nighthawk within the study area is low.

Eastern Meadowlark – Eastern Meadowlark is designated as Threatened under the ESA and designated as Threatened by COSEWIC. Suitable habitat occurs within the study area; there is a moderate probability of the Eastern Meadowlark occurring within the study area.

The Golden-winged Warbler is designed as Threatened by COSEWIC and Special Concern by SARO. Probability of occurrence of Golden-winged Warbler within the study area is low.

Red-headed Woodpecker – This species is listed as Threatened by COSEWIC and Special Concern by SARO. The probability of occurrence of Red-headed Woodpecker within the study area is low.

### **3.4.2.3 Mammals**

In Ontario, the Eastern Small-footed Bat and the Northern Long-eared Bat are less common bat species, the probability of occurrence of these bat species within the study area is low.

The Woodland Vole is designated as Special Concern under the SARA and ESA and is restricted to highly fragmented areas of southern Ontario, the probability of occurrence of the Woodland Vole within the study area is low.

#### **3.4.2.4    *Amphibians and Reptiles***

There is a low probability of Common Snapping Turtle, Northern Map Turtle or Blanding's Turtle occurring within the study area.

Eastern Hognose Snake, the Special Concern species occurring within the study area is low.

Eastern Milksnake, the probability of this species occurring within the study area is moderate to low.

No mammal, amphibian or reptile species of concern were observed within the study area. Ongoing consultation with MNR will be required to ensure that any newly regulated SAR potentially interacting with construction activities are considered.

#### **3.4.3    *Fisheries and Fish Habitat***

A Fish and Fish Habitat Study was conducted by AMEC (ref. Appendix 'F' - Fish and Fish Habitat Existing Conditions Report). The study area extends along Shellard Lane and includes the existing ROW (45 m on either side of Shellard Lane, as designated by the City of Brantford Official Plan) and an additional 50 m upstream and 200 m downstream at each watercourse crossing. The proposed project includes eight drainage feature crossings. The aquatic ecosystem conditions as observed during the 2012 field investigations are summarized below. An aerial view of the site (Figure 3.7: Significant Natural Areas) provides a reference for the drainage system orientation with respect to Shellard Lane with a more detailed view of the area illustrated in Appendix 'F' - Fish and Fish Habitat Existing Conditions Report

As noted previously, the study area as a whole has been heavily influenced by human activity and is largely comprised of agricultural land use on the western portion and residential land use on the eastern portion (Figure 3.7 Significant Natural Areas). The natural areas remaining in the vicinity are primarily confined to the D'Aubigny Creek corridor and the wetland area surrounding the unnamed tributaries at Crossings K, E and D.

The drainage features in the study area range from short reaches between piped sections to natural streams. Habitat, fish community, and overall sensitivity vary depending on the tributary. A summary of flow status, channel form, fish communities and habitat and fish community sensitivity for each drainage feature is provided in Table 3.3 (Summary of Fisheries Habitat) below.

Correspondence with GRCA has confirmed that the MNR Fish Spawning Area GIS layer has identified a Brook Trout spawning area 135 m downstream of the C1 crossing. It is recommended that this area undergo further risk assessment during the Detail Design permitting.

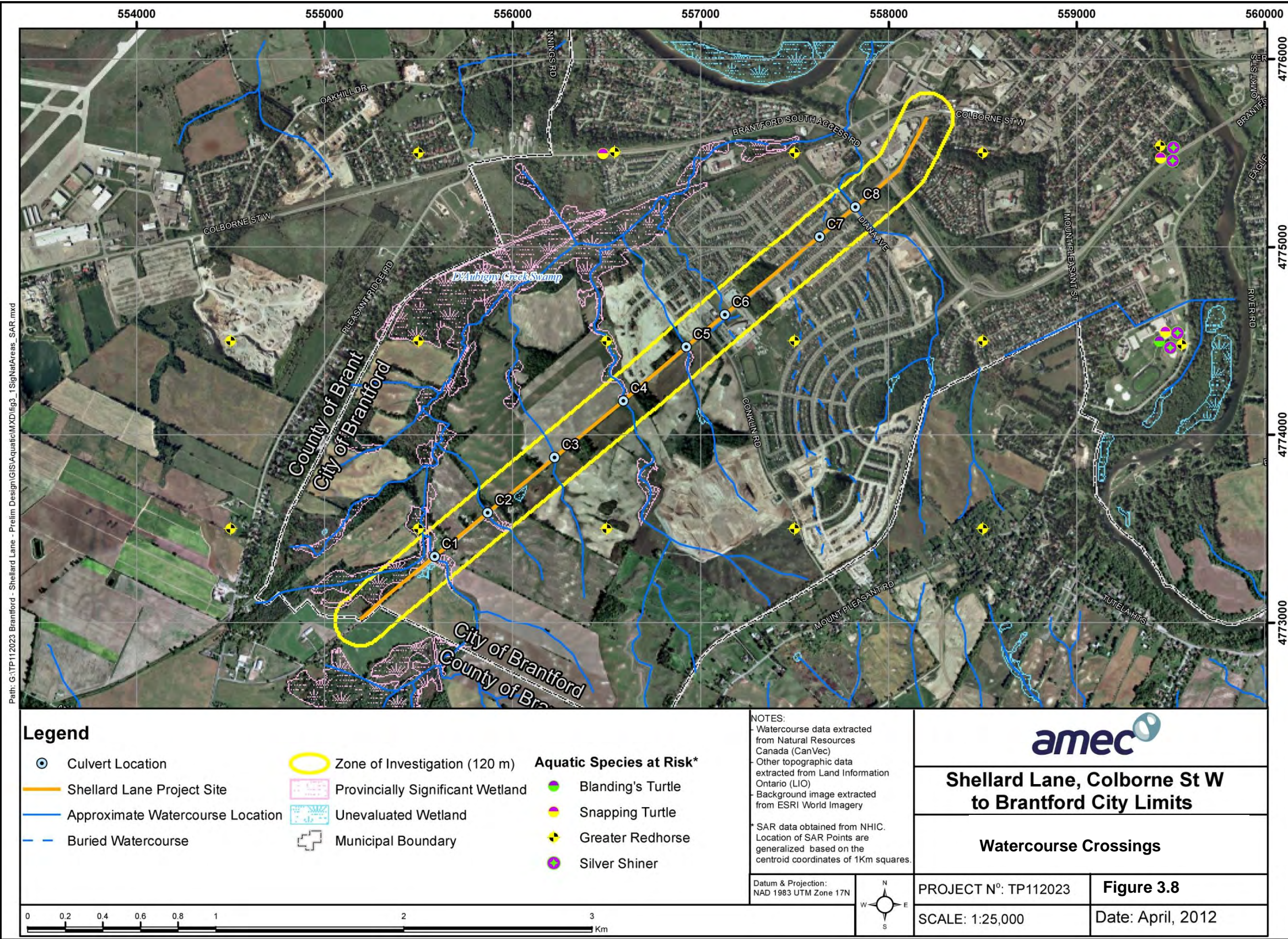
**Table 3.3: Summary of Fisheries Habitat**

Watershed	Crossing No & Watercourse Name	Flow	Thermal Regime	Drainage Area (ha)	Fish Species Present	Fish Habitat Sensitivity <sup>5</sup>	Existing Culvert
Grand River	C1 (D'Aubigny Creek)	Permanent	Coldwater	486	Brook Trout Brown Trout Rainbow Trout Longnose Dace Brook Stickleback Mottled Sculpin Longnose Sucker Fathead Minnow	High	3.6 m x 1.7 m x 18.1 m Concrete Open Footing Culvert
	K (C2)	Ephemeral	Warmwater	11.4	Unable to electrofish	Low	0.6 m dia x 18.3 m CSP
	G (C3)	Ephemeral	Warmwater	33.4	Unable to electrofish	Low	1.5 m x 1.05 m x 16.8 m CSP Arch
	E (C4)	Intermittent	Warmwater	144.1	Pumpkinseed <sup>4</sup> Fathead Minnow <sup>4</sup>	low sensitivity	1.8 m x 0.7 m x 11.5 m Concrete Open Footing Culvert
	D (C5)	Intermittent	Warmwater	29.0	No catch downstream Unable to electrofish upstream	Low	1.05 m x 0.70 m x 29.7 m HE CSP
	C (C6)	Ephemeral	Warmwater	NA	Unable to electrofish	Low	Enclosed in storm sewer with adjacent development
	B (C7)	Ephemeral	Warmwater	NA	Unable to electrofish	-	Enclosed in storm sewer with adjacent development
	Zone 'A' Stormwater storage facility (C8)	Permanent	Coldwater	195.0	Goldfish <sup>4</sup>	Moderate	Twin 3.05 m x 1.5 m x 26.4 m Concrete Open Footing Culvert





Figure 3.8: Watercourse Crossings





#### **3.4.4 Stormwater**

The study area is within the D'Aubigny Creek Watershed and the main branch of D'Aubigny Creek crosses Shellard Lane at the west end of the study. Various tributaries of D'Aubigny Creek cross the road within both the developed and rural areas (ref Figure 3.8: Watercourse Crossings). Tributaries A to K drain south to north across Shellard Lane. Tributaries A to D located within the Zones A and B have been either been urbanized, or at the easterly limit of the study area, have been included in the Zone A stormwater management facility. The Zone C crossings, consisting of Tributaries D to K, in addition to the D'Aubigny main branch, are open channels with culverts within the Shellard Lane right-of-way. The existing creek crossings have been documented in various reports including the Fisheries Assessment for this study (ref. Appendix 'H' - Stormwater Management Report).

The existing roadway is partially urbanized with storm sewers but still uses road side ditches to convey drainage, for the westerly section of the study area.

### **3.5 Social-Economic Environment**

#### **3.5.1 Utilities**

At present, there are various utilities present within the Shellard Lane right-of-way. Existing utilities are summarized as follows

**Hydro One** – No Hydro One plant reported in the study area.

**Brantford Power** – Existing plant from Colborne Street West to McGuiness Drive/Powell Road on the north side of Shellard Lane. West of McGuiness Drive/Powell Road the hydro poles transition to the south side of Shellard Lane for a distance of approximately 345 m before transitioning back to the north side for a distance of approximately 435 m and transitioning back to the south side and stopping approximately 25m past the former T.H.&B. (Rail Trail).

**Union Gas** – There are no existing underground mains on Shellard Lane between Conklin and the west city boundary. Steel and plastic mains of various sizes exist within the study area between Conklin Road and Colborne Street West.

**Rogers Cable** – Existing underground and aerial plant runs from Colborne Street West to Conklin Road along Shellard Lane.

**Bell Canada** – Existing underground and aerial plant on north and south sides of Shellard Lane from Colborne Street West to Pleasant Ridge Road.

### **3.5.2 Archaeological**

A Stage 1 Archaeological Assessment has been completed by AMEC for this study (ref. Appendix „I’ – Stage 1 Archaeological Assessment).

The Stage 1 background study and property inspection documents the archaeological and land use history of the study corridor and its current geography and topography in order to assess its archaeological potential.

The Stage 1 background study suggests that the study corridor has archaeological potential and warrants a Stage 2 property assessment due to three main factors. Firstly, some land within the study corridor is within 300 metres of historically mapped and current tributaries of D’Aubigny Creek. Secondly, there are 120 registered archaeological sites within a one-kilometre radius and nine of these have been found within the study corridor. And thirdly, the study corridor surrounds a historic transportation route (post-1858).

The Stage 1 property inspection indicated that approximately 49 percent of the study corridor consists of undeveloped land with archaeological potential. The Stage 1 background study and property inspection concludes that any development-related impact on these areas first requires a Stage 2 property assessment to be conducted.

In light of these results, the following recommendations are made, subject to the conditions outlined in Appendix ‘I’ – Stage 1 Archaeological Assessment.

- i. Should the proposed road improvements to Shellard Lane result in encroachment upon previously undisturbed lands determined by AMEC to have archaeological site potential, a Stage 2 archaeological assessment should be conducted in accordance with the Ministry of Tourism, Culture and Sport’s *Standards and Guidelines for Consultant Archaeologists* (2011), prior to any land disturbance.
- ii. Should the Stage 2 archaeological assessment result in the identification of a previously registered site, AMEC will evaluate the site under the Ministry of Tourism, Culture and Sport’s *Standards and Guidelines for Consultant Archaeologists* (2011) and will make further recommendations.
- iii. No additional archaeological assessment is required within the remainder of the study corridors, which do not exhibit archaeological site potential. These areas may be considered clear of further archaeological concern.

## **4.0 DEVELOPMENT AND EVALUATION OF ALTERNATIVE PLANNING SOLUTIONS**

### **4.1 Problem/Opportunity Definition**

Based on a review of existing and future conditions, as well as preliminary consultation with stakeholders, it has been determined that improvements are needed along the Shellard Lane corridor in order to:

- Accommodate existing and future (projected 2027) traffic demand;
- Accommodate pedestrian and cyclist movements through the corridor;
- Accommodate future transportation network;
- Accommodate transit system along the corridor;
- Address poor pavement condition;
- Provide for urbanization of the roadway;
- Address traffic operations and safety related to access to residential, commercial and institutional entrances;
- Accommodate pedestrian crossing safety issues at Assumption College/Assumption Plaza;
- Address sight distance issue on Shellard Lane west of Flanders, and
- Address drainage deficiencies and opportunities for Stormwater Management.

#### ***Accommodate existing and future (projected 2027) traffic demand***

Shellard Lane is currently operating at a moderate level of service, with some congestion at intersections during the peak hours. Only minor improvements to the corridor are required to address existing traffic congestion, however, with anticipated growth in the area, Shellard Lane will not be able to support future traffic volumes. If no improvements are made to the corridor, significant levels of congestion will occur, which would result in infiltration of Shellard Lane traffic into adjacent residential neighbourhoods.

#### ***Accommodate pedestrian and cyclist movements through the corridor***

Existing and future residential development in the area will generate both cyclist and pedestrian traffic along the Shellard Lane Corridor. The City of Brantford's 2000 Multi-Use Trail and Bikeway Implementation and Design Plan sets out an implementation plan for a city-wide pathway system. The City of Brantford's Transportation Master Plan Update (2007) affirms walking and cycling as key elements of the City's integrated, multi-modal transportation system. A key objective of the Transportation Master Plan Update was to promote bicycle use for purposes other than recreation, such as work, and shopping.

The City's Multi-Use Trails /Bikeway Network identifies links and extensions of existing bikeways, sidewalks and trails, as well as new walking and cycling connections, along Shellard Lane. The proposed design should provide for a multi-use trail and sidewalk connections along Shellard Lane.

The Southwest Brantford West of Conklin Urban Design Guidelines propose both a sidewalk and 3.0 m wide bicycle lane on one side of Shellard Lane, and a sidewalk on the opposite side.

***Accommodate future transportation network improvements***

The Southwest Brantford Secondary Plan and the North of Shellard Neighbourhood and Recreation Plan identify a road network servicing proposed development. This future road network must be accommodated by improvements to Shellard Lane.

***Accommodate transit system along the corridor***

Brantford Transit is expected to provide incremental transit service expansion matching the rate of development on both sides of Shellard Lane. It is understood that Brantford Transit will ultimately determine the routing, pattern and frequency of service for this area. The cross-section/lane widths of the future roadway should accommodate busses and bus stops, in addition to the core lanes.

***Address poor pavement condition***

With the exception of the pavement from Veteran's Memorial Parkway to Diana Drive, which is in very good condition, existing pavement is in poor to very poor condition.

***Provide for urbanization of portions of the roadway***

The urbanization of Shellard Lane is desirable to accommodate drainage, pedestrian and cyclist facilities and landscaping in a manner consistent with City standards and adjacent development.

***Address traffic operations and safety related to access to residential, commercial and institutional entrances***

As traffic volumes and development proceeds, the potential for conflicts at entrances increases. Proper access control, in conjunction with roadway reconstruction, is needed to minimize conflict potential.

***Accommodate pedestrian crossing safety issues at Assumption College/Assumption Plaza***

The Study has identified frequent occurrences of uncontrolled pedestrian crossings between Assumption College and Assumption Plaza. Roadway reconstruction will provide an opportunity to address this issue.

***Address sight distance issue on Shellard Lane west of Flanders Drive***

Where existing sight distance is deficient, modifications to the roadway profile should be made to provide for sight distance, in accordance with City standards.

***Address drainage deficiencies and opportunities for Stormwater Management***

Existing drainage deficiencies should be addressed to reduce flood potential. In addition, widening and reconstruction results in the need for additional stormwater management.

## 4.2 Identification of Planning Alternatives

The following planning alternatives have been identified for consideration in addressing the problems and opportunities discussed above:

**Alternative 1: Do Nothing:** Maintain Shellard Lane in its present configuration as a two-lane road. Continue regular maintenance and periodic resurfacing of the roadway.

**Alternative 2: Alternative Routes:** Improve adjacent roadways to accommodate the projected future traffic demand for Shellard Lane.

**Alternative 3: Widen to Three Lanes** with Intersection Improvements.

**Alternative 4: Widen to Four Lanes** from Veterans Memorial Parkway to Conklin Road.

**Alternative 5: Widen to Four Lanes** from Veterans Memorial Parkway to Street C.

**Alternative 6: Transit Service Improvements:** Improve existing public transit service within the City of Brantford to encourage a shift in modal choice from automobile to public transit.

**Alternative 7: Travel Demand Management (TDM):** Shift travel behaviour to reduce peak hour vehicular traffic demand, including facilitating active modes of transportation such as walking and cycling.

**Alternative 8: Combine alternatives 3, 4 or 5, plus 6 and 7** to increase the overall effectiveness of individual alternatives and reduce environmental impacts.

## 4.3 Preliminary Screening of Alternatives

In assessing planning alternatives, a range of environmental issues and potential avoidance or mitigation of negative effects have been considered. As a key part of assessing planning alternatives, this study has identified evaluation criteria that reflect the concerns of various stakeholders, as communicated through preliminary consultation, as well as the concerns of the City of Brantford. Table 4.1 provides an assessment of the various planning alternatives based on these criteria.

**Table 4.1: Preliminary Assessment of Planning Alternatives**

Component	Area of Study	Criteria	Issues and Assessment
Natural Environment	Wetlands and Vegetation	Proximity, size, characteristics and sensitivity of significant natural areas, terrestrial ecosystems and wetlands. Potential impact of loss of natural areas, terrestrial ecosystems or wetland area, function or habitat.	<p>There are 5 potential constraints areas identified within the Shellard Lane study area. These include the watercourse crossings, woodlots and drainage features associated with the D'Aubigny Creek corridor and associated PSW, woodlots, Linkage Corridors, and Species at Risk.</p> <p>Alternatives 1, 2, 6 and 7 would have no adverse effects on significant natural area/terrestrial ecosystem. Alternative 3, 4, 5 and 8 have potential adverse effects on significant natural area/terrestrial ecosystem. Adverse effects would be avoided to the extent possible, and mitigation would be provided.</p>
	Wildlife Habitat	Presence of identified or documented wildlife habitat areas. Potential adverse effects on existing wildlife due to disturbance or loss of habitat.	<p>Alternatives 1, 2, 6 and 7 would have minimal adverse effects on wildlife habitat areas. Alternatives 3, 4, 5 and 8 have potential adverse effects on wildlife habitat areas, however, adverse effects would be avoided to the extent possible, and mitigation would be provided.</p>
	Species At Risk	Presence of Species at Risk within study area due to disturbance or loss of habitat.	<p>Secondary source review revealed Eastern Meadowlark, Bobolink and Barn Swallow listed as Threatened under the ESA and designated as Threatened by COSEWIC (Committee on the Status of Endangered Wildlife in Canada) and are therefore protected under both the federal and provincial species at risk legislations and are documented within the vicinity of the study area.</p> <p>Alternatives 1, 2, 6 and 7 would have minimal adverse effects on Species at Risk. Alternatives 3, 4, 5 and 8 have potential adverse effects on wildlife habitat areas, however, adverse effects would be avoided to the extent possible, and mitigation would be provided.</p>

**Table 4.1: Preliminary Assessment of Planning Alternatives**

Component	Area of Study	Criteria	Issues and Assessment
Natural Environment	Special Designation Areas	Impacts on areas of natural and scientific interest (ANSI) and environmentally sensitive areas.	<p>There are no Areas of Natural and Scientific Interests (ANSIs). There is one PSW present adjacent to the Study Area.</p> <p>Alternatives 1, 2, 6 and 7 would have no adverse effect on the PSW. Alternatives 3, 4, 5 and 8 have potential adverse effects to the PSW, however, adverse effects would be avoided to the extent possible, and mitigation would be provided.</p>
	Fish Community and Habitat	Potential impacts to fish Community and habitat as a result of the proposed alternatives.	<p>Alternatives 1, 2, 6 and 7 would have minimal adverse effects on fish community and habitat. Alternatives 3, 4, 5 and 8 have potential adverse effects on fish community and habitat, however, adverse effects would be avoided to the extent possible, and mitigation would be provided.</p>
	Water Quality including temperature	Potential impacts to water quality as a result of the proposed alternatives.	<p>Alternatives 1, 2, 6 and 7 would have minimal adverse effects water quality. Alternatives 3, 4, 5 and 8 have potential adverse effects on water quality, however, adverse effects would be avoided to the extent possible, and mitigation would be provided.</p>
	Channel Stability and Erosion	Potential impacts to channel stability and erosion as a result of the proposed alternatives.	<p>Alternatives 1, 2, 6 and 7 would have minimal adverse effects on channel stability and erosion. Alternatives 3, 4, 5 and 8 have potential adverse effects on channel stability and erosion, however, adverse effects would be avoided to the extent possible, and mitigation would be provided. Note that future developments must provide erosion control.</p>
	Fluvial Geomorphological process	Potential impacts to fluvial geomorphologic process as a result of the proposed alternatives.	<p>Alternatives 1 to 5 would have minimal adverse effects on channel stability and erosions. Alternatives 3, 4, 5 and 8 have potential adverse effects on fluvial geomorphologic process, however, adverse effects would be avoided to the extent possible, and mitigation would be provided.</p>



**Table 4.1: Preliminary Assessment of Planning Alternatives**

Component	Area of Study	Criteria	Issues and Assessment
<b>Socio-Economic Environment</b>	<b>Land Use</b>	Presence, number and characteristics of residences, community facilities, public parks, institutions or businesses within or adjacent to the study corridor.	<p>Alternatives 1, 2, 6 and 7 would have no adverse affect on the existing land use. Alternatives 3, 4, 5 and 8 may have potential adverse effects on existing land use, but will provide enhanced access to adjacent properties.</p> <p>For Alternatives 3, 4, 5 and 8 adverse effects would be avoided to the extent possible, and/or mitigation would be provided, where possible.</p>
	<b>Noise</b>	Number and characteristics of noise sensitive receivers (generally residences adjacent to the study corridor). Potential effects of traffic related noise on residences, adjacent to the study corridor.	<p>The criteria for considering noise effects due to traffic is generally based on ambient and future anticipated noise levels at a standard receiver location, normally taken as the rear yard of a residential unit ("outdoor living area").</p> <p>Alternatives 1, 2, 6 and 7 will have no effect on traffic noise. Alternative 3, 4, 5 and 8 may affect traffic noise levels and would need to be investigated further.</p>
	<b>Archaeology and Cultural Heritage Resources</b>	Presence and characteristics of registered archaeological resources and designated built heritage resources under the Heritage Act. Potential adverse impacts on archaeological resources and built heritage resources within or adjacent to the study corridor.	<p>A Stage 1 Archaeological Assessment has been completed for the study area. Sections of the study area will require a Stage 2 Archaeological Assessment.</p> <p>A Stage 2 Archaeological Assessment will be completed at a later date.</p> <p>Alternatives 1, 2, 6 and 7 would have no adverse effect on the Archaeological Resources. Alternatives 3, 4, 5 and 8 have potential to have adverse effects on Archaeological Resources, however, adverse effects would be avoided to the extent possible, and mitigation would be provided.</p>
	<b>Agricultural</b>	Presence and characteristics (agricultural capability of soil) of agricultural lands within the study corridor. Potential adverse impact of loss of agricultural lands within the study corridor.	<p>There is productive farmland within the study area.</p> <p>None of the alternatives being considered would result in a significant loss of productive farmland.</p>
	<b>Access Considerations</b>	Potential adverse effects include limited access during construction and	Alternatives 1, 2, 6 and 7 would maintain existing access. Alternatives 3, 4, 5 and 8 could result in modification or restriction of access.

**Table 4.1: Preliminary Assessment of Planning Alternatives**

Component	Area of Study	Criteria	Issues and Assessment
		changes to residential or commercial entrances.	
<b>Socio-Economic Environment</b>	<b>Utilities</b>	Potential adverse effects on existing utilities	Alternatives 1, 2, 6 and 7 will have no adverse effect on utilities. Alternative 3, 4, 5 and 8 may require the relocation of existing utilities.
	<b>Construction Disruptions</b>	Potential adverse effects include noise, dust and disruption to existing traffic.	Potential adverse effects with Alternative 3, 4, 5 and 8 only.
	<b>Safety</b>	Safety related factors include roadway geometrics, roadside hazards, intersection design, and signalization.	Potential improvements with Alternative 3, 4, 5 and 8 only.
<b>Engineering Factors</b>	<b>Travel Delay/Traffic Capacity</b>	Potential adverse effects include traffic delays during construction. Potential advantages include increased traffic capacity.	Potential minor capacity improvement with Alternatives 1, 2, 6 and 7. Potential major capacity improvements with Alternatives 3, 4, 5 and 8 only.
	<b>Cost</b>	Capital costs of the proposed improvements.	Alternative 5 (or Alternative 8 when Alternative 8 includes Alternative 5) has the highest capital cost.
<b>Other</b>	<b>Compatibility with City Plans</b>	Consistency with Official Plan Objectives.	Consistent with the City of Brantford plans.

- **Alternative 1:** (Do Nothing) Dropped from further consideration, as it fails to address key deficiencies, particularly future congestion, deficient pavement conditions, lack of urbanization and lack of accommodation of pedestrians and cyclists.
- **Alternative 2:** (Alternative Routes) Improvements to adjacent roadways are not feasible as Shellard Lane is the only access, or most direct access for much of the area, and is the only designated arterial route. Therefore, Alternative 2 fails to address the identified deficiencies.
- **Alternatives 3, 4 and 5:** (Reconstruct and Widen Shellard Lane) These alternatives have the potential to address the identified needs, and are carried forward for further evaluation.
- **Alternative 6:** (Transit Service Improvements) While the provision of additional public transit service in this area has the potential to attract some growth in transit usage, it will not increase ridership enough to have a significant impact upon traffic delay and congestion on Shellard Lane. This planning alternative is not viable on its own, but may be considered in a conjunction with other alternatives proposed. This alternative can be

- implemented with Alternatives 3, 4 or 5, but is not expected to significantly reduce traffic demand.
- **Alternative 7:** Traffic Demand Management (TDM) strategies generally need to be applied on regional or larger area scales to achieve their desired effect. TDM has been investigated by the City of Brantford as part of the Transportation Master Plan Update. Studies indicated that TDM measures would have a similar impact on vehicular traffic demand as the transit alternatives suggested in Alternative 6. Therefore, TDM measures alone are not seen as an ideal strategy to mitigate increased traffic demand on Shellard Lane.
  - **Alternative 8:** A combination of one or more of the above alternatives could accommodate the projected future traffic demand along the Shellard Lane corridor while minimizing environmental impacts.

The preliminary recommended Planning Solution is Alternative 8, as it will address the identified needs while minimizing impacts. Alternatives 3, 4 and 5 are carried forward for further evaluation

#### **4.4 Public Consultation**

##### **Meetings**

Consultation with agencies and the public in Phase 2 included meetings held with stakeholder representatives from the County of Brant, the Grand Erie District School Board, Brantford Power, various City of Brantford departments, the Brantford Multi-Use Trail and Bikeway Advisory Committee, Shellard Neighbourhood Association and Bell Canada. (ref. Appendix 'K' - Meeting Minutes).

##### **4.4.1 Public Information Centre No. 1**

Public Information Centre No. 1 (PIC No. 1) for the above project was held on Wednesday June 20, 2012 at the Brantford and District Civic Centre. Notification of the PIC was sent to agencies and municipal staff by mail and hand delivered to area residents. Notification was published in the Brantford Expositor on June 8, 2012 and June 15, 2012. Copies of the newspaper advertisement, letters to stakeholders and agencies, a PIC summary, all comments received and written responses are contained in Appendix „L’ - Public Information Centre Number 1.

The PIC was well attended by members of the public, with 23 attendees signing the register. Display boards were prepared to summarize the following:

- Study Background;
- Municipal Class EA Process;
- Existing Conditions – Land Use;
- Existing Conditions – Natural Environment;
- Existing Conditions – Archaeological;
- Existing Conditions – Transportation;
- Existing Conditions – Trails & Cycling Routes;



- Traffic Study Overview;
- Need and Justification;
- Planning Solutions Considered;
- Cross Section Alternatives;
- Assessment of Planning Solutions;
- Preliminary Assessment of Short Listed Planning Alternatives;
- Next Steps, and
- How to Provide Your Comments.

#### **4.5 Preferred Planning Solution**

Based on input provided by stakeholders, technical agencies and public participants, as well as based on an assessment by the study team, the preferred planning alternative is **Alternative 8: Widen Shellard Lane, including provisions for transit and active transportation**. This alternative is recommended in the City of Brantford Transportation Master Plan Update 2007, and would address the problems and opportunities identified. Various design alternatives for Alternative 8 were prepared and assessed by the study team as a component of the next phase of the project.

## **5.0 ALTERNATIVE DESIGN CONCEPTS AND ASSESSMENT**

Alternative design concepts were considered and assessed for number of lanes, cross section configuration and various other details. The following sections discuss the alternatives considered and the rationale for the preferred design.

### **5.1 Number of Lanes**

Following identification of the preferred planning solution to widen Shellard Lane, in Phase 2 of the study, the following three sub-alternatives were carried forward for further consideration:

**Alternative 1:** Widen to three lanes from VMP to Conklin Road; maintain two lanes from Conklin Road to Pleasant Ridge Road

**Alternative 2:** Widen to four lanes from VMP to Conklin Road; maintain two lanes from Conklin Road to Pleasant Ridge Road

**Alternative 3:** Widen to four lanes from VMP to Street C; transition to two lanes west of future Street C

An assessment of the three alternatives was completed focusing on natural, socio-economic, environmental and engineering factors (ref Table 5.1: Evaluation of Number of Lanes). Based on the assessment, the preferred alternative is alternative 3: Widen to four lanes from Veterans Memorial Parkway to Street C, as it provides adequate level of service to the horizon year and beyond, minimizing the risk of traffic infiltration into adjacent neighbourhoods.



**Table 5.1: Evaluation of Number of Lanes**

Component	Area of Study	Alternative 1 – Three lane cross section VMP to Street E	Alternative 2 – Four lane cross section VMP to Conklin	Alternative 3 – Four lane cross section VMP to Street C
Natural Environment	Vegetation			
	Wildlife Habitat			
	Surface Water/ Fisheries/ Drainage			
	Special Designations /ESA			
	Land Use			
	Pedestrian Facilities			
Socio-Economic Environment	Noise			
	Archaeology and Cultural Heritage Resources			
	Access Considerations			
	Utilities			
	Construction Disruptions			
Engineering Factors	Safety			
	Travel Delay/Traffic Capacity			
	Cost			
Other	Compatibility with City Plans and Policies			



## **5.2 Typical Cross Section Alternatives**

Two alternative typical cross sections have been considered, as follows:

- Alternative 3a: Four Lane Cross Section with On-Road Bicycle Lanes (ref. Figure 5.1)
- Alternative 3b: Four Lane Cross Section with Multi-Use Path (ref. Figure 5.2)

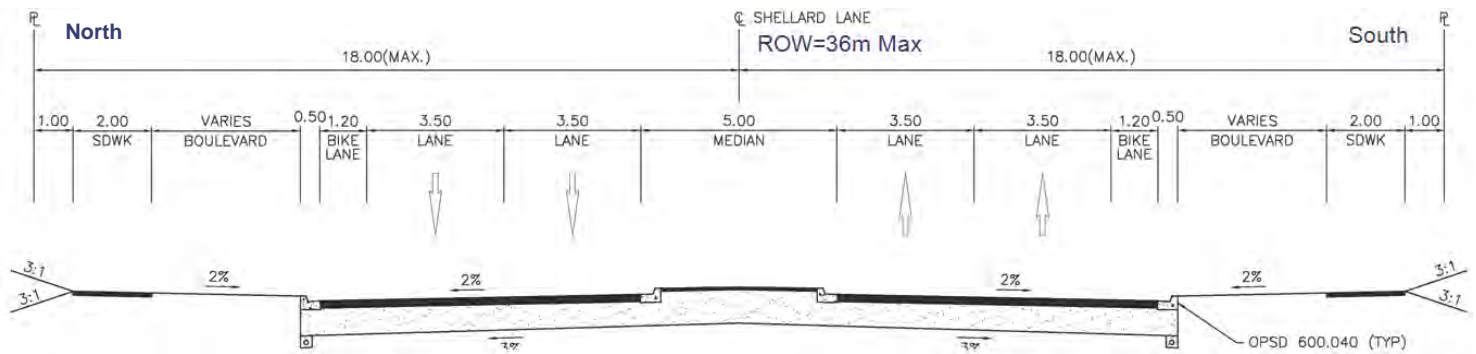
Alternative 3b: Four Lane Cross Section with multi-use path is preferred for the following reasons:

- There is insufficient width in the existing right-of-way (26m), from St. Patrick's Drive/Diana Avenue, to west of McGuiness Drive/Flanders Drive to accommodate on-road bicycle lanes, with sidewalks on both sides.
- The right-of-way width from west of McGuiness Drive/Flanders Drive to Conklin Road (31 m) is constrained, and accommodating on-road bicycle lanes without purchase of private property would be difficult.
- A multi-use path accommodates bicycles while maintaining separation from traffic, which is appropriate for the many casual and youth cyclists in the area, generated by local residential and school land use.
- Note that insufficient space exists within the right-of-way for both a sidewalk and bicycle lane on one side, with a sidewalk on the opposite side, as recommended in the Southwest Brantford West of Conklin Road Urban Design Guidelines, due to utility constraints.

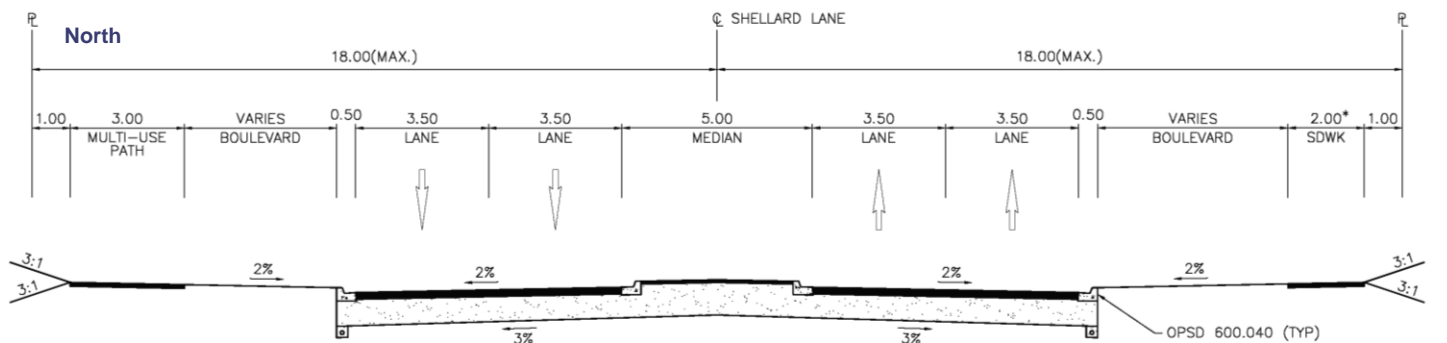
## **5.3 Sidewalk East of Veterans Memorial Parkway**

Possible sidewalk was considered along the north side of Shellard Lane east of Veterans Memorial Parkway (ref. Figure 5.3: Design Alternatives – Sidewalks East of Veterans Memorial Parkway). The potential for sidewalk is constrained by physical barriers including hydro poles at Colborne Street West, and existing slopes. Sidewalk is preferred as it provides for a key linkage in the pedestrian network; however, some grading and utility relocation will be necessary.

**Figure 5.1:  
 Alternative 3a: Four Lane Cross-Section  
 with On-Road Bicycle Lanes**



**Figure 5.2:  
 Alternative 3b: Four Lane Cross-Section  
 with Multi-Use Path**



\*UTILIZE EXISTING 1.4m SIDEWALK WHERE POSSIBLE



Figure 5.3: Design Alternatives – Sidewalk East of Veterans Memorial Parkway





#### **5.4 Gateway Feature Between Veterans Memorial Parkway and Diana Avenue/ St. Patricks Drive**

Two options have been considered for the lane configuration between Veterans Memorial Parkway and Diana Avenue / St. Patricks Drive, as follows (ref. Figures: 5.4 and 5.5):

Alternative 1: Tangent Alignment with narrow flush median.

Alternative 2: Deflected Alignment with raised planter median gateway feature.

Alternative 2 is preferred, as it provides for a gateway planter feature between Veterans Memorial Parkway and Diana Avenue / St. Patricks Drive. The gateway feature will serve as traffic calming.



Figure 5.4: Tangent Alignment with Narrow Flush Median

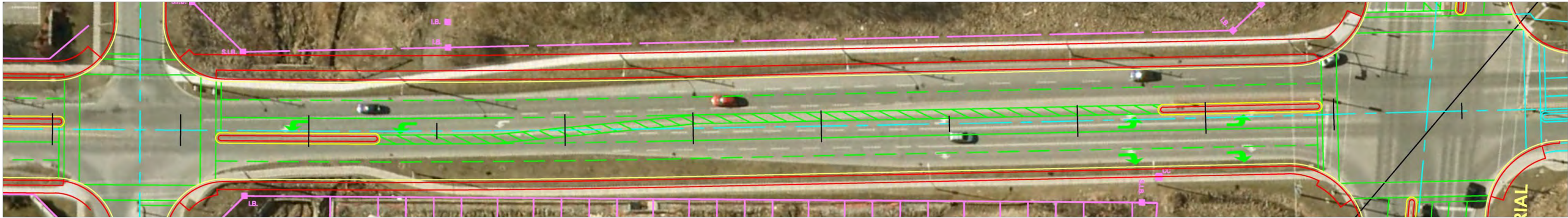
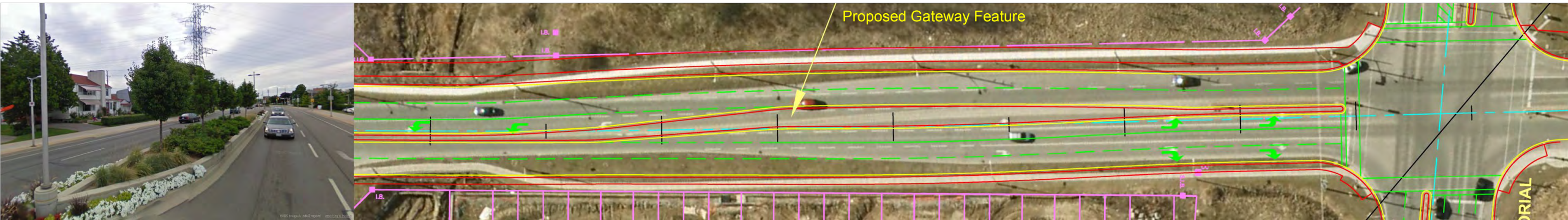


Figure 5.5: Deflected Alignment with Raised Planter Median Gateway Feature





## **5.5 Stormwater Management Opportunities**

Alternatives considered for drainage and stormwater management are documented in the Stormwater Management Report prepared for this study (ref. Appendix „H’ – Stormwater Management Report). In general, given that the drainage systems along the corridor are either established through past development or proposed as part of future development, no stormwater management alternatives were considered. Stormwater management will be accommodated by existing or future SWM facilities along the corridor.

## **5.6 Summary of Phase 3 Public/Agency Consultation**

A Stakeholder Meeting was held on October 10, 2012 with representatives of the County of Brant, the Grand Erie District School Board, Brantford Power, various City of Brantford departments, the Brantford Multi-Use Trail and Bikeway Advisory Committee, Shellard Neighbourhood Association and Bell Canada. The purpose of the meeting was to present information on alternatives considered and the assessment of alternatives, and to provide an opportunity for stakeholders and agencies to provide input. Additional consultation meetings were held with agency representatives from various schools and school boards on November 12, 2012, and with the Grand River Conservation Authority on December 4, 2012. Details of the meetings are recorded in Appendix „K’ - Meeting Minutes Public Information Centre No.2.

Public Information Centre (PIC) No.2 was held on Tuesday October 16, 2012 at the Salvation Army Wyndfield Community Church, 33 Diana Street (off of Shellard Lane). Notification of the PIC was sent to stakeholders, local residents, agencies and municipal staff by mail, email, and hand delivery. Notices were placed in the Brantford Expositor on October 2, and 9, 2012. Information regarding the PIC was also advertised on the City of Brantford project website. The PIC was hosted by representatives from the City of Brantford along with the consulting team from AMEC Environment & Infrastructure.

PIC No. 2 provided the public with an opportunity to ask questions of the Project Team, review the preferred design alternatives, and discuss issues related to the project, including traffic and environmental considerations. A copy of the PIC notice, a summary of the PIC, letters to stakeholders and agencies, a copy of the presentation, and copies of all comments received and written responses regarding PIC No. 2 are contained in Appendix 'M' - Public Information Centre Number 2. A general summary of Public/Agency comments received through consultation to date is presented in Table 5.2.

**Table 5.2: Summary of Public / Agency Consultation**

Comment / Question Received from Stakeholders	Response / Commitments
Shellard far too busy at present, will get worse.	The preferred design has been developed to provide for reduced congestion for present and future (2027) traffic volume conditions.
Accommodate Cyclists and Pedestrians	Both a multi-use path and a sidewalk will be provided for the full length.
Multi Use Path separated from traffic preferred to bicycle lanes	A multi use path is preferred as it is most appropriate for the anticipated usage, and consumes less space.
Maximize multi-use path width	The preferred standard 3.0 m width will be utilized for approximately 3400 m. Where this is not possible, for approximately 200 m, the minimum standard width (for a 2-way bicycle path) of 2.5 m will be utilized.
Pedestrian crossing safety	Pedestrian crossings will be provided at signalized intersections. At Assumption College/Assumption Plaza, pedestrians will be guided to cross at the Conklin Drive signals, by construction of a median planter and fence.
Traffic speed / traffic calming	The potential for higher speeds will be mitigated by traffic calming provisions, including narrower lanes, median planters and boulevard streetscaping features.
Traffic noise / sound barrier	A traffic noise study has been completed, recommending new noise barrier at 219 Shellard Lane and repairs to or replacement of acoustic fencing between McGuinness Drive and St. Patricks Drive.
Truck route and posted speed	As an Arterial road Shellard Lane is a designated truck route. Any request for reduced speed zones would need to be approved by council.
Rail Trail Parking	The potential for a parking facility at the rail trail will be investigated in detailed design.
Possible need for improvements to Brant County portion (pleasant Ridge Intersection)	Results of the traffic study to be reviewed closer to horizon year, to confirm projected volume. Traffic impact studies by developers to consider Pleasant Ridge intersection.

## 6.0 DESCRIPTION OF PREFERRED DESIGN

### 6.1 Major Features of the Recommended Plan

#### 6.1.1 Design Criteria

The proposed design criteria for the construction of Shellard Lane are as follows:

Table 6.1: Design Criteria: Shellard Lane from Colborne Street West to Conklin Road			
	Present Conditions	Design Standards	Proposed
HIGHWAY CLASSIFICATION	RAU-70/UAU-70	UAU-60	UAU-60
MINIMUM STOPPING SIGHT DISTANCE (m)	65	85	85
EQUIVALENT MINIMUM 'K' FACTOR	CREST – 21 SAG – 17	CREST – 15 SAG – 8	CREST – 17 SAG – 30
GRADES MAXIMUM	6%	6%	4.6%
GRADES MINIMUM	0.25%	0.5%	0.55%
MINIMUM RADIUS (m)	2500	130	2500
LANE WIDTH - through (m)	2 x 3.5	2 x 3.5	4 x 3.5*
SHOULDER WIDTH (m)	Varies: 2.5-3.5	N/A	N/A
SHOULDER ROUNDING (m)	N/A	N/A	N/A
MEDIAN WIDTH (m)	N/A	N/A	0 – 4.5
R.O.W. WIDTH (m)	Varies: 32m-26m	N/A	26.5 – 33.5
POSTED SPEED	50 km/h	50 km/h	50 km/h
CLEAR ZONE	N/A	3	3

\*3.3 median lanes from St. Patrick's Drive to McGuinness Drive

Table 6.2: Design Criteria: Shellard Lane from Conklin Road to West Limit			
	Present Conditions	Design Standards	Proposed
HIGHWAY CLASSIFICATION	RAU-70/UAU-70	UAU-70	UAU-70
MINIMUM STOPPING SIGHT DISTANCE (m)	65	110	110
MINIMUM 'K' FACTOR	CREST – 9 SAG – 11	CREST – 25 SAG – 12	CREST – 25 SAG – 25
GRADES MAXIMUM	6.25%	6%	5.5%
GRADES MINIMUM	0.20%	0.5%	0.75%
MINIMUM RADIUS (m)	N/A	190	0
LANE WIDTH - through (m)	2 x 3.0	2 x 3.5	4 x 3.5
SHOULDER WIDTH (m)	Varies: 0.5-3.00.5	N/A	N/A
SHOULDER ROUNDING (m)	0.5	N/A	N/A
MEDIAN WIDTH (m)	N/A	N/A	5.0
R.O.W. WIDTH (m)	27.5 Varies: 27.5m – 20m	N/A	36.0
POSTED SPEED	50 km/h	50 km/h	50 km/h
CLEAR ZONE	N/A	4	4

### **6.1.2 Horizontal Alignment**

The proposed horizontal alignment of Shellard Lane generally follows the existing tangent alignment, with the exception of an approximately 2.5 metre maximum shift to the south from sta. 11+209 to 11+700 and a 1.0 metre maximum shift to the south from sta. 11+816 to sta. 12+300. This alignment will result in the least overall impact to adjacent properties and the natural environment. The alignment extends east beyond Veterans Memorial Parkway and gently curves ( $R=2500m$ ) to the north, albeit reconstruction of Shellard Lane will not take place past Veterans Memorial Parkway.

The proposed alignment is shown in detail on the Preferred Design Drawings (ref. Drawings 2.1 and 2.2 (rear pocket)).

### **6.1.3 Vertical Alignment**

The vertical alignment for Shellard Lane was developed, and will be refined in detail design, based on the following criteria:

- Meet the design criteria specified above;
- Match the existing centerline profile at key locations, including existing intersection grades at McGuiness Drive, Conklin Road, McGuiness Drive/Flanders Drive, Killarney Street, Diana Avenue/St. Patricks Drive, and Veterans Memorial Parkway;
- Facilitate drainage;
- Accommodate the preferred pavement rehabilitation approach (ie. pulverize existing and pave east of Conklin Road and full reconstruction west of Conklin Road).

The proposed vertical alignment is shown in detail on the Preferred Design Drawings (ref. Drawings 2.1 and 2.2 (rear pocket)).



### 6.1.4 Typical Cross Section

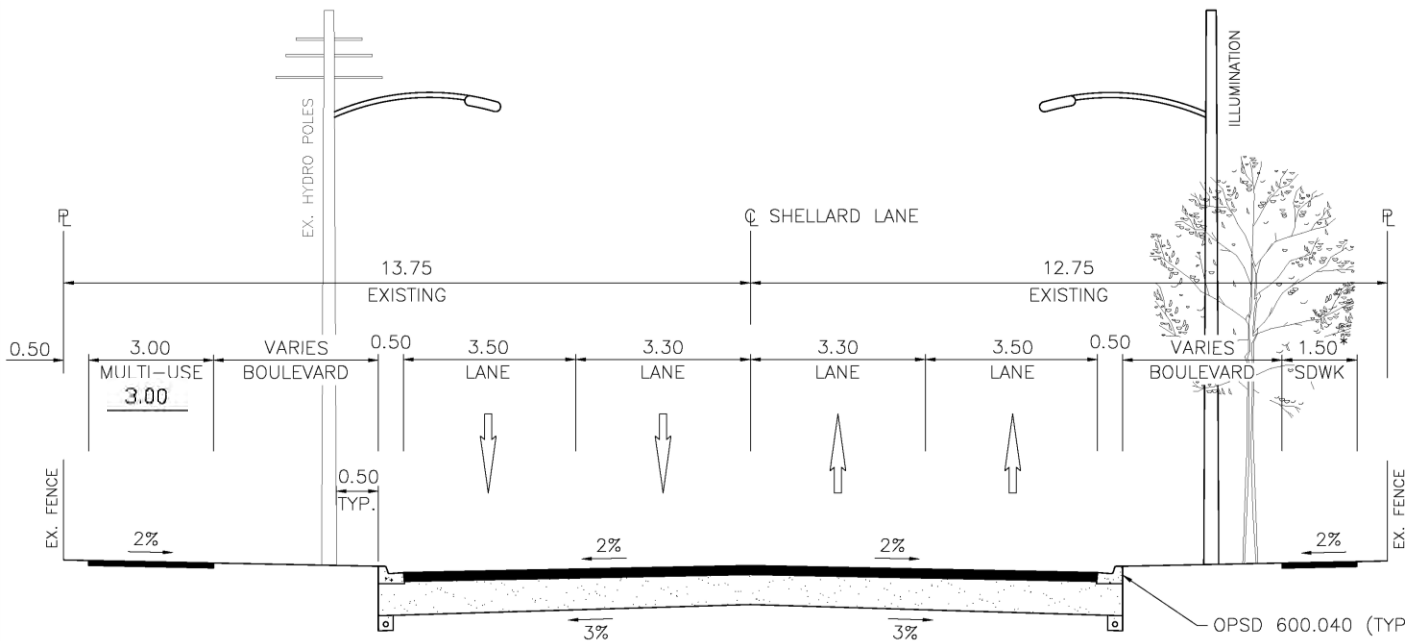
The typical cross sections proposed are illustrated on Figures 6.1 to 6.3. Key elements of the proposed cross-section of Shellard Lane include the following:

#### Veterans Memorial Parkway to Flanders Drive:

- Four (4) x 3.5 m through lanes;
- 3.0 m wide multi-use path – north side of Shellard Lane;
- 1.5 m concrete sidewalk on the south side, except where existing sidewalk will be maintained.
- Total proposed Right-of-Way varies in width.

Where required due to restricted property (in particular between Diana Avenue/St. Patrick's Drive and Flanders Drive/McGuinness Drive, 3.3 m wide median lanes are proposed.

**Figure 6.1: Typical Cross-Section Veterans Memorial Parkway to Flanders Drive**

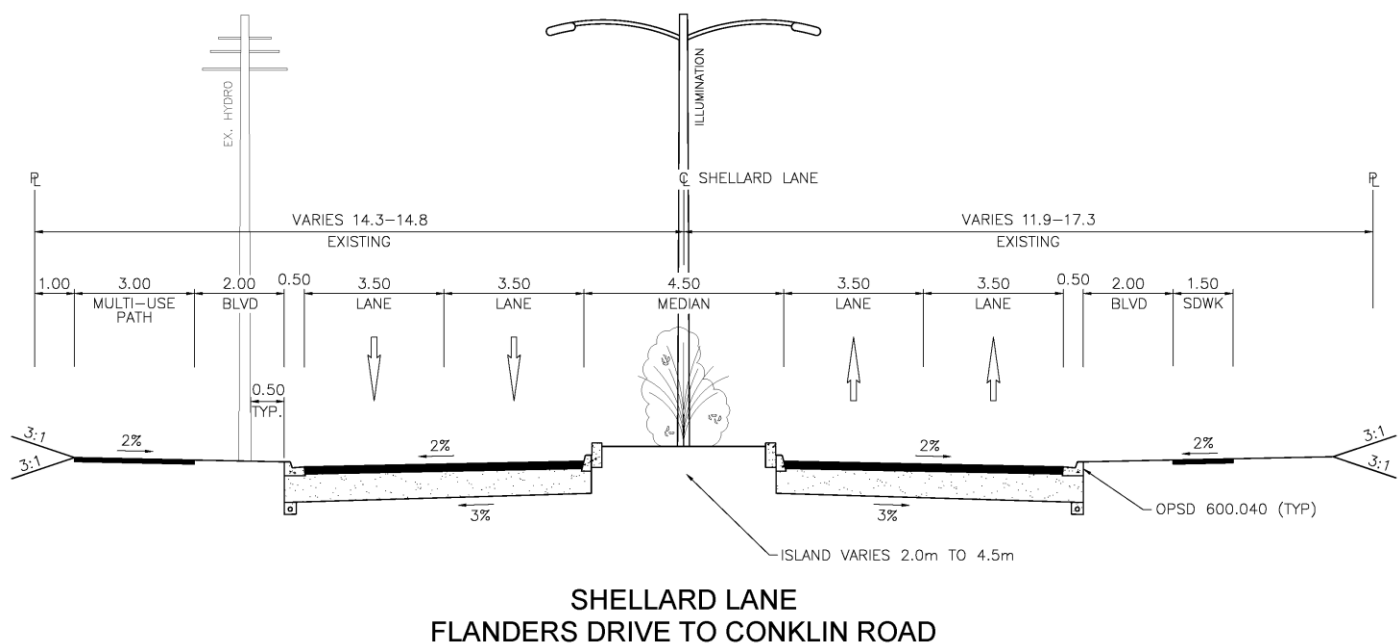


**SHELLARD LANE  
 VETERANS MEMORIAL PARKWAY TO FLANDERS DRIVE**

**Flanders Drive to Conklin Road:**

- Four (4) x 3.5 m through lanes;
- 4.5 m raised median;
- 3.0 m concrete multi-use path on the north side;
- 1.5 m concrete sidewalk on the south side;
- Total proposed Right-of-Way varies in width.

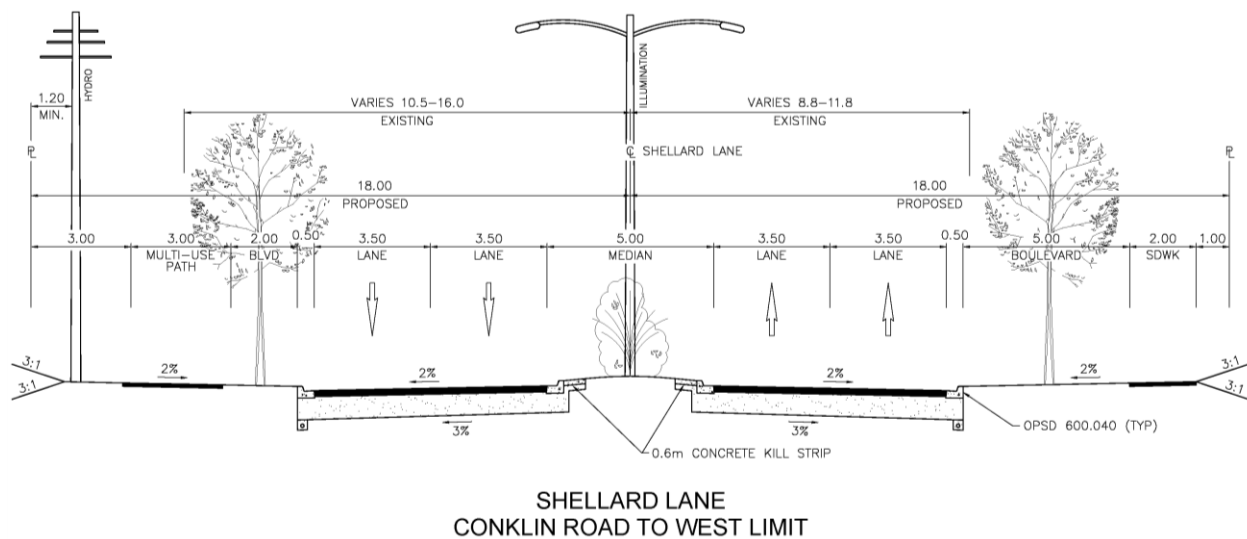
**Figure 6.2: Typical Cross-Section Flanders Drive to Conklin Road**



**Conklin Road to West Limit:**

- Four (4) x 3.5 m through lanes;
- 5.0 m raised median;
- 3.0 m concrete multi-use path on the north side;
- 2.0 m concrete sidewalk on the south side;
- Total proposed Right-of-Way will be 36.0 m.

**Figure 6.3: Typical Cross-Section Conklin Road to City West Limit**



### **6.1.5 Intersections and Side Roads**

The following auxiliary lanes are being recommended in this study:

- Double left turn lanes at Veterans Memorial Parkway northbound;
- Left turn lanes eastbound onto St. Patrick's Drive, westbound onto McGuiness Drive;
- Left turn lanes eastbound onto McGuiness Drive, westbound onto Flanders Drive;
- Left turn lanes eastbound and westbound onto Conklin Road;
- Left turn lanes eastbound onto McGuiness Drive and westbound onto Powell Road;
- Left turn lanes eastbound and westbound onto Street E;
- Left turn lanes eastbound onto Street D and westbound onto Blackburn Drive;
- Left turn lane eastbound onto Street C, and
- Left turn lane also proposed for the east Assumption College entrance on the south side of Shellard Lane.

The driveway for Assumption Plaza and the westerly driveway of Assumption College will be restricted to right, in-right out movements only. A raised median will effectively limit left turn movements, eliminating operational concerns due to traffic and turning movement, as well as potential student mid block crossings (ref. Drawing 2.7: Preliminary Landscape Plan McGuiness / Flanders Drives to Killarney Street, rear pocket).

Turning lane lengths are based on Transportation Association of Canada (TAC) standards for a 60 km/hr design speed from Veterans Memorial Parkway to Conklin Road and 70km/hr design speed from Conklin Road to the City West Limit. The lane lengths consist of taper and storage lane components. Storage lengths are either the minimum required or those calculated by Paradigm in the traffic study report.

At the request of the County of Brant, the impact of the projected increase in traffic on the intersection of Shellard Lane and Pleasant Ridge Road (within the County of Brant), and in particular, the warrant for a southbound left turn lane on Pleasant Ridge Road, was assessed. The traffic study identified the following (ref. Appendix B):

1. A Synchro analysis has been completed for the intersection of Shellard Lane and Pleasant Ridge Road. At the horizon year (2027), the intersection is anticipated to operate at an overall LOS A, with all movements on Pleasant Ridge Road operating at LOS C. Based on this analysis, a left turn lane would not be warranted.
2. Based on the current posted speed of 80kph, and a design speed of 90kph, the MTO Left Turn Warrant nomograph has been completed. The nomograph indicates that a left turn lane may be warranted at the horizon year of 2027.

Due to the contradicting conclusions of the two analyses completed, that further confirmation of the future conditions is required before the need for improvements is determined. Consequently, the following commitments were made to the County of Brant:

1. That the City require development-specific traffic impact studies to consider and address traffic impacts to the subject intersection, and that the results of the traffic impact studies be completed to the satisfaction of both the City of Brantford and the County of Brant;
2. That traffic volumes at the intersection be monitored as the 2027 horizon year approaches, to confirm that the projected volumes are realized, and
3. Confirm that no speed reduction is implemented on Pleasant Ridge Road, which could affect the left turn warrant.

#### **6.1.6 Pedestrian Facilities**

Concrete sidewalks are proposed to extend from Veterans Memorial Parkway to the City West Limit on the south side of Shellard Lane, and on the north side from Colborne Street West to Veterans Memorial Parkway. A portion of existing sidewalk between Flanders Drive and Diana Avenue will be maintained, if possible.

A 3.0 m wide asphalt multi-use trail is proposed to extend on the north side of Shellard Lane from Veterans Memorial Parkway to the City West Limit. The trail will connect with the existing multi-use trail which runs north-south adjacent to Veterans Memorial Parkway on the east side.

Note that insufficient space exists within the right-of-way for both a sidewalk and bicycle lane on one side, with a sidewalk on the opposite side, as recommended in the Southwest Brantford West of Conklin Road Urban Design Guidelines, due to utility constraints.

Crosswalks with ramps are proposed on all legs at the signalized intersections of Veterans Memorial Parkway, St. Patricks Drive/Diana Avenue, Mc Guinness Drive/Flanders Drive, Conklin Road, and Street E. A pedestrian linkage across Shellard Lane for the T.H.&B. Rail Trail has been proposed, to be aligned with the east crosswalk of the Street B intersection.

The need for audible traffic signals will be reviewed at the detailed design stage.

#### **6.1.7 Private Entrances**

There are 13 existing private entrances located within the project limits. All entrances will be affected. Entrances will be reconstructed based on the following criteria:

- Match original driveway material beyond sidewalks;
- Driveway grades in accordance with municipal standards;
- Permission to enter is to be obtained for regrading driveways beyond the Right-of-Way (if required).
- The 6 residential driveways west of Mc Guinness Drive (west leg) cannot be reconstructed due to the proposed road profile's grading impacts.

Curb cuts will be provided at each private entrance location that is reconstructed.

### **6.1.8 Pavement Design**

A preliminary pavement investigation was completed by AMEC (ref. Appendix 'C' - Geotechnical Investigation Report). The pavement design recommendations distinguish between rehabilitation of the existing asphalt platform, and widening to accommodate the ultimate width of the roadway. The result of each analysis is summarized below:

The following pavement designs are recommended for widening:

From Veterans Memorial Parkway to Conklin Road:

- 40 mm HL 3
- 50 mm HL 8
- 80 mm HL 8
- 150 mm Granular A
- 600 mm Granular B, Type I

From Conklin Road to West Limit:

- 40 mm HL 3
- 50 mm HL 8
- 50 mm HL 8
- 150 mm Granular A
- 475 mm Granular B, Type I

As an alternative, Superpave mix designs can be considered.

For rehabilitation of the existing pavement from Veterans Memorial Parkway to Conklin Road, in-place pulverization to a depth of 150 mm and resurfacing with 170 mm hot mix (is recommended).

### **6.1.9 Groundwater**

Groundwater conditions in the open boreholes were investigated as part of the geotechnical investigation, during and on completion of drilling. No groundwater was encountered in any of the boreholes. However the groundwater level could fluctuate seasonally and in response to major weather events.

### **6.1.10 Storm Drainage**

A stormwater management study has been completed for this assignment, addressing hydraulics, water quality and water quantity (ref. Appendix „H’ – Stormwater Management Report). Table 6.3 summarizes the hydraulic improvements required for each culvert crossing.

Stormwater management will need to be provided for the road improvements. Under existing road and drainage conditions, the roadside swale system provides informal stormwater quality





management. Within the urban area, the existing stormwater management facilities downstream of Crossings 5 to 8 provide stormwater quality, erosion and quantity controls.

For interim conditions, before development proceeds and the road is widened, stormwater quality treatment would either be provided by grass swales or oil/grit separators sized to meet the MOE's Enhanced Level of stormwater quality treatment. For ultimate land use conditions, road drainage would be directed to stormwater management facilities BSD, C1 and C2 within the planned development as per the North of Shellard Neighbourhood Recreation Plan. Discussion between the City of Brantford and land owners would be required as development plans proceed.

Stormwater management facilities would provide *Enhanced* level of stormwater quality treatment. As per the Watershed Plan, the combined water quality and erosion controls would be sized to capture the 2 year return period 3 hour (34 mm) design storm and drain approximately 75% of the extended detention volume in the first 24 hours, with the condition that the discharge rate not exceed 2 l/s/ha of catchment area with a 48 hour draw down time. Stormwater management facilities would also provide 5 to 100 year post to pre-development controls.

**Table 6.3: Summary of Hydraulics**

Crossing No & Watercourse Name	Flow	Drainage Area (ha)	Existing Culvert	Hydraulic Capacity	Proposed Culvert – Interim (Prior to Adjacent Development)	Proposed Drainage System - Ultimate
C1 (D'Aubigny Creek)	Permanent	486	3.6 m x 1.7 m x 18.1 m Concrete Open Footing Culvert	>Regional (Existing) <Regional (Future)	NA	Replace with new Concrete culvert (6.7 m x 1.83 m x 36 m) with head walls
K (C2)	Ephemeral	11.4	0.6 m dia x 18.3 m CSP	~ 100 year +/-	Extend Existing Culvert 15 m North 14 m South	Incorporate into adjacent drainage systems as per SW Brantford West of Conklin Secondary Plan
G (C3)	Ephemeral	33.4	1.5 m x 1.05 m x 16.8 m CSP Arch	> 100 year	Extend Existing Culvert 11 m North 13 m South	Incorporate into adjacent drainage systems as per SW Brantford West of Conklin Secondary Plan
E (C4)	Intermittent	144.1	1.8 m x 0.7 m x 11.5 m Concrete Open Footing Culvert	< Regional	NA	Replace with new Concrete Arch (3.66 m x 1.2 m x 34 m)
D (C5)	Intermittent	29.0	1.05 m x 0.70 m x 29.7 m HE CSP	> 100 year	Extend Existing Culvert 2m North 9m South	Incorporate into adjacent drainage systems as per SW Brantford West of Conklin Secondary Plan
C (C6)	Ephemeral	NA	Enclosed in storm sewer with adjacent development	-	NA	
B (C7)	Ephemeral	NA	Enclosed in storm sewer with adjacent development	-	NA	
Zone 'A' Stormwater storage facility (C8)	Permanent	195.0	Twin 3.05 m x 1.5 m x 26.4 m Concrete Open Footing Culvert	-> 25 year	Extend Existing Culvert 2 m North 2 m South	Extend Existing Culvert 2 m North 2 m South

### **6.1.11 Utilities**

Utility companies were contacted at the commencement of the study. Relevant utility companies included Bell Canada, Union Gas, Brantford Power, Rogers Cable, and the City of Brantford (water and wastewater).

**Brantford Power** – existing overhead hydro is located on the north side of Shellard Lane from Colborne Street West to McGuinness Drive/Powell Road. Poles in this section conflicting with the proposed widening can be relocated towards the north property line. West of McGuinness Drive/Powell Road, existing hydro poles alternate between the north and south sides to the west limit. Hydro poles in this section will be relocated to the north side of Shellard Lane.

**Rogers Cable** – Rogers plant is buried on the north side of Shellard Lane from Veterans Memorial Parkway to Killarney Street before transitioning to aerial lines which run on the Brantford Power poles to Conklin Road. Any conflict with the widening will result in the Rogers plant being relocated closer to the north property line, with Brantford Power.

**Bell** – existing overhead and buried/conduit Bell is located on both the north and south sides. Plant conflicting with the proposed widening can be relocated to the north or south property lines.

**Union Gas** – Union Gas has a 200 mm high pressure pipeline running within the right-of-way on the south side of the existing 27.5 m road allowance, from Conklin Road to the east of St. Patrick's Drive, where it reduces to 100 mm and crosses Shellard Lane to the north. It continues to run east on the north side before crossing Veterans Memorial Parkway and continuing east to the plaza entrances. A 280mm gas line also runs north on Veterans Memorial Parkway. Depending on the exact layout location and depth, the proposed roadway may conflict with the line. As a result, relocation or protection may be needed.

**Municipal Watermain** – The City of Brantford has an existing 200 mm diameter watermain in the boulevard on the south side of Shellard Lane, running along the length of the right-of-way from McGuinness Drive/Powell Road to 16 m east of Conklin Road. With the proposed widening, the existing watermain will be situated under the widened roadway asphalt surface area. No direct conflict is anticipated.

**Sanitary Sewer** – An existing 675 mm sanitary sewer runs from McGuinness Drive to an outlet at St. Patrick's Drive. An existing 250 mm sanitary sewer also runs from 150 m east of St. Patrick's Drive to the same outlet.

**Storm Sewer** – Six existing storm sewer systems exist from McGuinness Drive to Veterans Memorial Parkway. These sewers vary in size from 300 mm to 450 mm, and outlet to crossing culverts.

### **6.1.12 Permits**

The proposed culvert replacement and extension works may impact the watercourses and D'Aubigny Creek Swamp PSW. In the event that negative impacts to watercourses and may occur, permits and approvals will be required to complete work in these areas. The Grand River Conservation Authority (GRCA) regulates development and activities in or adjacent to watercourses, wetlands and PSWs. Works taking place in these lands will require a permit and approval from GRCA.

Three bird SAR were observed within the study area. Eastern Meadowlark, Bobolink and Barn Swallow, including habitat are provincially listed as Threatened and are therefore protected under the Endangered Species Act (ESA 2002). Consultation with MNR will be required at the detailed design stage. It should also be noted that wildlife SAR can move into an area at any given time. Suggestions for detailed avoidance and mitigation strategies have been provided through a Letter of Advice (LOA) from MNR Peterborough to MTO as a guidance document (Appendix 'G' - Terrestrial Ecosystem and Fish and Fish Habitat Impact Assessment). These LOA strategies may be taken into consideration, however consultation with the Guelph district MNR office is required to ascertain Project specific permitting requirements for this species. Based on correspondence with Guelph district MNR during the Class EA, it is anticipated that if appropriate avoidance measures are implemented through contract provisions (timing of work) that the need for MNR Authorization under the ESA can be avoided.

A Certificate of Authorization will be required from MOE for new storm sewer and stormwater management.

### **6.1.13 Traffic Signals and Illumination**

#### **6.1.13.1 Traffic Signals**

There are existing installations of traffic signals at the intersections of Shellard Lane and Veterans Memorial Parkway and of Shellard Lane and McGuiness Drive/Flanders Drive. Since these are existing traffic signal installations, the existing traffic signal warrants will still apply. These intersections will be reconstructed to accommodate the widening of Shellard Lane, as well as the widening of Veterans Memorial Parkway for double left turn lanes. Therefore, existing installations will need to be removed, a set of temporary traffic signals installed while the reconstruction is taking place, and a new set of traffic signals installed to address the widened intersections.

In addition to these signalised intersections, new traffic signals will need to be installed at the intersections of Shellard Lane and St. Patrick's Drive/Diana Avenue, Conklin Road, and the proposed Street „E', in accordance with the traffic signal warrants determined in the traffic study, which consider capacity and safety (Appendix 'B' - Transportation & Traffic Report). Traffic signals will be designed according to the standards of the City of Brantford.



### 6.1.13.2 Illumination

Continuous illumination along the roadway exists from Veterans Memorial Parkway to Conklin Road. The majority of luminaires are positioned on the existing power poles on the north side of Shellard Lane. This illumination will be maintained with the relocated poles on the north side. Illumination from Veterans Memorial Parkway to Conklin Road will be supplemented by the installation of poles and luminaires on the south side of Shellard Lane, subject to detailed lighting calculations. From Conklin Road to the end of the project limit, median illumination is proposed, with twin luminaires extending north and south from the centreline.

At the detailed design stage, it is recommended that LED lighting be considered as an alternative to conventional luminaire types.

The Provincial Ministry of Transportation and Illuminating Engineering Society (IES) have issued policy documents limiting light spill onto private property. Every effort will be made to mitigate light spillage onto private property.

### 6.1.14 Structural Design

**Table 6.4: Proposed Structure Extension/Replacement**

Crossing No & Watercourse Name	Station	Existing Culvert	Proposed Culvert – Interim (Prior to Adjacent Development)	Proposed Drainage System - Ultimate
C1 (D'Aubigny Creek)	9+845	3.6 m x 1.7 m x 18.1 m Concrete Open Footing Culvert	NA	Replace with new Concrete culvert (6.7m x 1.83m x 36m) with head walls
K (C2)	10+208	0.6 m dia x 18.3 m CSP	Extend Existing Culvert 15 m North 14 m South	Incorporate into adjacent drainage systems as per SW Brantford West of Conklin Secondary Plan
G (C3)	10+685	1.5 m x 1.05 m x 16.8 m CSP Arch	Extend Existing Culvert 11 m North 13 m South	Incorporate into adjacent drainage systems as per SW Brantford West of Conklin Secondary Plan
E (C4)	11+155	1.8 m x 0.7 m x 11.5 m Concrete Open Footing Culvert	NA	Replace with new Concrete Arch (3.66m x 1.2m x 34m)
D (C5)	11+595	1.05 m x 0.70 m x 29.7 m HE CSP	Extend Existing Culvert 2 m North 9 m South	Incorporate into adjacent drainage systems as per SW Brantford West of Conklin Secondary Plan
C (C6)	NA	Enclosed in storm sewer with adjacent development	NA	
B (C7)	NA	Enclosed in storm sewer with adjacent development	NA	
Zone „A’ Stormwater storage facility (C8)	NA	Twin 3.05 m x 1.5 m x 26.4 m Concrete Open Footing Culvert	Extend Existing Culvert 2 m North 2 m South	Extend Existing Culvert 2 m North 2 m South

### **6.1.15 Construction Staging and Phasing**

Construction will be staged, beginning with a temporary widening on the south side that will facilitate traffic being shifted to the south. A temporary concrete barrier will provide the necessary traffic separation during the installation of storm sewer and road work on the north side. Upon completion of the north side, the temporary barriers will be moved and traffic shifted to the north until the south side road work can be completed. Gaps in the temporary concrete barriers will be provided at intersections and entrances. Access will be maintained during construction.

Where significant modifications to grade will be made west of Conklin Road, accommodation of the grade difference must be made in detail design. Separation between traffic and the construction zone must be adjusted for the fill or cut slope between the existing and proposed grades, as well as drainage. Accommodation of staging in high cut and fill locations may require temporary widening of the right-of-way (permission to enter) or roadside protection (sheeting).

### **6.1.16 Preliminary Cost Estimate**

The preliminary cost estimate for this project, not including utility relocations and land acquisition, is provided in Appendix „N’ - Cost Estimate.

## **6.2 Environmental Issues and Commitments**

### **6.2.1 Property Requirements**

It is anticipated that the proposed design can be accommodated within the existing right-of-way, from Colborne Street West to Conklin Road, subject to detailed design review, with the exception of small parcels at the northwest corner of St. Patrick’s Drive and Shellard Lane, and northwest corner of McGuiness Drive and Shellard Lane. West of Conklin road, considerable purchase of property will be required to provide for a minimum 36 m right-of-way. Additional widening of the right-of-way, or temporary limited interest may be required for grading, culvert extension and staging.

Table 6.5 summarizes property requirements for this project:

Table 6.5 Property Requirements			
No.	Type	Location	Area (m <sup>2</sup> )
1	Wood Lot	Flanders Drive/McGuiness Drive to 200m west	1295
2	Place of Worship	Kingdom Hall of Jehovah's Witnesses	58
3	Future Residential	Conklin Road to 320 Shellard Lane, north of Shellard Lane	441
4	Residential	320 Shellard Lane	90
5	Residential	330 Shellard Lane	132
6	Residential	Nightingale Drive	16
7	Future Residential	Conklin Road to Street D/Blackburn Drive, South of Shellard Lane	11453
8	Future Residential	Street D/Blackburn Drive west to D'Aubigny Creek, south of Shellard Lane	4828
9	Future Residential	West of McGuiness Drive/Powell Road to 522 Shellard Lane, north of Shellard Lane	7527
10	Residential	522 Shellard Lane	223
11	Residential	544 Shellard Lane	2115
12	Residential	568 Shellard Lane	1091
13	Residential	D'Aubigny Creek to T.H. & B. Rail Trail, south of Shellard Lane	301
14	Public Multi-use Path	T.H. & B. Rail Trail, south of Shellard Lane	441
15	Residential	T.H. & B. Rail Trail to 94 m east of West Limit, south of Shellard Lane	1888
16	Public Multi-use Path	T.H. & B. Rail Trail, north of Shellard Lane	233
17	Future Residential	T.H. & B. Rail Trail to West Limit, north of Shellard Lane	3428
18	Future Residential	94 m east of West Limit to West Limit, south of Shellard Lane	313
<b>Total</b>			<b>35873</b>

Due to significant modifications to the proposed Shellard Lane vertical profile, driveway access from the reconstructed and widened Shellard Lane to several privately owned rural residential properties west of Conklin Road (501, 522, 544 and 568 Shellard Lane) will not be possible. In addition, in some cases, the proposed widened roadway and intersections designs directly conflict with existing buildings. The preferred design assumes that these properties will be purchased and incorporated into adjacent development, and that the buildings will be removed. Should this not be the case, the properties would be purchased by the City of Brantford. This property purchase is in addition to property requirements noted in Table 6.5.

## 6.2.2 Land Use

The proposed reconstruction and widening of Shellard Lane will result in the roadway and associated traffic being brought closer to existing residential and rural land uses. The following impacts to property have been documented, and will be reviewed during the detail design process:

- Driveway reconstruction/grading (both asphalt and gravel): Driveways will be reconstructed to match existing materials.

- Impact to or removal of trees and residential landscape planting at various properties along corridor: A tree preservation plan and landscape planting plan will be prepared in detail design.
- Modification to the entrances of Assumption College and Assumption Plaza east of Shellard Lane and Conklin Road.
- Coordination with adjacent ongoing development with respect to grading, drainage and servicing.
- Construction of a raised median planter and metal fence to direct student crossing between Assumption College and Assumption Plaza to the Conklin Road signalized crossing.

### **6.2.3 Noise**

A Traffic Noise Study was completed for this project by AMEC (ref. Appendix „J’ Traffic Noise Study). In accordance with Ontario Ministry of Transportation (MTO) and Ministry of the Environment (MOE) practices, the area of investigation for the project has been determined using screening level modeling to establish a distance from the project to where there is no anticipated increase above future ambient sound levels.

There are eight (8) existing barriers (wood fences) within the study area that will require either replacement or repairs. These barriers have structural issues or have gaps or cracks that need addressing, as identified during AMEC’s site visits. In particular, the fence on the north side of Shellard Lane from McGuinness Drive to St. Patrick’s Drive will be replaced with new noise barrier. Noise mitigation is required at 219 Shellard Lane and will require installation of a noise wall.

During construction, it is recommended that explicit contract language be provided requiring proper maintenance of construction vehicles to reduce potential noise impacts.

### **6.2.4 Archaeology**

AMEC completed a Stage 1 Archaeological Assessment for this study. (Appendix 'I' - Stage 1 Archaeological Assessment).

The Stage 1 Assessment recommended that a Stage 2 Assessment is warranted due to three main factors:

- Land within the study corridor is within 300 m of historically mapped and current tributaries of D’Aubigny Creek.
- There are 120 registered archaeological sites within a one-kilometre radius; nine (9) being within the study corridor.
- The study corridor surrounds a historic transportation route; the Toronto, Hamilton & Buffalo Railway (post-1858).



A Stage 2 Archaeological Assessment shall be completed subsequent to completion of this report and prior to construction, in the areas to be disturbed by construction where potential exists.

#### **6.2.5 Site Contamination Study**

An environmental soil screening and laboratory analyses program was carried out in conjunction with the preliminary geotechnical investigation (ref. Appendix – 'C' Geotechnical Report). The environmental soil screening and laboratory analyses program was carried out in accordance with the current 2004 Ontario Regulations.

There is the potential to encounter contaminated material from the removal of existing pavement, site excavation and grading to implement new lanes and new pavement for the proposed works. Appropriate provisions should be included in the construction contract to deal with testing and disposal of excess materials. In the event that contaminated material (soil/water) is found during construction, material will be handled in accordance with the Ontario regulations (Contaminated Soils Environment Protection Plan, Ontario Environmental Protection Act and appropriate MOE Guidelines, including waste classification and the use and selection of disposal sites and spill response and contaminated procedures).

The soil chemical analyses results are preliminary and not intended to provide a complete assessment of all soil conditions at the Site. Further assessment and/or chemical analyses would be required if off-site disposal of soil is required.

#### **6.2.6 Fisheries/Watercourse**

As part of this study, AMEC completed a fish and fish habitat impact assessment of the preferred alternative (ref. Appendix 'G' - Terrestrial Ecosystem and Fish and Fish Habitat Impact Assessment).

The proposed widening of approximately 3.5 km of Shellard Lane extending from Colborne Street West, westward to the Brantford West City limits (ref. Figure: 1.1 ) will have varying degrees of impact depending on numerous factors including, but not limited to, the watercourse sensitivity and level of culvert modification required. Overall assessments anticipate minimal potential impacts to fish and fish habitat during the project. However, potential impacts to the watercourses are anticipated to include the following:

- Removal of riparian vegetation could result in increased water temperatures and instability in channel banks;
- Culvert extensions can result in a net loss of fish habitat, however, open-foot culvert extensions tend to have less of an impact;
- Construction activity can have potential negative impacts to resident fish populations which can include: increased siltation; changes in stream channel structure and water clarity; increase instream temperatures as a result of the removal of riparian vegetation; and roadside drainage could increase input of pollutants, and
- Modification, disruption or destruction of fish habitat as a result of construction activities.

The proposed culvert works were assessed to determine project risk of impacts to fish and fish habitat. Preliminary assessment (Table 6.5) is based on the proposed works and existing fish and fish habitat conditions.

**Table 6.6: Preliminary Fish and fish Habitat Impact Assessment**

Reference	Proposed Works	Community	Risk of Impact to Fish and Fish Habitat
C1 D'Aubigny Creek	Replace with new concrete culvert (6.7 m x 1.83 m x 36 m) with head walls	Permanent Coldwater Directly Supports a Fishery High Sensitivity No SAR	The installation of an open footing culvert will minimize impact to the natural channel bed. Proposed works are expected to result in Low overall residual effects. The relative scale of works is insignificant to the fishery as a whole. Approximately 31 m <sup>2</sup> of channel will be replaced by culvert
K	Extend existing culvert 15m North 14m South	Ephemeral Warmwater Indirectly Supports a Fishery Low Sensitivity No SAR	Proposed works are expected to result in Low overall residual effects. The relative scale of works is insignificant to the fishery as a whole. Approximately 14 m <sup>2</sup> of channel will be replaced by culvert at inlet and 15 m <sup>2</sup> at the culvert outlet.
G	Extend existing culvert 11m North 13m South	Ephemeral Warmwater Indirectly Supports a Fishery Low Sensitivity No SAR	Proposed works are expected to result in Low overall residual effects. The relative scale of works is insignificant to the fishery as a whole. Approximately 13 m <sup>2</sup> of channel will be replaced by culvert at inlet and 11 m <sup>2</sup> at the culvert outlet.
E	Replace with new concrete Arch (3.66m x 1.2m x 34m)	Intermittent Warmwater Directly Supports a Fishery Low Sensitivity No SAR	The replacement of an open footing culvert will minimize impact to the natural channel bed. Proposed works are expected to result in Low overall residual effects. The relative scale of works is insignificant to the fishery as a whole. Approximately 24 m <sup>2</sup> of channel will be replaced by culvert.
D	Extend existing culvert 2m North 9m South	Intermittent Warmwater Indirectly Supports a Fishery Low Sensitivity No SAR	Proposed works are expected to result in Low overall residual effects. The relative scale of works is insignificant to the fishery as a whole. Approximately 9 m <sup>2</sup> of channel will be replaced by culvert at inlet and 2 m <sup>2</sup> at the culvert outlet.
C	No proposed Works	Ephemeral Warmwater Directly Supports a Fishery Low Sensitivity No SAR	None
B	No Proposed Works	Ephemeral Warmwater Does not Support a Fishery	None
SWM Facility	Extend existing culvert 2 m North 2 m South	Permanent Warmwater Directly Supports a Fishery Low Sensitivity	Proposed works are expected to result in Low overall residual effects. The relative scale of works is insignificant to the fishery as a whole. Approximately 2 m <sup>2</sup> of channel will be replaced

**Table 6.6: Preliminary Fish and fish Habitat Impact Assessment**

Reference	Proposed Works	Community	Risk of Impact to Fish and Fish Habitat
		No SAR	by culvert at inlet and 2 m <sup>2</sup> at the culvert outlet.

***Potential enhancement and compensation measures***

Recommended design considerations including general mitigation measures for fish habitat affects and potential enhancement opportunities (should they be required) are as follows:

- In water construction timing should consider timing restrictions for warmwater and coldwater fish habitat where appropriate;
- Warmwater habitat is present at Crossings C2 through C7 and would require in-water construction to be completed within the window of July 1 to March 31; and
- Coldwater habitat is present at Crossing C1 and C8, and would require in-water construction to be completed within the window of July 1 to September 30.
- Culvert cleaning shall be completed “in the dry”. Works shall be scheduled during a period in which the channels are not flowing. Pump-around equipment shall be readily available in the event precipitation occurs;
- All materials and equipment used will be operated and stored in such a manner that prevents any deleterious substance from entering the water;
- Construction staging shall be considered such that spills into the watercourse will be avoided or minimized;
- Standard for Erosion and Sediment Control (ESC) measures will be applied which meet or exceed Ontario Provincial Standards and Specifications (OPSS). The control measures shall be implemented prior to work and be maintained during construction and until disturbed areas have been effectively stabilized with permanent vegetation cover; as a minimum, the following standards will be followed:
  - Installation of silt fencing consisting of geotextile and wooden stakes. Fencing is installed such that a minimum of 600 mm of geotextile is above ground and a minimum of 300 mm is buried; and
  - Dewatering stations shall be located a minimum of 30 m from the channel edge in a vegetated area.
- All disturbed areas of the work site shall be stabilized and re-vegetated promptly, and/or treated with appropriate erosion protection materials. In riparian and aquatic habitats, all temporarily disturbed areas will be reinstated to original condition, or better, upon completion of works;
- The disturbance or removal of riparian vegetation shall be minimized;
- Any stockpiled materials shall be stored and stabilized away from the water; and
- Shading of coldwater watercourses (i.e. D’Aubigny Creek - Crossing C1) shall be enhanced to maintain or cool water temperatures by planting shrubs along the channel banks. Tree plantings are to be located sufficiently distant from the channel allowing shrubs become well established; and incorporate habitat diversity into the final structure design (i.e., bank diversity and substrate placement associated with any scour protection requirements).





### **6.2.7 Terrestrial Resources**

As part of this study AMEC completed a terrestrial resources assessment of the preferred alternative (ref. Appendix 'G' - Terrestrial Ecosystem and Fish and Fish Habitat Impact Assessment). The results of the assessment are summarized below.

The following sections describe in general forms the potential impacts, mitigation, and compensation for the proposed road improvements.

- Project activities may result in disturbance in the form of exhaust emissions, dust, and vegetation removal. The level of disturbance, however, would be comparable to current levels. General construction mitigation measures should be employed to minimize impacts.
- A Partners in Flight priority species was identified within one of the forests and any alterations to its preferred habitat should be considered as it may be sensitive to changes in forest structure.
- The deciduous forests should be delineated and marked in the field and minimizing or avoiding disturbance, including placement of lay down areas.
- Vegetation removal/trimming and other disruptive activities will be considered during Detail Design for these areas.
- The *Migratory Birds Convention Act* (MBCA 1994) makes it unlawful to pursue, hunt, take, capture, kill or sell birds listed therein ("migratory birds"). Compliance with the MBCA regulations and guidelines for vegetation clearing or demolition, as recommended by Environment Canada, needs to be considered during the project's construction and operation phases.
- Proposed work activities in migratory bird habitat must be undertaken outside of the active breeding season (mid-May to August 1 across Canada). If clearing (or other work) in migratory bird habitat is required during the nesting season, a nest survey must be conducted by a qualified avian biologist immediately (i.e. within 2 days) prior to commencement of the works to identify and locate active nests of species covered by the MBCA.
- Consultation with MNR is required regarding the proposed activities, regarding the ESA and Barn Swallow, Bobolink and Eastern Meadowlark SAR. Submission of an application for a permit under the ESA is not anticipated to be required if appropriate avoidance is specified, based on preliminary consultation with MNR.
- Monarch and Black Swallowtail butterflies have been observed within the study area and are listed as specially protected invertebrates under the *Fish and Wildlife Conservation Act*. Efforts should be made to avoid any negative effects to these species.
- Ongoing consultation with MNR will be required to ensure that any newly regulated SAR potentially interacting with the project is considered.

### **6.2.8 Tree Planting/Streetscape**

A preliminary streetscape plan has been prepared for the proposed road improvements/widening for the section of Shellard Lane, extending west of Memorial Parkway, (ref. Figures 6.4 to 6.6 Typical Aerial Perspective Sections and Figures L1 to L4 Preliminary Landscape Planting Plans. The purpose of the plan is to provide guidelines for the detailed design phase of the project.

The proposed road geometry provides for a continuous multi use trail along the north side of Shellard Lane, a pedestrian sidewalk along the south side and an extensive median strip separating the east bound and west bound lanes of traffic. These features provide many of the functions of a „complete street’ (living streets designed to enable safe, attractive, and comfortable travel opportunities for all users including pedestrians, bicyclists, motorists, and public transport).

The general intent of the preliminary streetscape plan is to improve the aesthetics and ecological diversity of the road corridor by introducing „greening’ initiatives in available soft landscape areas along Shellard Lane. These „greening’ initiatives include, the preservation of existing woody vegetation where possible, landscape plantings (trees, shrubs, ornamental grasses, perennials and groundcovers) in the road medians, shade trees along the boulevards, and the introduction of riparian plantings along disturbed sections of stream crossings. Existing specimen/street trees are to be preserved wherever possible.

Additional features introduced into the streetscape in the study area include a „Gateway’ feature at Memorial Parkway, a linkage across Shellard Lane for a recreation rail trail that intersects with roadway, and decorative paving in the sections of the median considered too narrow for the long term survival of plant material.

The landscape plantings selected for the corridor should provide a diversity of species and a variety of colour and form. Species selection should focus on trees/shrubs that are native, salt tolerant, low maintenance and non-invasive. The boulevard plantings are to avoid conflicts with overhead utilities, and be coordinated with street lighting pole locations.

### **6.2.9 Sediment and Erosion Control**

Construction activities will result in exposed and compacted soils during surface grading. Potential impacts include erosion and sediment transport. A sediment and erosion control plan, will be prepared during detailed design and submitted to agencies for approval. The plan will detail constraints to construction and other provisions to ensure protection of downstream watercourses. The sediment and erosion control plan will be in accordance with Grand River Conservation Authority (GRCA) guidelines and will be submitted to GRCA for review. Prior to construction, control measures including rock check dams, silt fencing and straw bales, sediment basins, temporary diversion berms etc. may be installed along the limits of grading to reduce the potential for erosion. During construction, these systems should be inspected regularly and repaired as necessary.



### **6.3 Monitoring**

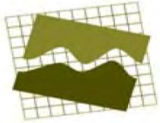
During construction, the City of Brantford will review the implementation of mitigation measures and key design features, to confirm that they are consistent with the contract and with commitments made. All City of Brantford construction projects are subject to daily on-site inspection.





Figure 6.4  
**TYPICAL AERIAL PERSPECTIVE**  
SHELLARD LANE (VETERANS MEMORIAL PARKWAY TO FLANDERS DRIVE)

CITY OF BRANTFORD



JAMES MCWILLIAM  
LANDSCAPE ARCHITECT





Figure 6.5  
**TYPICAL AERIAL PERSPECTIVE**  
SHELLARD LANE (FLANDERS DRIVE TO CONKLIN ROAD)

CITY OF BRANTFORD



JAMES MCWILLIAM  
LANDSCAPE ARCHITECT





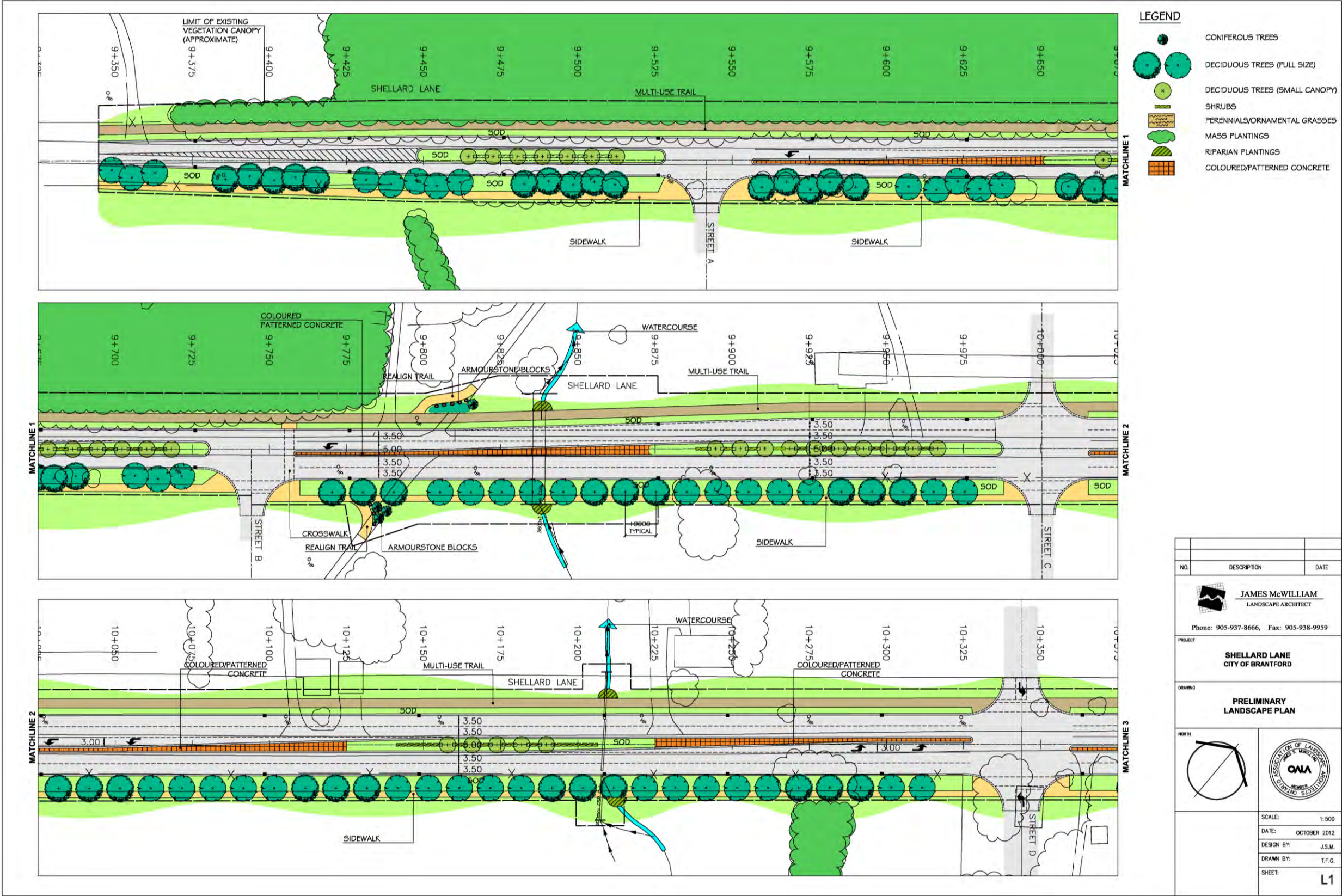
Figure 6.6  
**TYPICAL AERIAL PERSPECTIVE**  
SHELLARD LANE (CONKLIN ROAD TO WEST LIMIT)

CITY OF BRANTFORD

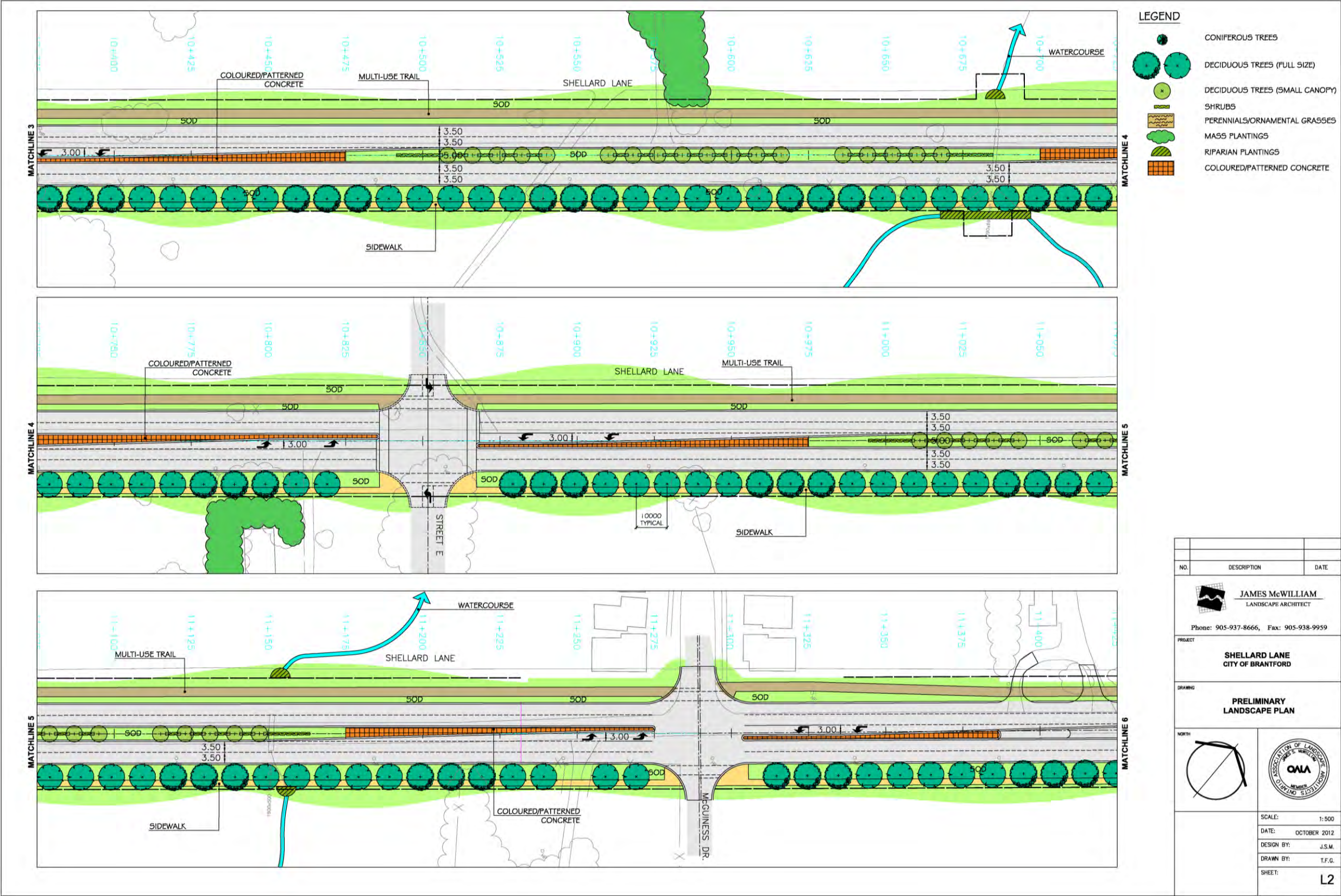


JAMES MCWILLIAM  
LANDSCAPE ARCHITECT

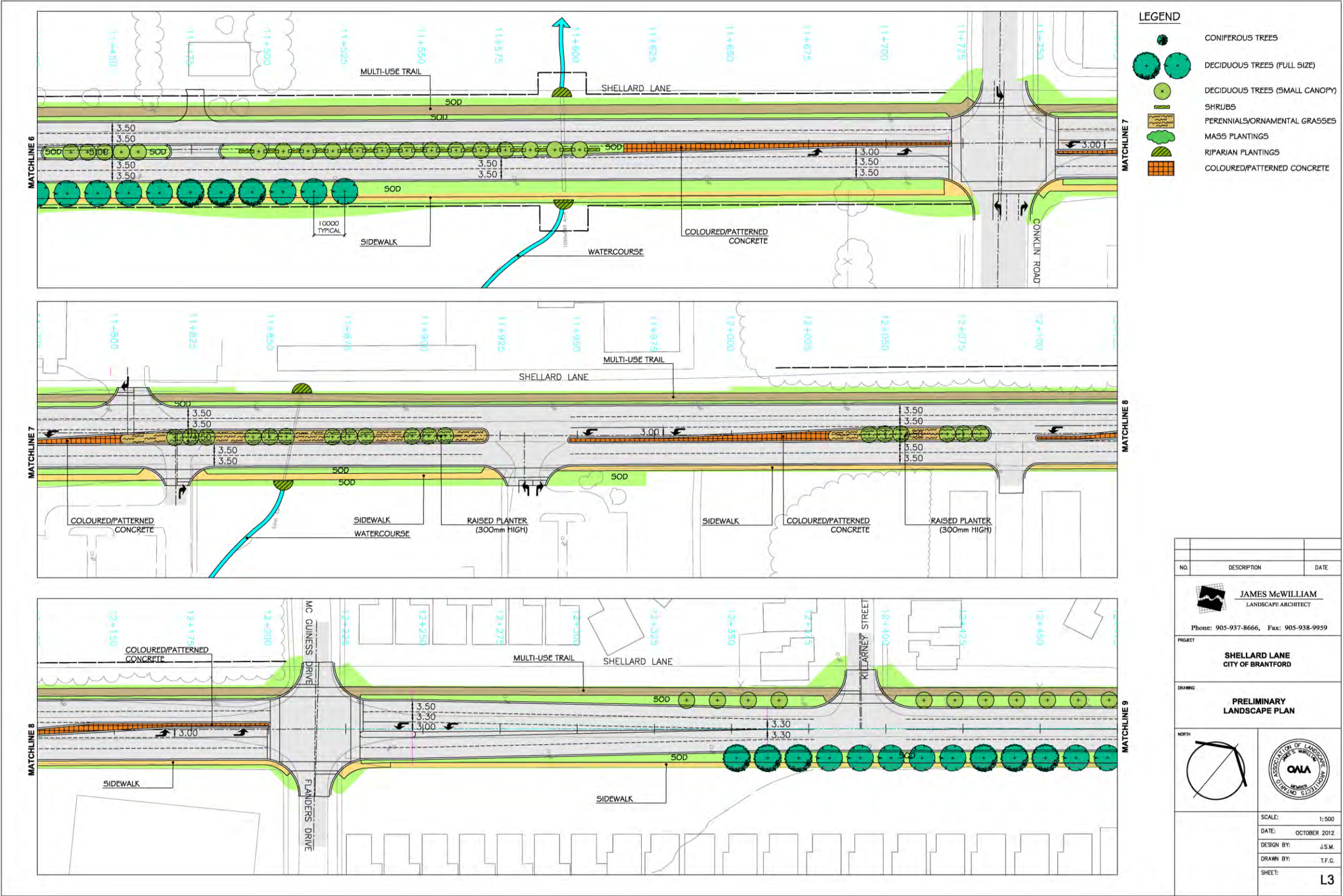




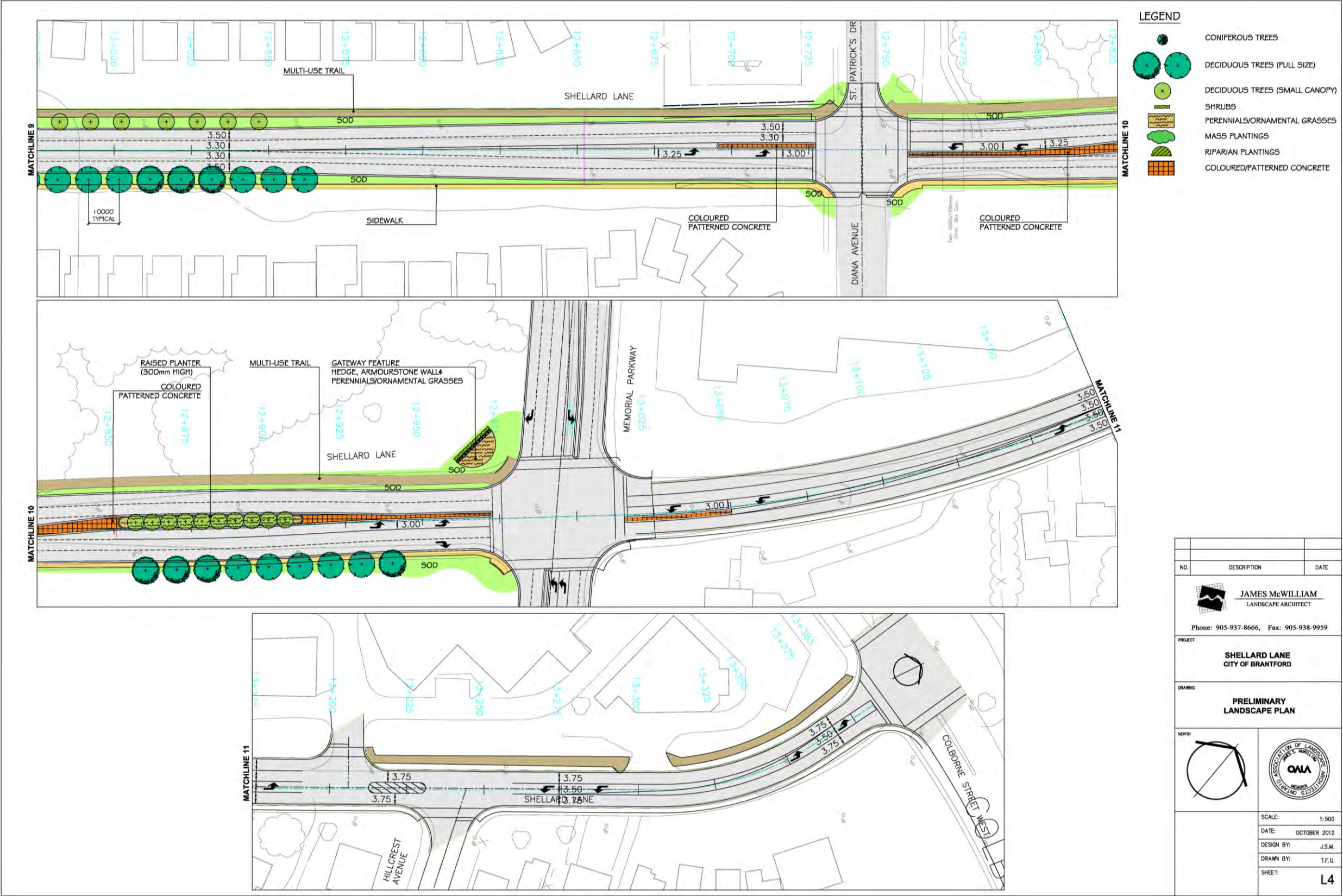












## 7.0 SUMMARY OF ENVIRONMENTAL EFFECTS, PROPOSED MITIGATION, COMMENTS TO FURTHER WORK

**Table 7.0 Summary of Environmental Effects, Proposed Mitigation, Commitments to Further Work**

ID	DETAILS	EXPRESSED BY	ID	DETAILS
1	Air Quality	City of Brantford	1.1	The contractor will be required to limit and control dust during construction
2	Surface Water Quality	Ministry of the Environment Conservation Authority City of Brantford	2.1	Mitigation measures for erosion and sedimentation from construction operations will be included in the contract and implemented. An erosion and sedimentation plan will be submitted to the Conservation Authority during detail design. Work will be controlled to prevent the entry of any deleterious materials to watercourses and located downstream of the study area. Refuelling of all vehicles and equipment will be conducted away from the watercourse to prevent any material from entering the watercourse. Any material (excavated soil, sediment, and backfill material) that is removed during construction will be placed above the high water mark and contained in a manner to ensure sediment will not enter the watercourse.
			2.2	All spills that could potentially cause damage to the environment will be reported to the Spills Action Centre of the Ministry of the Environment. A detailed protocol will be developed during detailed design to be implemented during construction if an incidence should occur.
			2.3	Stormwater management (quality control) will be implemented as per recommendations in this report.
3	Fisheries/ Watercourse	Conservation Authority MNR DFO	3.1	Fisheries Act authorization may be required.
			3.2	Warmwater crossings: Work to be completed July 1 – March 31 Coldwater crossings: Work to be completed July 1 – Sept. 30
4	Property Impacts	Residents City of Brantford	4.1	All impacts to private property will be mitigated where appropriate as documented within this report.
5	Landscaping and Vegetation		5.1	Removal of vegetation and disturbance of soils will be minimized.
			5.2	A Landscape Planting Plan and Tree Preservation Plan will be prepared during detail design.
			5.3	All tree and shrub plantings within the corridor are to be salt-tolerant, non-invasive, low maintenance, disease/pest resistant and drought tolerant.

**Table 7.0 Summary of Environmental Effects, Proposed Mitigation, Commitments to Further Work**

ID	DETAILS	EXPRESSED BY	ID	DETAILS
			5.4	The planting of new trees along the corridor is to be coordinated with existing and proposed utility corridors, and light standards
			5.5	Street trees are to be planted on private property on both sides of the corridor (see preliminary landscape plans) in consultation with adjacent property owners, unless restricted by utilities
			5.6	Construction impacts at stream crossing areas are to be mitigated with the planting of riparian vegetation. This vegetation should be native, non-invasive, riparian vegetation, as approved by Conservation Authority.
			5.7	Trees to be planted near overhead utilities to be selected to conform to mature height limitations (Hydro approved species)
			5.8	Gateway treatments are to be provided for the Shellard Lane VMP intersection.
6	Traffic and Access	Residents City of Brantford County of Brant	6.1	A construction staging plan will be prepared at the detail design stage.
			6.2	Access to existing residential and business entrances will be maintained during construction, unless otherwise noted in this report.
			6.3	Require developers to address operations of the intersection of Shellard Lane with Pleasant Ridge Road, to the satisfaction of the City and County, and monitor operations to confirm that projected volumes are realized, before implementing improvements.
			6.3	Entrances will be reconstructed with similar material as existing conditions.
7	Pedestrians/ Cyclists	Residents	7.1	A multi-use path (north side) and sidewalk (south side) will be constructed along Shellard Lane.
8	Utilities	Utility Companies	8.1	Conflicts with utilities will be reviewed during the detail design phase. Relocation or protection of some utilities will be required.
9	Noise	City of Brantford Residents	9.1	Traffic noise mitigation measures are required. New noise wall is required at 219 Shellard Lane. The existing fence on the north side between St. Patrick's Drive and McGuiness Drive will be replaced. Repairs to some existing noise wall will be necessary.



**Table 7.0 Summary of Environmental Effects, Proposed Mitigation, Commitments to Further Work**

ID	DETAILS	EXPRESSED BY	ID	DETAILS
			9.2	Construction noise control measures to be implemented. General noise control measures to be referred to, or placed into the contract documents.
10	Property Requirements	City of Brantford	10.1	Property purchase requirements to be minimized where possible. Compensation for property purchase in accordance with City of Brantford policy.
11	Archaeology	Ministry of Culture, Citizenship and Recreation	11.1	A Stage 1 Archaeological Assessment has been completed for this project and a Stage 2 Archaeological Assessment will be required. The Stage 2 Archaeological Assessment will be completed subsequent to this study.
			11.3	If any archaeological artifacts are located during construction, work in the area will cease and the Ministry of Culture will be contacted. The Ministry of Culture and the Registrar of the Cemeteries Regulation Unit will be contacted in the event that human remains are encountered during construction.
12	Wildlife	Conservation Authority	12.1	Removal of trees is limited to outside the nesting period of April 15 to July 15, or completion of a nesting survey by a qualified avian ecologist will be required, to identify and temporarily protect active nests.
			12.2	Locally rare/uncommon species were identified. Opportunities to relocate or to avoid are required.
			12.3	Project must adhere to the construction window of between September 1st and February 28th for work on culverts with Barn Swallow habitat. For Eastern Meadowlark and Bobolink, if suitable nesting habitat is avoided, and if disturbance is avoided until after the breeding season, ESA authorization is not anticipated to be required. Ongoing consultation with MNR is required to ensure that any newly regulated SAR potentially interacting with construction activities are considered.

## GLOSSARY OF TERMS AND ABBREVIATIONS

<b>CLASS EA</b> .....	Class Environmental Assessment
<b>CSP</b> .....	Corrugated Steel Pipe
<b>EA</b> .....	Environmental Assessment
<b>EA ACT</b> .....	Ontario Environmental Assessment Act
<b>ESR</b> .....	Environmental Study Report
<b>OP</b> .....	Official Plan
<b>ROW</b> .....	Right-of-Way

**Agency:** Government agencies, ministries or public authorities or bodies whose mandates require them to have jurisdiction over matters affected or potentially affected by projects planned under this Class EA. This includes municipalities other than the proponent.

**Class Environmental Assessment:** A planning process approved under the *EA Act* for a class or group of undertakings. Projects included in the Class EA may be implemented without further approval under the *EA Act* provided the approved Class EA planning process is followed.

**Environment:** As defined in the *Environmental Assessment Act*, means:

- a) air, land or water;
- b) plant and animal life, including human life
- c) the social, economic and cultural conditions that influence the life of humans, or a community;
- d) any building, structure, machine or other device or thing made by humans;
- e) any solid, liquid, gas, odour, heat, sound, vibration or radiation resulting directly or indirectly from human activities; or
- f) any part or combination of the foregoing and the interrelationships between any two or more of them, in or of Ontario.

**Environmental Study Report:** The documentation for a specific project planned in accordance with the procedures for Schedule C projects, setting out the planning and decision making process, including consultation practices, which has been followed to arrive at the preferred solution. The ESR also sets out the mitigating measures proposed to avoid or minimize environmental impacts.

**Public:** The general public, individual members of the public who may be affected by or have an interest in a project and special interest groups.