Class Environmental Assessment

Malden Road
Transportation, Public Safety & Urban Design Improvements Project

From Todd Lane to Meagan Drive

DILLON CONSULTING

ENVISION the hough group

VICTOR FORD AND ASSOCIATES INC *Landscape Architects*

Proj.No. 08-8837-1000

April 2009

Malden Road Transportation, Public Safety & Urban Design Improvements Class Environmental Assessment

April 2009

Corporation of the Town of Lasalle

08-8837-1000

Submitted by

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EXECUTIVE SUMMARY

As a result of significant growth in the Town of LaSalle over the last 20 years, there is now a need to evaluate the transportation related infrastructures and services within the Malden Road corridor.

In February 2008, the Town of LaSalle and the County of Essex, as joint proponents, retained the Consulting Team of Dillon Consulting Limited, Envision and Victor Ford and Associates Inc., to complete a Class Environmental Assessment for Malden Road that addressed safety, transportation, pedestrian and cycling issues and urban design improvements along the corridor.

The study limits extended from the north Town limits (Todd Lane) to south of Meagan Drive, approximately 3.6 km.

This is the Environmental Study Report that documents the study methods, public consultation program, and the evaluation of impacts of the various practical alternatives on the natural, social and economic environment and recommends the preferred design.

The preferred design, which will incorporate features that will create an attractive and dynamic "complete street", consists of:

- 5-lane road cross-section from the north Town limit to the Cahill Drain with an intermittent left turn lane separated by raised median;
- 3-lane road cross-section from the Cahill Drain to the south study limit with a continuous centre left turn lane;
- Intersection improvements including turning lanes and a roundabout at Todd Lane and Malden Road;
- New local roads to improve traffic flow at the Vollmer Culture and Recreation Complex and Sandwich Secondary High School;
- Realignment of the east leg of Bouffard Road to align with the west leg of Bouffard Road;
- Signalize future reconfigured intersection of Bouffard Road and Malden Road, including pedestrian crossings;
- On-road and share the road cycling lanes;
- Off-road trail for cycling and pedestrians;

- Sidewalks or multi-use path on each side of the road for pedestrians;
- Urban streetscape features along the corridor including a green gateway feature at the Todd Lane roundabout, and landscape nodes at the Cahill Drain and at the south study limits;
- Pedestrian lighting; and
- Expansion of trails and cycling facilities outside of the Malden Road corridor to connect to other areas within the Town.

Depending on the final design and configuration of Malden Road between Normandy and Sprucewood, a portion of the Town's existing municipal building may have to be removed.

The Turkey Creek Bridge and Cahill Drain Culvert will need to be widened.

Property will also be required along the corridor. The exact extent of property requirements including daylight corners will be determined at the preliminary design stage.

The estimated cost (2008 Dollars) is approximately $19,000,000, excluding property. It is recommended that these improvements be constructed in phases to match the Town's ability to finance the work. Priority should be given to completing the major intersections early in the phasing (Todd Lane, Normandy/Sprucewood and Laurier).

1.0 INTRODUCTION

1.1 Background

Malden Road is a major north-south arterial road in LaSalle. This road is under the jurisdiction of the Town of LaSalle and is a County Connecting Link. The southern portion of Malden Road is a County Road.

As part of the Town and County's long term planning, it has become apparent that adequate road capacity will become an issue on Malden Road. In the Spring of 2008, the Town and County as joint proponents, requested proposals to undertake a comprehensive study of the transportation needs of Malden Road from the town limits, to south of Meagan Drive. This study was not only to address transportation issues, but was to equally assess safety issues, cycling and pedestrian needs, and urban design features along the corridor. The study was to be completed in the context of the Town's planning documents which focuses on liveable communities and sustainable development as articulated in the Town's Request for Proposals as noted below.

> *As a result of the significant residential and commercial growth that the Town has experienced during the last two decades and the social, economic and demographic changes that are taking place within the LaSalle community, there is now a need to carefully examine and re-evaluate the transportation-related infrastructure and services that are being provided within the Malden Road corridor (and all of the existing and planned intersecting streets and trails), in order to properly establish:*
>
> - *a comprehensive and effective set of preferred public safety, traffic and public realm improvements that need to be made within this transportation corridor (including the Malden Town Centre) to meet the evolving needs of existing and future LaSalle residents for ten and twenty year planning horizons; and*
>
> - *an implementation strategy for this transportation corridor that is fiscally and environmentally responsible; enhances public safety for motorized and non-motorized forms of transportation; promotes and facilitates healthy and active lifestyles; properly addresses on-going municipal servicing requirements; and is capable of retaining/attracting businesses, services and residents as part of a vibrant attractive and safe Malden Town Centre.*

In February 2008, the consulting team of Dillon Consulting Limited, ENVision – The Hough Group and Victor Ford and Associates Inc., were selected to carry out this study. This multi-discipline team includes professionals with skills in environmental assessments, transportation planning, urban design, municipal engineering, pedestrian and cycling design, road safety and project management.

The consulting team (Dillon, ENVision and Victor Ford) were guided by and reported to the Project Steering Committee made up of the following members:

Town of LaSalle	-	Larry Silani, Director of Planning and Development Services
	-	Robert D. Hayes, P. Eng., Town Engineer
	-	Jerry Barycki, P. Eng., Development Engineer
	-	Allan Burgess, Planning Technician
County of Essex	-	Tom Bateman, P. Eng., County Engineer
	-	Jaime Garcia, P. Eng., Project Manager

1.2 Study Purpose

The purpose of this study is to identify a preferred solution and a preferred design concept to resolve roadway operational deficiencies, future transportation capacity needs for the next 20 years, pedestrian and cycling needs, urban design features, safety issues and concerns along the corridor, and meet the requirements of the Class Environmental Assessment process.

1.3 Study Area

The study area follows the Malden Road corridor from the Town's north limit to south of Meagan Drive. The study also addressed areas outside of this corridor which were necessary to address interconnectivity issues for trails and cycling facilities and short term traffic improvements in and around the Vollmer Culture and Recreation Complex and Sandwich Secondary School.

Figure 1.0 illustrates the study area.

The land uses within the study area can be broken down into three precincts from north to south.

Town Centre Precinct – Town limit to Cahill Drain. This precinct is evolving from a typical suburban auto-oriented commercial area to an area that is a more pedestrian oriented, compact, mixed-use Town Centre with a broad range of commercial, residential and civic land uses.

Transition Precinct – Cahill Drain to Reaume Road. This precinct is a transition from the Town Centre Precinct to the north to the Residential Precinct to the south. This precinct is primarily a residential area with several small scale commercial uses that serve the need of the surrounding neighbourhood.

Residential Precinct – Reaume Road to south of Meagan Drive. This precinct is predominately single-family residential dwellings. Sandwich Secondary School and access to the Vollmer Culture and Recreation Complex are near the south end of the precinct.

1.4 Class Environmental Assessment Process

The stated purpose of the Environmental Assessment Act (EAA) is the "betterment of the people of the whole or any part of Ontario by providing for the protection, conservation and wise management in Ontario of the environment" where the broad environment includes the natural, social, cultural, built, and economic environments.

The provisions of the EAA require all municipalities to undertake an environmental assessment for virtually all public works projects. The procedures and requirements under the EAA are described in the document titled *Municipal Class Environmental Assessment* that was prepared by the Ontario Municipal Engineers Association (June 2000), as amended in 2007. The Municipal Class EA process is a five phased decision-making framework for the planning and design of municipal projects that are undertaken on a frequent basis, are normally limited in scale, and have a predictable range of environmental impacts.

The Class EA document also serves as the public statement of the decision-making process followed by the municipalities in the planning and implementation of the needed infrastructure.

Studies conducted using this framework are considered to have satisfied the requirements of the Ontario Environmental Assessment Act by virtue of having followed the key principles of environmental planning outlined below:

- consultation with affected parties early in and throughout the process, such that the planning process is a cooperative venture;

- consideration of a reasonable range of alternatives, both the functionally different "alternatives to" and the "alternative methods" of implementing the solution;
- identification and consideration of the effects of each alternative on all aspects of the environment;
- systematic evaluation of alternatives in terms of their advantages and disadvantages to determine their net environmental effects; and
- provision of clear and complete documentation of the planning process followed, to ensure "traceability" of decision-making with respect to the project.

The five Phases of the Class EA process, as described in the *Municipal Class Environmental Assessment* (October 2000), as amended in 2007 and considered essential for the fulfillment of the EAA requirements, are described below:

- *Phase 1* – Identification of the problem or opportunity;

- *Phase 2* – Identification of alternative solutions to the problem which take into account the existing environment and the establishment of the preferred solution with public and agency consultation; this phase also includes the confirmation of the appropriate project schedule;

- *Phase 3* - Examination of alternative means of implementing the preferred solution based on the existing environment, potential environmental effects, methods for minimizing effects, input from government agencies and the public, and opportunities for maximizing positive effects;

- *Phase 4* – Preparation of an Environmental Study Report that documents the rationale for the undertaking, and the planning, design and consultation process that was followed; and the placement of the document on the public record for review and comment by government agencies and interested parties; and

- *Phase 5* – Completion of engineering drawings and documents, followed by the construction and operation of the project, with appropriate monitoring to ensure compliance with environmental provisions and commitments.

The Municipal Class EA document classifies projects into three separate categories: Schedule "A", "B", or "C". The Class EA for improvements to Malden Road falls under the Schedule "C"

category, which requires the completion of all five phases of the EA process. Schedule "C" projects include the "reconstruction or widening where the reconstructed road... will not be for the same purpose, use, capacity, or at the same location as the facility being reconstructed". The construction costs were estimated to exceed $2.2 million, therefore the project was planned as a Schedule "C" project.

The preferred solution and preferred design that were identified through this Class EA falls within the above Schedule "C" project definition. Refer to ***Figure 2.0*** for a description and flow chart of the requirements of the Schedule "C" Class EA process.

In brief, the specific objectives of this Class EA study are as follows:

- define the purpose and description of the undertaking;
- identify and evaluate alternative solutions and alternative design concepts;
- conduct two Public Information Centres;
- document study findings in an Environmental Study Report (ESR); and
- respond to a Part II Order, if required.

This document is the Environmental Study Report which documents the study process and findings.

1.5 Problem and Opportunity Statement

As noted from the Class Environmental Assessment Flow Chart, the first step is to identify the problem and/or opportunity of the undertaking. Based on discussions and a consensus with the Steering Committee, the following Problem and Opportunity Statement was developed:

1.5.1 Background

The Town of LaSalle is an urbanizing community with a current population in excess of 27,000 persons. The Town's population is projected to double during the next two to three decades, with the corresponding need to provide a broad range of services and amenities that will enable

existing and future LaSalle residents to live, work and play within liveable, safe and vibrant neighbourhoods, Town Centres and employment districts.

Since 1999, the Town of LaSalle has invested a significant amount of financial and human resources to meet the needs of existing and future residents by providing infrastructure to better accommodate pedestrian and cyclist-related traffic along the Town's urban arterial and major collector road network. These new sidewalks, trails and bridges are being used extensively by LaSalle residents of all ages and abilities to travel to/from various neighbourhoods and to/from the Malden Town Centre.

In the Spring of 2007, the Town completed a Commercial and Employment Land Study which confirmed the importance of maintaining and enhancing strong, vibrant, mixed-use and compact Town Centres. Many "empty nester" households and seniors have chosen to live within the Malden Town Centre to take advantage of the broad range of goods and services that are available in close proximity to their place of residence. **For a variety of health-related and lifestyle reasons, many of these residents want to maintain a healthy lifestyle by walking or riding their bikes to/from the Malden Town Centre and other destinations in adjacent residential neighbourhoods.**

1.5.2 Transportation

The volume of vehicular traffic using the Malden Road Corridor has increased significantly during the last decade, with current traffic volumes approaching 16,000 AADT. In keeping with the Town of LaSalle's need to provide modern community facilities and services to existing and future residents they have chosen to develop a new multi-use facility. The Vollmer Culture and Recreation Complex is south of the Malden Road Town Centre and has been strategically located near the intersection of Malden Road and Laurier Parkway. In the short term, the Vollmer Culture and Recreation Complex will be primarily accessible from the Malden Road Corridor. Based on the traffic analysis that was completed for the Howard Bouffard Master Plan, traffic is expected to increase along this important corridor.

1.5.3 Public Realm and Community Design Principle

The "LaSalle Greenway" is a cornerstone upon which the existing and future neighbourhoods and Town Centres of this urbanizing community will be built. This greenway provides (or will provide) a safe and well developed trail system that connects residents with the natural environment and with each other and will link the various components

of the community, while preserving and enhancing ecologically significant lands and providing places to recreate and interact. In addition to this cornerstone urban design feature, the following community design principles have been adopted by LaSalle Council and collectively articulate the shared community vision for the Town:

a) liveable, mixed-use neighbourhoods designed for people are the building blocks of a healthy, vibrant and caring LaSalle community;

b) neighbourhoods; Town Centre and employment districts with a highly interconnected road network and **a balanced transportation system that is designed and built for pedestrians, cyclists, transit and automobiles;**

c) shorter block lengths, a finer grain of block sizes and 5 minute walking distances to neighbourhood activity centres;

d) neighbourhoods which are diverse in use and population, with a broad range of housing choices for residents with different needs and different incomes;

e) parks, schools, places of worship, compact pedestrian-scaled shopping districts (mixed-use Town Centres) and employment opportunities situated closer to where people live, easily accessible by foot, bicycle, transit and automobile;

f) public places that foster a sense of community pride and well-being within each neighbourhood (with each neighbourhood having an activity centre – parkettes, day care centres, transit stops, corner stores/cafes, places of worship, etc. – which would be the focal point, creating a sense of place for each neighbourhood);

g) ecologically significant lands are protected, enhanced, incorporated within planned "greenway" systems and given prominence (i.e. single loaded roads) for the benefit of all residents in the surrounding neighbourhood; and

h) **urban places framed by architecture and landscape of a high standard of design that celebrates local history, climate, ecology and building practice, in keeping with new urban design guidelines and standards for both the public realm and for private lands.**

The transportation related and public realm problem and opportunities that are identified must incorporate and apply these community design principles, and must ensure that the preferred design properly balances and promotes the needs of pedestrian, cyclist, transit and vehicular traffic along the Malden Road Corridor and establishes:

- **a comprehensive and effective set of preferred public safety, traffic and public realm improvements that need to be made within this transportation corridor (including the Malden Town Centre) to meet the evolving needs of existing and future LaSalle residents for a twenty-year planning horizon; and**
- **an implementation strategy for this transportation corridor that is fiscally and environmentally responsible; enhances public safety for motorized and non-motorized forms of transportation; promotes and facilitates healthy and active lifestyles; properly addresses on-going municipal servicing requirements; and is capable of retaining/attracting businesses, services and residents as part of a vibrant, attractive and safe Malden Town Centre.**

Section 4.0 of this report expands on the problems and opportunities from a traffic, safety, cycling and pedestrian and urban design perspective.

2.0 PUBLIC CONSULTATION PROGRAM

2.1 Project Steering Committee

This study was undertaken under the direction of the Project Steering Committee, made up of administration staff from the Town and County.

The Committee met with the Consulting Team at regular intervals throughout the process (six meetings), reviewed and commented on the draft submission of various documents, provided background information, attended and assisted at Council meetings, Public Information Centres, and a workshop, and responded to public inquiries. The Committee also organized the uploading of documents on the Town and County web sites, and placed advertisements in the local newspapers.

2.2 Council Meetings and Presentations

Council was kept informed of the study progress. Two Council presentations were made.

A meeting was held on October 28, 2008 to discuss property issues along the corridor.

A presentation was made to Council on April 14, 2009. The presentation material is included in ***Appendix M.*** Council's comments, as well as the Consulting Team's responses, are included in ***Table 19.*** Council was asked to pass a Resolution on April 28, 2009 authorizing the publishing of the Notice of Completion.

2.3 Public and Agency Contacts

Public and agency consultation is a key element of the EA planning process and accordingly, extensive efforts have been made to provide the public and agencies with information on the study and to solicit input.

A contact list of potential stakeholders, groups, and agencies was established in consultation with the Town of LaSalle in order to identify interested parties. Refer to ***Appendix A: Property Owners Mailing List*** for the complete contact list for property owners within the study area. Refer to ***Appendix B: Agency and Stakeholder Mailing List*** for the complete contact list of agencies with an interest in the study area.

A Notice of Project Initiation, as shown in ***Appendix C: Notice of Project Initiation***, was published in the *LaSalle Post* on Thursday, May 1, 2008 and Thursday, May 8, 2008, and in the *LaSalle Silhouette* on Friday, May 9, 2008, to notify the public of the proposed undertakings. Agencies were also notified of the project initiation by facsimile and mail, while individual letters were sent or delivered to property owners within the study area, the week of April 21, 2008. The Project Initiation Notice was also posted on the County of Essex and Town of LaSalle websites.

The first of two Public Information Centres (PIC) was held on Wednesday, June 25, 2008, at the Vollmer Culture and Recreation Complex in the Town of LaSalle and the second PIC was held on Thursday, October 30, 2008, at the Vollmer Culture and Recreation Complex. The first PIC consisted of an informal walk-in session with displays summarizing the work completed to date and the recommended solution. The second PIC also consisted of an informal walk-in session with displays summarizing the work completed to date and the recommended design concept. The PICs were held in order to provide residents in the study area and the public with background information and an evaluation of alternatives and design concepts, as well as the preliminary recommendations.

2.4 Workshop Committee

In order to better understand the problems and opportunities along the corridor, members of the public were invited to a workshop that was held on May 7, 2008. ***Appendix D: Notices of Issues & Design Workshop*** contains the notice that was distributed along the corridor, the week of April 21, 2008.

Members of the public, including some Town Council members, attended and were asked to provide feedback on four key themes:

- Traffic;
- Safety;
- Pedestrian and Cycling; and
- Urban Design

The feedback from the workshop provided important information to the Consulting Team.

The workshop participants were also invited to a presentation of the work completed just prior to the Public Information Centre held on October 30, 2008.

The workshop presentation material, participant input and minutes can be found in the ***Appendices E, F and G.***

2.5 Public Information Centres

Two Public Information Centres were held on June 25, 2008 and October 30, 2008 to present work completed and receive feedback from the public and agencies. Notices are included in ***Appendix H.***

The material presented at these Public Information Centres are included in ***Appendices I and J*** of this report.

Comments received are also included in the ***Appendices K and L*** and the responses to these comments are included in ***Section 8.0 and 9.0*** of this report.

3.0 DESCRIPTION OF THE ENVIRONMENT

The Malden Road Corridor is an existing urban developed corridor. In general, the corridor has been significantly disturbed as a result of construction of various infrastructure components (roads, sewers, watermains, utilities) and buildings throughout the corridor.

3.1 Terrestrial and Aquatic Environment

The existing right-of-way has been significantly disturbed. In the residential areas, landscape features including turf, landscape plantings, manicured lawns and ornamental trees abut the right-of-way.

Two natural areas exist: Turkey Creek and Cahill Drain. Any work proposed in and around these crossings will need to address fish habitat and water quality.

3.2 Soils and Topography

Geotechnical reports have been completed along the corridor as part of past infrastructure projects (sanitary sewer installation) as well as additional investigation for this project. The geotechnical information is included in ***Appendix N.***

The ground is genuinely a silty clay with pockets of sand. Bed rock is expected to be about 30 metres below grade.

The topography is very flat, resulting in poor drainage of the natural soils.

3.3 Groundwater

Previous geotechnical reports indicated that groundwater is present and in some cases can cause construction difficulties, particularly at the Turkey Creek and Cahill Drain crossings.

3.4 Social Environment

The northerly part of the study area from the Town limits to the Cahill Drain is primarily heavy commercial including shops, stores and services and is referred to as the Town Centre. The Town's Municipal buildings are located on the northeast corner of Malden Road and Normandy Road.

From the Cahill Drain southerly to Reaume Road, the corridor transitions from commercial to single-family residential dwellings.

The Town's Vollmer Culture and Recreation Complex is located at the south end of the study area, along with a public high school (Sandwich Secondary School).

3.5 Economic Environment

As noted, commercial uses dominate the northerly portion of the corridor. This is one of the major retail areas of the Town, along with service outlets and restaurants.

3.6 Existing and Future Land Uses

The Town's Existing and Future Land Use Plan for the study area is included as ***Figure 3.0.*** The existing land uses generally reflect the Official Plan designation.

Within the Town Centre area, there is the potential for additional new and/or expanded commercial, multi-unit residential and civic buildings. The Town is encouraging new "street edge" development and redevelopment to occur on vacant and partially developed sites within this area in keeping with the approved Town Centre policies.

3.7 Cultural Resources

The weeks of April 21, 2008, June 9, 2008 and October 6, 2008, Dillon submitted letters and notices to the following groups indicating the Town's proposed undertaking and the upcoming public consultation dates:

- Walpole Island First Nation
- Caldwell First Nation
- Moravian of the Thames
- Chippewas of the Thames
- Munsee Delaware Nation
- Department of Indian and Northern Affairs
- Ministry of Culture (Toronto)
- Ontario Secretariat for Aboriginal Affairs
- Indian and Northern Affairs Canada

The groups listed above did not contact Dillon, the Town or the County indicating a potential for the presence of archaeological or cultural resources.

4.0 DEFINITION OF THE PROBLEM AND/OR OPPORTUNITY

4.1 Background

Phase 1 of the Municipal Class EA process involves the identification of the problem and/or opportunity being addressed by the study. This identification included:

i) Reviewing the findings and conclusions of previous transportation reports such as:
- Malden Arterial Road Corridor Study, Transportation Planning Report (1995);
- Master Servicing Study and Secondary Plan, Bouffard Planning District, Transportation Master Plan (2002);
- Town of LaSalle Road Needs Study (2007); and
- Town of LaSalle Commercial and Employment Land Study (2007).

ii) Carrying out an assessment of the existing roadway.

iii) Undertaking a traffic analysis including a review of:
- Existing traffic volumes, and
- Future traffic volumes.

iv) Assessing the needs of pedestrians and cyclists along the corridor including interconnectivity to facilities outside the corridor.

v) Reviewing the urban design and streetscape opportunities and problems.

vi) Reviewing staging and timing considerations.

vii) Developing a statement of the problem being addressed by the study (as noted in Section 1.5 of this document).

viii) Assessing alternatives at a planning level.

4.2 Study Approach

The Town of LaSalle has identified through previous work, a vision for the Malden Road corridor that is based on the principle of accommodating the needs of all users by providing a balance between transportation, cycling, pedestrian and future transit needs, and enhancing the streetscape along the corridor.

Specific objectives for the study included:

- the development of a human scale livable and safe transportation corridor that accommodates all modes of travel;
- a corridor that provides for the safe and efficient mobility needs of vehicles with equal opportunities for pedestrians, cyclists and persons with disabilities;
- the establishment of facilities along the corridor that are integrated into the surrounding Town system and serve as a spine for north south mobility needs; and
- enhancement of the corridor through improvements to the streetscape.

Key considerations included the following:

- integration of sidewalk, multi-use trail and cycling facilities;
- pedestrian and cyclist movement at intersections;
- traffic operations and roadway safety;
- long term capacity requirements;
- access management and feasibility of on-street parking;
- speed and traffic calming measures; and
- streetscaping enhancements.

4.3 Background Studies

Town of LaSalle Official Plan (2003) – The Official Plan contains the Town's plans up to 2016. It includes relevant policies related to future land use and future road construction within LaSalle to accommodate the anticipated growth in population. Proposed land uses along the Malden Road corridor are identified, as well as future collector and arterial roads proposed to connect to Malden Road.

Town of LaSalle Road Needs Study (2007) – This study took an inventory of all roads and railway crossings in LaSalle and identified needed improvements to the network within the next ten years. Included as part of the report were AADT counts for strategic locations along Malden Road. The report did not recommend any improvements required to Malden Road under current operating conditions. However, it did state that should planned expansion occur in the Howard and Bouffard Planning Districts (as per the Official Plan), Malden Road would require a capacity upgrade.

Master Servicing Study and Secondary Plan, Bouffard Planning District, Transportation Master Plan (2002) – This report includes a comprehensive plan for a 600-hectare "greenfield"

development (2016 build-out) in the southwestern corner of LaSalle's urban area. It also includes locations, classifications, and cross-sections of proposed roadways, recommendations to integrate this development with the regional transit network, cost estimates, and transit policy.

Malden Arterial Road Corridor Study, Transportation Planning Report (1995) – This report documented a transportation planning study of the 3.5 km section of Malden Road in central LaSalle. Recommendations for road expansion, signalization, pedestrian, cycling, parking and transit improvements were based on anticipated development for 3 horizon years (2000, 2015, and build-out).

Town of LaSalle Commercial and Employment Land Study (2007) – This study documented how LaSalle should expand and manage its commercial districts to deal with anticipated growth, as well as how to manage its employment districts to meet current and anticipated demand. Malden Town Centre is identified as the main commercial focus of LaSalle, and it is recommended that this should be maintained.

4.4 Existing Conditions

4.4.1 Roadway Geometry and Intersection Controls

Malden Road has three distinctive cross-sections. The first cross-section, from Todd Lane to about 100 metres south of Normandy Street, has concrete curbs and gutters. South of Normandy Street to Reaume Road, the cross-section has a concrete gutter and a gravel shoulder on the west side. The east side has a concrete gutter separating the road from a paved multi-use path parallel to the road. The third cross-section, from Reaume Road to Meagan Street, is rural in character. A gravel shoulder on either side leads to a ditch used for drainage. There are no concrete curb infrastructures along this segment.

The following intersections along the corridor are signalized:

- Malden Road and Todd Lane;
- Malden Road and Delmar Street;
- Malden Road and Sprucewood Avenue;
- Malden Road and Normandy Street; and
- Malden Road and Laurier Drive.

The remaining intersections operate under two-way stop control, with Malden Road being the major approach in all cases. ***Figure 4.0*** provides a schematic of the lane configurations and signal control at each intersection along the corridor.

4.4.2 Existing Transit Network

Transit Windsor Route 7 serves Malden Road between Todd Lane in the north and Sprucewood Avenue in the south, connecting LaSalle to the University of Windsor, the Devonshire Mall, and St. Clair College. This service runs six days a week, with a 40-minute frequency on weekdays and an hourly frequency on Saturday. The rest of the corridor is not currently served by transit.

4.4.3 Bicycle and Pedestrian Network

A multi-use path runs along the eastern side of Malden Road from a point approximately 100 metres south of Normandy Street to Reaume Road. The multi-use path consists of one lane in each direction for bicycles and separate space for pedestrians. The multi-use path lanes are asphalt paved. North of the multi-use path, a concrete sidewalk runs along the eastern side of Malden Road to Todd Lane. South of the multi-use path, there is no sidewalk on the eastern side of Malden Road. There are sporadic locations along the western side of Malden Road where concrete sidewalks also currently exist.

All signalized intersections contain at least one set of pedestrian signals and crosswalks per direction.

4.4.4 Existing Traffic Volumes

Existing weekday AM and PM peak hour traffic volumes for the key intersections in the study area were obtained through turning movement counts commissioned by Dillon. AADT (Average Annual Daily Traffic) volumes were obtained from data collected for the 2006 LaSalle Road Needs Study report. The survey dates of the various traffic counts are listed in ***Table 1***. The existing peak hour traffic volumes, representing the critical conditions in analysis, are illustrated in ***Figure 5.0.*** The AM peak hour was found to be 7:45 to 8:45 AM and the PM peak hour from 4:15 to 5:15 PM.

Table 1: Traffic Count Survey Dates

Intersection	Survey Date	Source
Todd Lane	March 18, 2008	Dillon
Delmar Street	March 18, 2008	Dillon
Sprucewood Avenue	March 18, 2008	Dillon
Normandy Street	March 19, 2008	Dillon
Morton Drive /Grillo Drive	March 18, 2008	Dillon
Stuart Boulevard	March 19, 2008	Dillon
Reaume Road	March 19, 2008	Dillon
Bouffard Road (West)	March 18, 2008	Dillon
Bouffard Road (East)	March 19, 2008	Dillon
Laurier Drive /Gilroy Street	March 19, 2008	Dillon

Table 2 summarizes the typical traffic volumes for various segments along Malden Road. In general, the PM peak hour represents 8.5% of the daily traffic along Malden Road. This factor was used to calculate AADT volumes for segments that did not have this data in the 2006 study.

Table 2: Typical Corridor Section Volumes

Road Section	AM Peak Hour		PM Peak Hour		AADT
	SB	NB	SB	NB	Two-way
Todd Lane to Sprucewood Avenue	250–350	550–650	700–750	450–550	14,000
Sprucewood Avenue to Morton Drive	250–300	650–750	750–900	450–500	15,500
Morton Drive to Reaume Road	250–300	450–650	700–800	450–550	14,500
Reaume Road to Laurier Drive	250–350	450–600	500–650	350–500	11,500

4.4.5 Existing Roadway Safety Characteristics

A summary of all collisions from 2005 to 2007, as well as Individual Motor Vehicle Accident Reports (MVARs), along Malden Road were provided by the Town of LaSalle. ***Table 3*** summarizes the number of collisions on Malden Road by year.

Table 3: Collisions Along Malden Road, 2005-2007

Year	2005	2006	2007
Collisions	44	46	39

Over the last three years, an average of 43 collisions/year occurred along Malden Road. The precise location, movements, and driver actions that led to these collisions were obtained from individual Motor Vehicle Accident Reports (MVARs).

4.4.6 Trends

Rear-end collisions were prevalent throughout the corridor. While some collisions were due to weather conditions (wet or icy roads) the majority were due to driver carelessness or inattentiveness (such as hitting a stopped vehicle). Numerous rear-end collisions resulted in chain reactions involving 3 or 4 vehicles. There were also a number of collisions with deer reported (7 total, or approximately 2 per year), specifically around Todd Lane and at the southern end of the corridor. Most collisions resulted in vehicle damage; few collisions along the corridor resulted in injuries to any of the parties involved.

Malden Road at Delmar Avenue

Of the approximately 15 collisions recorded at Malden Road and Delmar Avenue between 2005 and 2007, 5 of these (33% or 1-2 per year) involved vehicles travelling in the southbound left turn lane being sideswiped by another vehicle trying to manoeuvre into the same lane. In most cases, the vehicle changing lanes did not realize there was a vehicle in that lane already. This is because there is an abrupt change in the lane configuration upstream of this intersection: a 2-way left turn lane extends from the north until 45 metres upstream of the intersection. At this point, there is a 15 metre gap in the pavement markings (presumably to allow those vehicles turning left to switch lanes) before the left turn lane is marked as a solid white line for the last 30 metres. It is possible that vehicles turning left at Delmar switched into the 2-way left turn lane and continued on into the dedicated southbound left turn lane.

Malden Road at Sprucewood Avenue

Of the approximately 16 collisions in the vicinity of Malden Road and Sprucewood Avenue, 4 of them (25% or 1.3 per year) involved the channelized southbound right turn lane. This turn is greater than 90 degrees, reducing the visibility for vehicles trying to merge. As well, 2 of these collisions were due to icy conditions at this turn where a turning vehicle, unable to make the full turn, collided with a vehicle in the eastbound left turn lane.

Malden Road at Normandy Street

Between 2005 and 2007, there were 4 collisions in the northbound direction of Malden Road south of Normandy Street where a vehicle attempting to move into the right turn lane sideswiped a vehicle already there. This may be due to some confusion with the pavement markings in the area. There are 2 northbound right turn lanes in quick succession that may be confused as one lane: the first one is for the plaza at the southeast corner of Malden Road and Normandy Street, while the second is for vehicles turning eastbound onto Normandy Street.

There were also 5 collisions between vehicles and pedestrians or cyclists at this intersection during the analysis period, resulting in injuries. While these collisions occurred in various locations, the future design of Malden Road should be cognizant of the interaction between pedestrians, cyclists, and vehicles at this intersection.

Normandy Street to Meagan Drive

The majority of collisions along this segment were rear-end collisions where drivers failed to stop for turning vehicles or for a queue resulting from a turning vehicle. At Reaume Road, 3 of the 4 collisions reported during the study period were collisions between drivers turning from Reaume Road onto Malden Road and drivers on the through approach.

4.5 Cyclists and Pedestrians

4.5.1 Problems

Problems for cyclists and pedestrians within the study area may be categorized as either functional or physical. The functional problems represent cyclist and pedestrian activities that are desired or desirable to occur within the study area, but which are made impossible, difficult or unsafe due to the present conditions there. Physical problems represent actual physical conditions within the corridor that restrict or make the activities of cycling and walking unsafe. These may, in some cases, be the cause of functional problems, but may not always be apparent to the user. Physical problems are further divided into problems of context or surroundings, and problems with the facilities themselves.

4.5.2 Functional Problems

Cyclist and pedestrian movement between the Town Centre and the southern part of the corridor (Vollmer Culture and Recreation Complex and Sandwich Secondary School, for example) has been described as difficult and unattractive. Because most pedestrian and cycling trips in the

immediate area are likely to make some use of the corridor, it is very important that Malden Road be usable, safe and attractive for pedestrians and cyclists.

Cyclists are often not able to cycle the length of the study area without becoming confused about their proper positioning, whether it be on-road or off-road. Changes in the roadway conditions and lack of space and of continuous designated or demarcated facilities for cycling contribute to this problem.

Pedestrian crossings of Malden Road throughout the northern portion of the study area are very difficult for many residents, especially those with reduced mobility or small children. This is a result of the wide roadway and the configuration or timing of traffic signals. It is especially important that this problem be addressed as there are numerous apartments serving senior citizens in this area, especially east of Malden Road, around Normandy Street, and the services used by these residents are located on both sides of Malden Road.

Pedestrian crossings of the central and southern portions of the study area are limited to a small number of marked intersections, resulting in longer trips for pedestrians, or unsafe crossings of the roadway at unmarked locations. It would improve the accessibility of the Malden Road corridor to increase the number of locations where the road can be safely crossed and to ensure that these crossings are well-demarcated, signed and signalized where necessary and practical.

Users of the Cahill Drain Trail face problems connecting to, from and across Malden Road. An improved connection with this trail will help to connect trail users to destinations on or near Malden Road, and will make the trail more attractive to users. As development increases, east of Malden Road, this trail has the potential to be a very strong, east-west community connection across LaSalle.

Increasing levels of motorized traffic along Malden Road increases the potential difficulties associated with many of the above problems. All proposed solutions should take into account the interactions between cyclists, pedestrians and motorists, and ensure that each user is able to safely use the facilities.

4.5.3 Physical Problems - Context

Numerous driveways on either side of Malden Road result in numerous turning vehicles, potential collision sites, and break up the continuity of any possible cycling and pedestrian facilities. It is possible and recommended that all future facility design acknowledge the

presence of driveways and ensure that adequate fields-of-vision are maintained for drivers, pedestrians and cyclists, and in some cases, warning signage may be appropriate.

The width of the existing Malden Road right-of-way may proscribe the available solutions, or require that compromises be made between the various transportation modes.

The steep ditches, located near the roadway, on either side of parts of the central and southern sections of Malden Road present a hazard to cyclists and pedestrians using the shoulder of the road—they restrict these users' ability to escape collisions, and increase the potential for injuries from slips or falls. As well, should the ditches be retained in a design solution, they would severely limit the facility options possible.

The bridges on Malden Road over Turkey Creek and Cahill Drain have very narrow pedestrian areas, and a narrower roadway than the rest of Malden Road. Both conditions are problems and may restrict the possibility of improving cycling and pedestrian facilities over these structures without significant expense.

Utility poles located along Malden Road throughout the study area may restrict the available facility options if they are to remain in place. Whether left as-is, or moved to a new location, adequate setbacks must be provided between these poles and any cycling or pedestrian facility.

4.5.4 Physical Problems - Facilities

Currently, cycling and pedestrian facilities are not continuous for the length of the corridor. To be useful, successful and safer, cycling and pedestrian facilities should be continuous. Discontinuities confuse users, potentially leave them stranded or lead them into unsafe situations, and discourage further use of the facility or of cycling and walking altogether as ways to reach destinations.

The types of cycling and pedestrian facilities in-place vary along the length of the corridor. These include sidewalks, multi-use trails and even the shoulders of the road. These individual facilities, in some cases, also vary in position and design. Wherever possible, facilities should be consistent for as long a distance as possible. Where conditions change and facility design may not be able to remain consistent, the transitions should be smooth, navigable and well-marked by signs or line painting. This is generally not the case on Malden Road today.

There are no designated on-road cycling facilities of any type anywhere within the corridor, though there are on-road cyclists present. Designating and clearly marking cycling facilities will improve safety on the road for all users, and will help to ensure that cyclists in the roadway are expected by motorists.

In the central and southern parts of the corridor, pedestrian facilities are in place only on one-side of the corridor. Because trip start and end-points occur on both sides of Malden Road, it would be more appropriate for any cycling and/or pedestrian facilities to be located on both sides, where there is allowable room to do so. As a minimum, some form of pedestrian facility and some form of on-road cycling facility should be implemented on both sides of the road.

The existing sidewalks that are in place are narrow. Even to accommodate two-way pedestrian traffic, a wider sidewalk would be desirable, however these sidewalks are presently accommodating two-way pedestrian *and* bicycle traffic, as children use them to go to and from school and other activities. Wherever a sidewalk is installed, its width should be generous, and it should be complemented by an adjacent cycling facility. A wide multi-use pathway, set back from the road, would be an acceptable alternative to a sidewalk, but would not replace the need for an on-road cycling facility.

In some parts of the central area of the corridor, cycling and pedestrian facilities—in this case, a multi-use pathway—are separated from the vehicular traffic lanes by only a rolled curb. Further south in the corridor, the cycling and pedestrian facility is on the shoulder of the road and separated by only a painted line. It is preferable to maintain a minimum landscaped buffer of 1.5 metres wide, with a curb-height grade difference.

The placement of the bollards on the multi-use pathway on Malden Road can create barriers for people in wheelchairs and less-skilled cyclists. Bollards are not always recommended as a safe or effective means of controlling the use of multi-use pathways. Appropriate signage and markings are preferred.

4.5.5 Opportunities

Many opportunities exist for increasing and improving bicycle and pedestrian use of the Malden Road corridor. Very important among these is the desire of many LaSalle residents to walk and to cycle more often, expressed during the public input components of this EA, and their positive reaction towards the multi-use trails built in the Town to date. That this desire exists represents a strong opportunity, as it suggests a latent demand for, and will help to guarantee the success of,

properly designed and implemented pedestrian and cycling facilities. In addition, residents have shown support for a number of specific possible improvements, such as closing ditches and connecting trails, which suggests general public support for initiatives aimed at improving and increasing infrastructure for cyclists and pedestrians.

Other opportunities are described below, divided into categories of context-related opportunities, and facilities-specific opportunities.

4.5.6 Opportunities - Context

That Malden Road itself is the location of many community destinations and is centrally located in LaSalle should be seen as an opportunity. The Town Centre and all of its businesses and services, Sandwich Secondary School and the Vollmer Complex all draw users to and along Malden Road. This contributes to the justification and viability of implementing comprehensive and extensive cycling and pedestrian facilities here.

A similar opportunity exists in that Malden Road acts or can act as a collector road, leading traffic including cyclists, pedestrians and transit users (who are generally pedestrians for a portion of their trip) directly to and from Windsor and destinations therein (such as downtown Windsor, the Detroit River waterfront, the University of Windsor, and St. Clair College, for example.) Its location, viewed regionally, also helps to ensure that there will be immediate and growing use of any pedestrian and cycling facilities that may be implemented. Encouraging the City of Windsor to connect their cycling and pedestrian facilities along Malden Road to LaSalle would be a positive additional improvement.

Nearby or crossing Malden Road there are a handful of complimentary facilities which represent an opportunity to integrate and connect new facilities on Malden Road into a more useful and comprehensive Town-wide and regional grid of cycling and pedestrian facilities. These connections include:

- the trails to and through the Spring Garden ANSI (connecting north from Todd Lane (just east of Malden Road);
- newly upgraded cycling facility connections on Normandy Street connecting eastward to Huron Church Line and beyond along the Sandwich Parkway Trail; and
- the Cahill Drain Trail connecting east and west, and intricately tied to many of LaSalle's neighbourhoods and parks.

There may be an opportunity, in conjunction with development east of Malden Road, to develop a new greenway corridor parallel to Malden Road with associated off-road cycling and pedestrian facilities. This would provide alternative and complimentary facilities to those that may be provided within a road right-of-way and would help to intensify the local network of cycling and walking facilities.

4.5.7 Opportunities - Facilities

The width of the existing Malden Road right-of-way has been described as a problem from a contextual perspective, however, it should also be seen as an opportunity in terms of providing a land base, which, properly planned and sensitively designed, should be able to accommodate new, high-quality cycling and pedestrian facilities. That the right-of-way is relatively free of obstructions such as large trees is also helpful. Solutions that take full advantage of the right-of-way should include planted buffer zones between the roadway and any sidewalk or pathway, including tree planting which will not only make the entire facilities image much more attractive, but fulfills an important function by shading pathway users. Other related design improvements and benefits are described in the urban design sections of this report.

Trends towards more and better cycling and pedestrian facilities being installed in other municipalities and the accompanying development of stronger and safer facility designs represents an opportunity for the Town of LaSalle to benefit from the experiences of other municipalities and organizations who have addressed similar issues regarding cycling and pedestrian facilities. Improved standards for design of on-road cycling lanes, shared lanes, multi-use trails, lane markings and facility signage, among other improvements have been developed, and LaSalle now has an opportunity to make use of these standards and to provide safer, highly visible and attractive facilities for cycling and walking.

With the implementation of new cycling and pedestrian facilities, there are related opportunities to carry out a number of improvements or to meet users' needs and desires. These opportunities include:

- the opportunity to develop innovative, functional and attractive pedestrian and cycling facilities that will be integral components in an attractively designed, dynamic "complete-street" streetscape;
- the opportunity to accommodate the needs of all users (cyclists, pedestrians, in-line skaters, persons with disabilities, seniors, persons with strollers, etc.);

- the opportunity to implement a consistent and continuous plan for branding, destination and way-finding signage along Malden Road, which may be coordinated with existing practices for signing other on-road and off-road facilities in LaSalle and elsewhere in Essex County;
- the opportunity to develop more on-road cycling facilities on connecting roads;
- the opportunity to develop more off-road multi-use trails;
- the opportunity to develop more sidewalks on connecting streets;
- the opportunity to upgrade traffic signals to the most current 'intelligent' technologies, to improve the use and experience of pedestrians, cyclists and motorists; and
- the opportunity to add more off-road trails that are appropriate and safe for children to develop their cycling skills in a situation that is safer and less intimidating than an on-road facility or a sidewalk.

4.6 Urban Environment

An assessment of the quality of the current urban experience along Malden Road and any potential for enhancement was based on how land use, built form, development density and the quality, experience and character of urban elements were expressed in the public realm. The assessment revealed that both the quality and nature of the urban experience along Malden Road was not uniform but varied discernibly. Three generally different precincts exist:

1. LaSalle 'Town Centre' (Todd Lane to Cahill Drain);
2. A Mixed-use Transitional Area (from Cahill Drain to Reaume Road); and
3. An Estate Residential Area (Reaume Road to Meagan Drive).

LaSalle Town Centre

The section of Malden Road from Todd Lane to the Cahill Drain identified as the LaSalle Town Centre provides the highest concentration of commercial and civic destinations.

Like most main street development, LaSalle's Town Centre has evolved over time and has become increasingly car-oriented. The most prominent features within the corridor's landscape are utility poles and wires, backlit tower signs and parking areas.

There is little to encourage pedestrian travel to, from or within this locale. Surface parking immediately adjacent to the sidewalk dominates views. There are limited examples of built form that have their principal entrances directly adjacent to or within a few metres of the pedestrian sidewalk. The street side pedestrian realm on both the east and west sides of Malden Road vary in both quality and treatment, are intermittent, sometimes non-existent, and are uneven and inconsistent in width and/or alignment presenting safety risks and posing trip hazards for pedestrians. Many areas require repair and many sections lack pedestrian walkways. It currently offers little in terms of safety, identity, greenery, shade or refuge. Opportunities to enhance the pedestrian realm are challenged by a constrained, limited right-of-way.

From an urban design perspective, the LaSalle Municipal Building exhibits a positive relationship to the street with its principal entrance and direct access facing the sidewalk on Malden Road. The building also provides clear pedestrian access from parking areas to the entrance. Improvements to landscaping, particularly on the south side of the building, would enhance the Municipal Building's prominence as one of the most important and symbolic places within the urban area.

The Mixed Use Transitional Area

A mix of land uses exists in this area although the majority of lots are single family residences. While the particular character of this area exhibits a more 'parkway' nature, there are fewer signalized intersections, large areas of open parking adjacent to the roadway and more curb cuts.

Qualitatively similar pedestrian conditions exist and pedestrian safety remains a primary concern here as in the Town Centre. The street side pedestrian walkway on both the east and west sides is inconsistent - in width, treatment and state-of-good-repair and offers pedestrians and cyclists only slight improvements in terms of safety, greenery, shade or refuge, over the Town Centre.

The Estate Residential - Vollmer Gateway Area

This section of Malden Road is two-lanes, with wide gravel shoulders and an open ditch on the east side; it has an ill defined street edge. Some urban design features continuous throughout the corridor also apply in the mixed-use transitional area.

5.0 TRANSPORTATION ANALYSIS

5.1 Transportation Analysis

5.1.1 Existing Capacity Analysis

The existing AM and PM peak hour intersection volumes were analyzed using the methodology outlined in the *Highway Capacity Manual* (HCM), 2000 edition. These analyses were facilitated using the Synchro 6.0 software package. Traffic signal timings were obtained from the Town.

The signalized and unsignalized intersection analysis results are summarized in ***Table 4 and Table 5*** respectively. For each of the five signalized intersections, the level of service (LOS), average vehicular delay, and volume-to-capacity ratio (v/c) have been noted for the intersection overall, and for any critical movements identified at the intersection.

Level of Service (LOS) applied to an intersection is a measure qualifying the amount of delay experienced by motorists, expressed either for specific turning movements or for the intersection as a whole.

Critical movements are defined as:

- any through lane, or shared through/turning lane, with a v/c of 0.85 or greater; or
- any exclusive turning lane with a v/c of 1.00 or greater.

Table 4: Existing Signalized Intersection Operations

Peak Hour	Intersection	Overall Intersection			Critical Movements			
		LOS	*Delay (s)*	*v/c*	*Movement*	*LOS*	*Delay (s)*	*v/c*
AM	Todd Lane	B	11.1	0.42	N/A	—	—	—
	Delmar Street	A	9.8	0.46	N/A	—	—	—
	Sprucewood Avenue	B	18.2	0.45	N/A	—	—	—
	Normandy Street	B	13.3	0.55	N/A	—	—	—
	Laurier Drive	B	11.0	0.45	N/A	—	—	—
PM	Todd Lane	B	14.5	0.57	N/A	—	—	—
	Delmar Street	B	13.2	0.52	N/A	—	—	—
	Sprucewood Avenue	C	24.4	0.59	SBT	D	45.4	0.87
	Normandy Street	B	16.5	0.67	N/A	—	—	—
	Laurier Drive	A	8.9	0.49	N/A	—	—	—

During the AM peak hour, all signalized intersections operate satisfactorily, with a LOS of B or better. Delays are not significant, and all approaches are under capacity. In the PM peak hour, operations are slightly worse, with the Sprucewood Avenue intersection operating at LOS C. The southbound through movement at this intersection is critical, operating with a v/c ratio of 0.87 and a 45-second delay (LOS D).

For the unsignalized intersections, as summarized in ***Table 5***, the LOS, delay and v/c were noted for the side street approaches.

Table 5: Existing Unsignalized Intersection Operations

Peak Hour	Intersection	Movement	LOS	Delay (s)	v/c
AM	Morton Drive /Grillo Drive	EB Approach WB Approach	D C	25.3 16.1	0.24 0.04
	Stuart Boulevard	EB Approach	C	17.2	0.20
	Reaume Road	EB Approach	B	14.7	0.21
	Bouffard Road (West)	EB Approach	B	14.0	0.17
	Bouffard Road (East)	WB Approach	C	24.2	0.32
PM	Morton Drive /Grillo Drive	EB Approach WB Approach	F C	124 18.7	0.59 0.03
	Stuart Boulevard	EB Approach	D	27.1	0.24
	Reaume Road	EB Approach	E	42.6	0.57
	Bouffard Road (West)	EB Approach	C	18.6	0.19
	Bouffard Road (East)	WB Approach	D	25.1	0.48

During the AM peak hour, all approaches operate satisfactorily, at LOS D or better. Operations worsen in the PM peak, with the eastbound approach at the Morton Drive intersection operating at LOS F due to the high approach delay (124 seconds). From a capacity standpoint, all approaches operate under capacity in both the AM and PM peak hours.

There have been concerns raised that the pedestrian signals along Malden Road do not currently provide sufficient walk time for people to cross the road safely. Current signal timing plans indicate pedestrian crossing times of 18 – 25 seconds are provided. Accepted industry standards assume a pedestrian walking speed of 1.0 – 1.2 m/s. At the intersection of Malden Road and Sprucewood Avenue, the southern east-west pedestrian crossing is 20 metres wide, yet only 18 seconds of walk time has been allocated to cross Malden Road. This situation results in a requirement for pedestrians to walk faster than the average walking speeds noted above; validating, in this location, the concerns raised over the sufficiency of walk times provided in the study area.

5.1.2 Existing Screenline Analysis

A screenline analysis was undertaken to determine the existing north-south capacity in LaSalle in the vicinity of the study area. Two east-west screenlines were analyzed, using model volumes from the Region's Transportation Model and existing volumes from traffic counts collected for

the purpose of this study. "East-West 1" screenline was positioned south of Normandy Street and extended from Front Road to Huron Church Road. "East-West 2" screenline also extends from Front Road to Huron Church Road, but was located south of Laurier Drive. The results of the existing screenline analysis are summarized in ***Table 6***.

Table 6: Existing PM Peak Hour Screenline Analysis

Screenline	Capacity	Model Volume	Existing Volume	Model v/c	Existing v/c
East-West 1	3950	2572	3029	0.65	0.77
East-West 2	4000	957	1642	0.24	0.41
East-West 1 Screenline (from Front to Huron Church, south of Normandy)					
Screenline	**Capacity**	**Model Volume**	**Existing Volume**	**Model v/c**	**Existing v/c**
Front Road	1600	1211	1482	0.76	0.93
Matchette Road	650	564	495	0.87	0.76
Malden Road	800	570	855	0.71	1.07
Disputed Road	900	227	197	0.25	0.22
TOTAL East-West 1	3950	2572	3029	0.65	0.77
EW 2 Screenline (from Front to Huron Church, south of Laurier)					
Screenline	**Capacity**	**Model Volume**	**Existing Volume**	**Model v/c**	**Existing v/c**
Front Road	1600	499	900	0.31	0.56
Matchette Road	800	133	203	0.17	0.25
Malden Road	800	247	350	0.31	0.44
Disputed Road	800	78	189	0.10	0.24
TOTAL East-West 2	4000	957	1642	0.24	0.41

As shown in ***Table 6*** the current volume-to-capacity (v/c) ratio of the screenline south of Normandy Street is 0.77. This means that traffic is currently utilizing 77% of the available screenline capacity during the existing PM peak hour. From a volume-to-capacity perspective, the 0.77 is below the threshold of 0.90 (which is commonly considered to be the screenline critical v/c threshold at which additional capacity is needed for a PM peak hour time frame), however future growth will add traffic demand and the results will likely be approaching the critical threshold. The volume-to-capacity ratio on Malden Road specifically, south of Normandy Street, is 1.07, which is above the critical threshold of 0.90. This will also only

worsen as future growth is added to the network. Therefore, it is recommended that additional north/south capacity be added to Malden Road from Todd Lane to Normandy Street.

The analysis of the screenline located south of Laurier Drive resulted in a volume-to-capacity ratio of 0.41. This does not indicate capacity issues, as it is much less than the critical threshold of 0.90. Malden Road analyzed individually at this location is also currently operating with a v/c much lower than the critical 0.90 at 0.44. Therefore, no additional through capacity is recommended at this time along Malden Road south of Normandy Street to Meagan Drive.

5.1.3 Future Traffic Methodology and Assumptions

The traffic forecasting exercise assumed a horizon year of 2021. Background population and employment projections were extracted from the Region of Essex 2021 Transportation Model. These projections were converted into future trips using population and employment trip generation rates acquired from The Master Servicing and Secondary Plan Report for the Bouffard Planning District. The population trip generation rate used was 0.384, with a 61% inbound, 39% outbound split. The employment trip generation rate used was 0.42 with a 19% to 81% inbound to outbound split. The rates were developed using ITE trip generation rates for the area along the southeast portion of the study area. It was assumed that these rates were conservatively representative of the study area. This assumption is consistent with other studies conducted in the study area.

To predict the total future traffic volumes, Dillon undertook a "bottom-up" forecasting exercise for anticipated development zones along Malden Road, as indicated in the Region's Transportation Model. Existing traffic volumes were expanded by adding new trips generated for population and employment projections per zone. Distribution and assignment was conducted using distribution assumptions from the Bouffard Planning District Master Servicing and Secondary Plan Study along with future traffic pattern predictions based on future road improvement projects and current traffic patterns. Volumes were projected for the 2021 PM peak hour only, as this is the critical peak traffic period observed in existing conditions.

5.1.4 Planned Network Modifications

Based on the 2003 Official Plan for the Town of LaSalle a number of modifications to the existing road network are planned for 2016. The following are the arterial and major collector improvements proposed in the vicinity of the study area:

- proposed Laurier Drive Extension (Laurier Parkway) as an arterial road from Malden Road to Howard Avenue;
- extension of Reaume Road, as a major collector, from Malden Road to connect with Sandwich West Parkway at Huron Church Line;
- new major north-south collector (Town Centre Parkway), parallel to Malden Road, between Laurier Drive Extension and Normandy Street; and
- new major north-south collector (Woodlot Parkway) parallel to Disputed Road between Laurier Drive Extension and Normandy Street.

For the purposes of this analysis, the only project assumed to be completed by the 2021 horizon is the Laurier Drive extension (Laurier Parkway), from Malden Road to Howard Avenue, for which funding has been secured for the construction of two lanes. It is recommended that the Town/County monitor the traffic volumes along Malden Road to determine if the long term traffic projections are being realized in order to confirm construction timing and phasing.

5.1.5 Future 2021 Traffic Volumes

The forecasted 2021 PM peak hour traffic volumes were estimated in two stages. Firstly, new trips for population and employment growth were generated for the traffic zones based on the Region's Transportation Model data and zone configurations. These trips were then distributed throughout the study area and added to the to the existing PM peak hour traffic volumes.

Figure 6.0 illustrates the 2021 PM peak hour traffic volumes for all the intersections in the study area.

5.1.6 Future Intersection Operations on Existing Road Network

A detailed analysis of the future 2021 PM peak hour traffic operations at signalized and unsignalized intersections within the study area was conducted under existing intersection control, lane configurations and signal timings using the calculated future 2021 PM peak volumes. These analyses were facilitated using the Synchro 6.0 software package. The results

of the analysis of the PM peak hour signalized intersection operations are shown in ***Table 7***. The results of the analysis of the unsignalized intersection operations for the PM peak hour are displayed in ***Table 8***.

Table 7: Future PM Peak Hour Signalized Operations on Existing Road Network

Cross Street	LOS	Delay (s)	v/c
Todd Lane	B	13.4	0.73
Delmar Avenue	B	13.5	0.61
Sprucewood Avenue	B	18.3	0.81
Normandy Avenue	B	20	0.78
Laurier Drive	B	13.6	0.69

All signalized intersections are operating at good levels of service (LOS B) during the PM peak hour in 2021 on the existing road network, however the volume to capacity ratios of the intersections of Malden Road and Sprucewood Avenue, Normandy Avenue and Todd Lane are approaching critical (0.85).

Table 8: Future PM Peak Hour Unsignalized Operations on Existing Road Network

Cross Street	Movement	LOS	Delay (s)	v/c
Morton / Grillo Drive	Eastbound Approach	F	1253.7	2.57
	Westbound Approach	E	49.7	0.09
Stuart Boulevard	Eastbound Approach	F	55.9	0.54
Reaume Road	Eastbound Approach	F	299.1	1.38
	Westbound Approach	F	71.6	0.14
Bouffard Road (West)	Eastbound Approach	F	55	0.68
Bouffard Road (East)	Westbound Approach	F	177.5	1.22

The unsignalized intersections within the study area are generally predicted to operate poorly during the 2021 PM peak hour, on the existing road network. Specifically, the intersection of Morton (Grillo) Drive and Malden Road is expected to experience excessive delays, a poor level of service (LOS F) and capacity issues on the eastbound approach. This is a result of a relatively high number of eastbound left turns from the minor approach with large conflicting through volumes. The eastbound approach at the intersection of Malden Road and Reaume Road is also

expected to operate poorly during 2021 PM peak hour conditions, with a poor level of service (LOS F), long delays (approximately five minutes) and a high volume to capacity ratio (v/c > 1.0). This is a result of a relatively large number of eastbound left and right turns from the minor approach onto Malden Road, experiencing relatively high conflicting through volumes. The east leg of Bouffard Road is also predicted to experience poor levels of service (LOS F), large delays (approximately three minutes) and capacity issues (v/c > 1.0) for westbound movements at the intersection with Malden Road in the PM peak hour of 2021 on the existing road network. These issues are mainly a result of high westbound right and left turn movements from the minor approach onto Malden Road. The intersections of Malden Road and Stuart Boulevard and Malden Road and the west leg of Bouffard Road are forecast to operate at poor levels of service (LOS F) in the 2021 PM peak hour, but with reasonable delays (> one minute) and well below critical capacity (v/c < 0.85).

5.2 Transportation Findings and Conclusions

Based on a review of the existing and future travel demands on Malden Road, the following was concluded:

- **Existing Conditions**

    - The existing 2 lane roadway is not adequate to handle the traffic volumes and is approaching or at capacity in the peak hours.

    - Access and egress delays occur at driveway locations along the corridor.

    - There are identified safety issues including pedestrian crossings, turning radius restrictions and merging lane conflicts.

    - There is inadequate separation of multi-use pathway from road traffic.

    - There are a number of access locations along the corridor that should be reviewed for consolidation or modification.

    - Existing traffic signal timings need to be optimized.

- Limited right-of-way widths.

- Improvements to some infrastructure features like open drains and ditches are required.

- As development occurs within the Town, traffic growth will continue to utilize Malden Road as a major north south connection.

- **Future Conditions**

  - Future 2021 peak hour traffic projections were analyzed on the existing road network. This analysis predicted signalized intersection operations will operate at good levels of service, with most intersections approaching critical capacity with volume-to-capacity ratios approaching 0.85. Existing unsignalized intersection operations during the 2021 PM peak hour are predicted to be poor, with low levels of service (mainly LOS F), long delays with most intersections approaching or over capacity.

  - As development continues with the Town, additional capacity will be required along certain sections of the corridor.

  - Pedestrian and cycling enhancements are required along the entire corridor to meet the requirements of users.

  - Future transit accommodations are required.

  - Potential realignments of side streets should be considered in the redesign of Malden Road to enhance network connectivity and to enhance overall roadway operations and safety.

6.0 CYCLING AND PEDESTRIAN ANALYSIS

6.1 Introduction

Increasing and improving cycling and pedestrian use and opportunities are viewed as important components of a balanced transportation strategy for Malden Road by the citizens, the Town of LaSalle and the County of Essex. These forms of *active transportation* are key aspects of a

"complete street" approach for the Malden Road Corridor. This kind of approach balances motorized traffic (including movement of goods), cycling movement, pedestrian movement and crossings, and landscaping concerns, equally within the designed roadway, as opposed to the more traditional, cars-first approach.

In order to analyse the existing situation and conditions of the study area, and to then determine what proposals or improvements should be considered, the consultant team reviewed related documents and reports, carried out a number of detailed field investigations, participated in a visioning workshop with stakeholders, in two Public Information Centres, and consulted closely during the entire process with Town of LaSalle and County of Essex staff.

6.2 Document Review

As part of the analysis aspect of work for cyclists and pedestrians, some of the documents and reports we reviewed were:

1. Town of LaSalle - Official Plan
2. Town of LaSalle - Pedestrian and Bicycle Facility Policy, dated May, 1999
3. Town of LaSalle - Staff report, dated September 6, 2007 regarding up-date and addendum to Pedestrian and Bicycle Facility Policy
4. Town of LaSalle - Pedestrian and Bicycle Facility Policy Statement and Plan of Action
5. Town of LaSalle - Summary, Culture and Recreation Master Plan
6. Town of LaSalle - Master Servicing Study and Secondary Plan
7. Town of LaSalle - Servicing Study and Secondary Plan, Bouffard Planning District Transportation Master Plan
8. City of Windsor Bicycle Use Master Plan (BUMP)
9. Transportation Association of Canada (TAC) Guidelines for the Design and Application of Bikeway Pavement Markings
10. AASHTO – American Association of Highway Traffic Officials, Guide for the Development of Bicycle Facilities
11. Velo Quebec – Technical Handbook of Bikeway Design, 2nd Edition
12. Waterfront Regeneration Trust – Design, Signage and Maintenance Guidelines – Waterfront Trail

1. ***Town of LaSalle - Official Plan*** - The Town's Official Plan makes a number of references to improving cycling, pedestrian and trail linkages. Some of these include:

   - "...natural corridors, trails, bikeways joining core natural heritage sites, parks and schools will enable residents of LaSalle to travel between neighbourhoods without having to rely exclusively on cars and roads." (from Section 3.10.2.v.).

   - Under "Community Structure," the Town's transportation system is described as' "designed to be a balanced transportation system, which is capable of providing LaSalle residents with viable alternatives to the almost exclusive use of the car, particularly for short trips within and between neighbourhoods and adjacent districts. It includes a major bikeway/trail system, and is planned to have a road network that is "transit-supportive" and convenient and safe for cyclists and pedestrians" (from Section 4.2.5.2.vi).

   - Schedule E, Transportation Plan, indicates a town-wide "Bikeway / Linear Trail System".

2. ***Town of LaSalle - Pedestrian and Bicycle Facility Policy, dated May, 1999*** - This document sets out the Town's specific policies regarding bicycle use.

3. ***Town of LaSalle - Staff report, dated September 6, 2007 regarding up-date and addendum to Pedestrian and Bicycle Facility Policy*** - This document recommends updates to the Town's Pedestrian and Bicycle Facility Policy.

4. ***Town of LaSalle - Pedestrian and Bicycle Facility Policy Statement and Plan of Action*** - This document addresses the Town's bicycle use policies and provides a plan of action for the implementation or enforcement of those policies.

5. ***Town of LaSalle - Summary, Culture and Recreation Master Plan*** - This document identifies cycling as one of the top program / activity gaps in LaSalle, and bicycle trails and nature walks are listed at the top of the list of current and future needs.

6. ***Town of LaSalle - Master Servicing Study and Secondary Plan*** - This document provides additional context and information about existing and planned servicing in and near the study area.

7. ***Town of LaSalle - Servicing Study and Secondary Plan, Bouffard Planning District Transportation Master Plan*** - This document provides additional context and information about existing and planned servicing in and near the study area.

8. ***City of Windsor Bicycle Use Master Plan (BUMP)*** - Reviewed for information pertaining to possible existing or planned local connections, as well as further, up-to-date information on local practices for design and signage of cycling and pedestrian facilities.

9. ***Transportation Association of Canada (TAC) Guidelines for the Design and Application of Bikeway Pavement Markings*** - This is a useful guide and reference describing current best practices and minimum dimensional standards for design, pavement markings and signage of cycling facilities for Canadian municipalities. Contains material related to both on-road and off-road facility design.

   Detailed design of the preferred alternative for Malden Road, and any on-going or future design or upgrading of cycling facilities should always make reference to the most current edition of this document.

10. ***AASHTO – American Association of Highway Traffic Officials, Guide for the Development of Bicycle Facilities*** - Useful guide and reference describing current best practices and geometrical standards for design of cycling facilities from an engineering and cyclist movement perspective. Contains material related to both on-road and off-road facility design.

    Detailed design of the preferred alternative for Malden Road, and any on-going or future design or upgrading of cycling facilities should always make reference to the most current edition of this document.

11. ***Velo Quebec – Technical Handbook of Bikeway Design, 2nd Edition*** - Developed for use in the Province of Quebec, this is another useful guide and reference describing additional or alternative practices for design and signage of cycling facilities. Contains complimentary and alternative approaches to those described in the TAC and AASHTO Guides (above).

12. ***Waterfront Regeneration Trust – Design, Signage and Maintenance Guidelines – Waterfront Trail*** - Developed for use along the Lake Ontario Waterfront Trail, this is another useful guide and reference describing additional or alternative practices for design, signage and maintenance of cycling facilities. This document contains complimentary and alternative approaches to those described in the TAC and AASHTO Guides, and also provides detailed recommendations for special applications, that may not be covered in the other guides, such as practical approaches to crossing railways, implementing transitions between different facility types, and a detailed approach to an integrated way-finding signage and facility branding system.

6.3 Field Investigations/Conditions

This section provides a brief description and analysis of existing conditions on and near the study area, from a cycling and pedestrian perspective. For additional information specific to motor traffic or urban design issues, please refer to the relevant sections of this report.

The Malden Road corridor is divided into two areas for ease of analysis and description. In the field, the transition between these areas tends to be more gradual.

Northern, "Urban" Area (LaSalle Town Centre)
This section extends from the Todd Lane intersection, south to approximately the Cahill Drain. It includes the bridge crossing of Turkey Creek, and is characterized by narrow sidewalks and/or boulevards on both sides of Malden Road, large commercial and apartment (several of which serve senior citizens exclusively) land uses with accompanying parking, more signalized intersections and heavier traffic volumes.

Typical View of existing conditions on Malden Road, within Northern, "Urban" Area, or "Town Centre" (looking north). Note inconsistent alignment of sidewalk.

View of existing conditions on Malden Road, within Northern, "Urban" Area, or "Town Centre" (looking south at Delmar Street.) Note unmarked crossings and pedestrian barrier and varying surface-types on sidewalk.

Existing view across Malden Road at north side of Cahill Drain Bridge crossing (looking west.) Note multi-use pathway in foreground, sidewalk across street, and recommended location for Cahill Drain Trail connection beyond.

As noted, pedestrian facilities, namely sidewalks, are present on both sides of the street through most of this section. There are locations where the sidewalks are discontinuous or blocked by parked vehicles. These vary in width, position, and condition. Of note are the sidewalks on the bridge over Turkey Creek. These are significantly elevated from the roadway and are narrow in width. Improving this situation will be a significant challenge for the Town of LaSalle.

Pedestrian crossings of Malden Road through this section, though signalized, present an obstacle to pedestrians as the signal timing is short and the distance from curb-to-curb across Malden Road is quite far for less-able pedestrians.

Generally, in this segment, pedestrians are better-served than through the other parts of the study area, however, the demand for pedestrian facilities is also significantly greater, and the overall assessment of the level of service provided is characterized as insufficient.

There are no cycling facilities within the Malden Road right-of-way through any portion of this section. Normandy Road, connecting east from Malden, has a shared bicycle lane and connects further east to a multi-use trail running on the south side of the road. The Cahill Drain Trail is discontinuous at Malden Road, and a nearby trail to and through the Spring Garden ANSI (located beyond the municipal boundary, in Windsor) and accessed from Todd Lane, just west of Malden Road, is not connected to any cycling or pedestrian facilities within LaSalle.

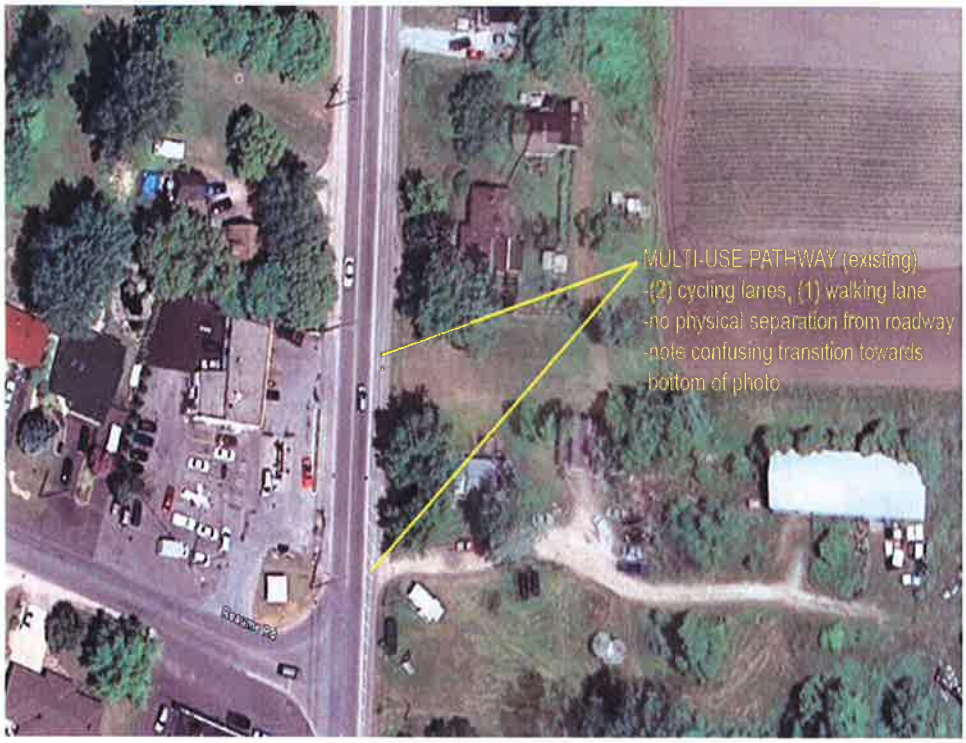
Generally, this segment of the corridor could be considered to have the greatest demand for cycling facilities, and the greatest potential for accidents or other issues to arise while this demand is not met, and cyclists choosing to cycle here are obliged to travel, undesignated, within inadequate vehicular traffic lanes. Note that this area may also have the greatest potential for significant, positive transformations to occur based on implementation of generous cycling and pedestrian facilities, and accompanying urban design improvements.

Also of note, Malden Road north of this segment (beyond the municipal boundary, in Windsor) is also under-serviced for both pedestrians and cyclists. Encouraging the City of Windsor to connect their cycling and pedestrian facilities along Malden Road to LaSalle would be a positive additional improvement.

Southern Area

This section extends from approximately the Cahill Drain bridge crossing, south to beyond the Vollmer Centre. It is characterized by a wide multi-use pathway on the east side of the road, extending from just north of Cahill Drain south to across from Reaume Road, which then transitions to a wide paved shoulder for the duration of the study area. Much of the west side of the road is made up of unpaved shoulders. Narrow steep ditches are also present adjacent to the pathways or shoulders through much of the corridor. There are no sidewalks. The properties fronting on Malden Road are mainly wide residential lots with deep setbacks and driveways accessing Malden Road, as well as a large high school and recreation complex on the east side of the road at the south end of the study area. Traffic volumes may be less heavy than are typically found to the north, but traffic speeds are possibly higher.

Typical existing view of Malden Road, within Southern Area (looking north.)
Note pedestrian space restricted to paved shoulder.



Aerial view of Malden Road at Reaume Road (see notes on image above.)
(Photo taken from Google Earth.)

As noted, sidewalks are not present through this section of the study area on either side of the road. The multi-use pathway has been divided into two cycling lanes and one pedestrian lane (on the side away from the motorized traffic) however, these are level with the road and not separated with any type of buffer or physical guard. The existing painted-line configuration on the multi-use path which designates pedestrians to one side is considered inadequate and not recommended. The wide paved shoulder is intended as a pedestrian facility, and it also presents safety concerns for the same reasons noted above. Transitions onto and between these facilities are also awkward and may confuse users. In practice, the un-paved shoulder on the west side is also used by pedestrians and is also a concern for safety and usability. The shoulders on both sides are frequently used to park cars, increasing the danger for pedestrians and cyclists. The ditches also present a hazard to cyclists and pedestrians by restricting these users' ability to escape collisions, and increase the potential for injuries from slips or falls.

Pedestrian crossings of Malden Road through this section, are restricted to a single marked crossing at Laurier Drive. In practice, this leads to pedestrians crossing the road at unmarked and unexpected locations. With designated pedestrian facilities being located on only one side of the road, the potential hazard is increased.

There are no cycling facilities within the Malden Road right-of-way through any portion of this section, and the cycling facilities that are present are on the multi-use pathway and paved shoulder, as described above.

Generally, in this segment, pedestrians and cyclists are very poorly served, the facilities provided present a number of possible hazards, and are frequently misused by motorists. That this section connects residential neighbourhoods with schools and recreational facilities suggests that better, safer linear facilities and more numerous safe crossings of the road should be considered a priority.

6.4 Public and Stakeholder Input

Through participation in a visioning workshop with stakeholders, and in two Public Information Centres, the consultant team was able to obtain input regarding the concerns of local residents and stakeholders related to Malden Road, and general input on related desires of how they would

like to see this are develop. A summary of key points related to cycling and pedestrian activities follows:

- Citizens of LaSalle want to be able to walk and cycle comfortably up and down the Malden Road Corridor on improved cycling and pedestrian facilities. The desire lines for this travel are from the Town Centre south to the Vollmer Culture and Recreation Complex and from the Sandwich Secondary School north to the residential neighbourhoods to the north of the Town Centre.

- On-road cycling facilities, multi-use pathways within the right-of-way, and sidewalks are facility-types that are supported by the public.

- Many residents have stated that there should also be better connections from Malden Road to both the off-road trail system, and adjacent cycling-friendly roads.

- Residents suggested that improved pedestrian and cycling facilities along and adjacent to Malden Road could be complimentary to the popular existing greenway system.

- Better crossings of Malden Road for cyclists and pedestrians are desired.

- The entire roadway from Todd Lane south to Meaghan Drive has very little tree planting in the road right of way or general streetscape amenities and is generally unattractive.

- The placements of the bollards on the multi-use pathway on Malden Road were identified as barriers for people in wheelchairs and less-skilled cyclists.

- The existing rolled curbs along Malden Road send out the wrong message to motorists. Barrier curbs are preferred and would be safer for pedestrians and cyclists.

- Currently, pedestrians and cyclists do not feel well-served by the facilities on the corridor.

6.5 Conclusions

The existing situation throughout the study area does not meet the needs and desires of existing and potential cyclists and pedestrians. Several broad areas of improvement may be identified, as follows:

- consider developing Malden Road as a "complete street" where the needs and comfort of motorists, cyclists, and pedestrians are better balanced, and where urban design and aesthetic concerns are also addressed;

- implement continuous, safe pedestrian and cycling facilities along both sides of Malden Road, throughout the study area;

- upgrade and improve existing crossings of Malden Road to make them more pedestrian friendly, and implement additional safe crossings where they are absent; and

- implement connections to existing on-and off-road cycling facilities connecting to or near Malden Road.

7.0 URBAN DESIGN ANALYSIS

The three identified 'character or precinct' areas require distinct urban design responses to preserve and/or enhance the quality of the public realm and the pedestrian experience, to reflect community pride and to provide a more favourable impression of the Town to visitors. These different character areas, in conjunction with engineering improvements to address traffic volumes and congestion issues have guided the preferred Urban Design Framework for Malden Road.

In addition to these character areas, as options for the roadway widening, re-alignment and traffic studies were reviewed and assessed, three key nodes were also identified creating additional opportunities to 'green' Malden Road and provide urban design features and civic gestures at the particularly key 'gateways':

1. The Green Town Centre Gateway at Todd Lane/Turkey Creek;
2. The Green Town Centre Gateway at Cahill Drain; and
3. The Laurier-Vollmer Gateway.

The Green Town Centre Gateways

These two nodes could provide the north and south gateways into LaSalle's commercial heart 'book-ending' the downtown LaSalle experience and marking the length of the five lane road cross-section. These gateways provide the best opportunity to establish LaSalle's community identity through landscape and built-form improvements and can serve to showcase LaSalle's civic nature through the use of urban design elements and enhanced streetscapes that integrate public art, feature lighting, special paving, street furnishings and enhanced pedestrian crossings.

These gateways also occur at the juncture of intensely built urban environments and more natural systems – Turkey Creek at Todd Lane on the north end and Cahill Drain just south of the Town Centre. The development of the Todd Lane roundabout, the widened bridge over Turkey Creek and over Cahill Drain, provide windows of opportunity to enhance the ecosystem of Turkey Creek and elevate Cahill Drain as a more viable natural habitat corridor. Naturalization efforts focused on these systems where they intersect with Malden Road, combined with complementary planting strategies for street trees, median, and parking lot buffer situations using a more native palette of materials that are also salt and drought tolerant, help to restore LaSalle's unique sense of place.

The Laurier-Vollmer Gateway

The Vollmer Culture and Recreation Complex, completed in early 2008, provides LaSalle with a range of indoor and outdoor facilities in support of culture and recreation - NHL ice surfaces, aquatics, soccer pitches, trails and meeting spaces for adults, seniors, pre-schoolers, local service clubs, community programs and special events. The Vollmer Complex sits behind Sandwich Secondary School. Laurier Drive, east of Malden road meets Mike Raymond Drive at the Vollmer Complex providing access and egress forming a looped roadway around the complex and the high school. Just south of this juncture is the limit of the study area, where Malden Road will retain a more typical two-lane rural cross-section.

The Laurier-Vollmer Gateway marks the end of LaSalle's urban precinct and is just inside the southern boundary of the Malden Road Study Area. The Vollmer Gateway provides an opportunity to address pressing traffic congestion and safety concerns related to the concentration of activity surrounding Sandwich Secondary School and the new Vollmer Culture and Recreation Complex. A generously landscaped median combined with other feature plantings and urban design features could provide a green gateway, assist in traffic calming, and signal the special nature of the Vollmer Culture and Recreation Complex and the role it plays in the community.

8.0 ALTERNATIVE SOLUTIONS

8.1 Transportation, Cycling and Pedestrian Alternative Solutions

As part of the Class EA process, a series of alternative solutions were considered to address the Problem and Opportunity Statement. The following sections describe the alternative solutions, the assessment and evaluation criteria used, and the results of the comparative evaluation of transportation, cycling and pedestrian alternatives.

8.1.1 Identification and Description of Alternate Solutions

Alternative 1: Do Nothing

- This alternative assumes that Malden Road is maintained in its present configuration with no roadway improvements.

Alternative 2: Improve Adjacent Parallel Roadways

- This alternative incorporates improvements to widen other roadways, adjacent and parallel to Malden Road, to increase capacity in the study area and accommodated projected future demand.

Alternative 3: Public Transit Service

- Alternative 3 encourages a shift in modal choice by increasing and improving local public transit service.

Alternative 4: Travel Demand Management (TDM) Measures

- An alternative to implement travel demand management techniques to reduce peak hour demand and single occupancy vehicles along Malden Road was considered.

Alternative 5: Traffic Signal Optimization and Co-ordination

- This alternative would improve the capacity along the Malden Road corridor by implementing signal optimization and signal co-ordination at appropriate signalized intersections.

Alternative 6: Cycling and Pedestrian Facilities

- Another alternative to encourage a shift in modal choice was considered. This would include providing facilities that promote alternative travel modes, such as cycling and walking.

Alternative 7: Widen Roadway and Create a "Complete Street"

- This alternative would increase vehicular capacity along Malden Road by providing additional travel lanes (3 lane or 5 lane cross-sections) to accommodate traffic demands.

8.1.2 Planning Evaluation of Transportation, Cycling and Pedestrian Alternatives

Alternative 1: Do Nothing

- This alternative does not address the issues identified in the Problem and Opportunity Statement.

Alternative 2: Improve Adjacent Parallel Roadways

- The evaluation of future capacity considered planned improvements to Huron Church Road, Laurier Parkway and Reaume Road. These improvements alone, will not address the issues and full scope of requirements identified in the Problem Statement.

Alternative 3: Public Transit Service

- A shift in modal choice by increased use of public transit service was considered in the future capacity analysis. It cannot solely address the issues identified in the Problem Statement.

Alternative 4: Travel Demand Management (TDM) Measures

- Implementing travel demand management techniques to reduce peak hour demand and single occupancy vehicles along Malden Road is part of the overall solution. TDM measures cannot solely respond to the transportation issues acknowledged in the Problem Statement.

Alternative 5: Traffic Signal Optimization and Co-ordination

- The improvements to signal timing identified in this alternative are a component of the required solution, but cannot solely address the capacity issues along the Malden Road corridor.

Alternative 6: Cycling and Pedestrian Facilities

- Providing facilities that promote alternative travel modes, such as cycling and walking will be a component of the solution, however, this alternative does not wholly address all the issues identified in the Problem and Opportunity Statement.

Alternative 7: Widen Roadway and Create a "Complete Street"

- The alternative to widen Malden Road by providing additional travel lanes (3 lane or 5 lane cross-sections) to accommodate traffic demands, in conjunction with implementing signal timing improvements, Public Transit improvements, cycling and pedestrian facilities and TDM measures is the recommended solution. This alternative will provide the best overall solution to the issues identified in the Problem and Opportunity Statement.

8.2 Urban Design Alternative Solutions

The urban design framework illustrates unique urban design opportunities that build on existing features - mature street trees, natural heritage features such as Turkey Creek and the Cahill Drain – and ensures these features can contribute to the corridor's renewal. The following principles guided the streetscape development concepts.

8.2.1 Identification and Description of Urban Design Alternative Solutions

Alternative 1: Do Nothing

Alternative 2: Establish Verdant Gateways as Civic Features that Enhance LaSalle's Unique Identity and Mark Arrival in LaSalle

- Take advantage of Turkey Creek and Cahill Drain.
- Expand/enhance open space along the corridor.
- Consider a traffic circle.

Alternative 3: Improve Community Identity

- Provide signage for way finding.
- Establish a 'family of signs' for Town facilities.
- Use banners for special Events and/or special places.

Alternative 4: Support Appropriate Intensification

- Attract and hold more retail and commercial services.
- Encourage street-related, street facing land uses.
- Ensure that new buildings address the street.
- Create convenient pedestrian routes.
- Screen at grade parking.
- Limit the amount of parking adjacent to the road corridor.

- Protect key view-sheds.
- Ensure that the public realm is welcoming.

Alternative 5: Improve Connectivity to Open Space

- Establish nodes at key intersection points.
- Give pedestrians priority.
- Identify and enhance the connection locations.

Alternative 6: Improve Aesthetic Characteristics of the Public Realm

- Make Malden Road an enjoyable and attractive thoroughfare and destination that can attract tourism and business.
- Bury overhead electrical infrastructure.
- Relocate poles to remove barriers.
- Consider decorative roadway lighting.
- Consider pedestrian level illumination in the commercial areas and at nodal areas.
- Establish a consistent landscape strategy:
    - Street trees;
    - Planters and baskets in the civic district;
    - Street furnishings; and
    - Continuous sidewalks.

Alternative 7: Define the Pedestrian, Cycle and Vehicular Travel Ways

- Encourage more pedestrian usage by using urban design features to enhance safety at nodes with more intense pedestrian activity:
    - Accentuate Road crossings;
    - Generous pedestrian travel way;
    - Consistent curb side zone; and
    - Flexible building side zone.
- Accommodate alternative modes of transportation and improve connections to off-road trails.

Alternative 8: Employ Traffic Calming

- Cycle lanes
- Roundabout
- Narrow the travel lanes
- Tree plantings

Alternative 9: Implementation

- Ensure guidelines encourage appropriate redevelopment.
- Nurture a sense of community.
- Ensure all parties can embrace guidelines.
- Ensure they can be implemented.

8.2.2 Planning Evaluation of Urban Design Alternative Solutions

Alternative 1: Do Nothing

- This alternative does not address the issues identified in the Problem and Opportunity Statement.

Alternative 2: Establish Verdant Gateways as Civic Features that Enhance LaSalle's Unique Identity and Mark Arrival in LaSalle

- This alternative can be part of the solution.

Alternative 3: Improve Community Identify

- This alternative can be part of the solution.

Alternative 4: Support Appropriate Intensification

- This alternative can be part of the solution but is best developed through the Town's planning documents.

Alternative 5: Improve Connectivity to Open Space

- Giving pedestrian priority will be difficult. This is best addressed from a safety perspective at signalized intersections.

Alternative 6: Improve Aesthetic Characteristics of the Public Realm

- Some of these elements can be incorporated, others may be cost prohibitive like burying overhead services.

Alternative 7: Define the Pedestrian, Cycle and Vehicular Travel Ways

- Most of the elements can be part of the solution. Property limitations will impact pedestrian travel way.

Alternative 8: Employ Traffic Calming

- This can be part of the solution.

Alternative 9: Implementation

- This can be part of the solution.

This long list of alternatives was reduced for evaluation into the following alternatives:

Transportation and Public Transit

Alternative A:	Do Nothing
Alternative B:	Three Lane Road
Alternative C:	Four Lane Road
Alternative D:	Four Lane Road from Todd to Cahill and Three Lane Road south of Cahill

Cycling

Alternative E:	Do Nothing
Alternative F1:	On-Street Cycling Facilities without Parking
Alternative F2:	On-Street Cycling Facilities with Parking
Alternative G:	Off-Street Cycling Facilities (Multi-use Trail)
Alternative H:	Off Right-of-Way Cycling Facilities

Pedestrian Features

Alternative I:	Do Nothing
Alternative J:	Sidewalks
Alternative K:	Multi-Use Trail

Urban Design

Alternative L:	Do Nothing
Alternative M:	Town Centre
Alternative N:	Transition
Alternative O:	Residential

8.3 Evaluation of Alternative Solutions

Each alternative solution was evaluated against a set of criteria, some of which included:

- Transportation
  - Improvements to vehicular flow
  - Improvements to vehicular safety
  - Traffic Calming
  - Public Transit

- Physical Environment
  - Impacts on terrestrial environment
  - Impacts on aquatic environment
  - Improvements to drainage network
  - Location of facilities
  - Cycling and pedestrian connectivity
  - Improvements to cycling and pedestrian safety
  - Roadway crossings (at-grade versus grade separated)
  - Improvements to streetscaping/urban aesthetics

- Social Environment
  - Property acquisition
  - Mail delivery
  - Existing and Proposed Land Use

- Economic Environment
  - Disruption to existing businesses

- Cultural Resources
  - Effect on Cultural Resources

- Utilities
  - Relocation of Existing Utilities

- Cost
  - Capital Cost
  - Operational and Maintenance Cost

Table 9 – Evaluation of Alternative Solutions, provides an evaluation and assessment of each of the alternative solutions.

Based on this evaluation and assessment of each of the alternative solutions, the Recommended Solution that was presented at PIC #1 included the following:

- 4 lane cross-section in the Town Centre (Todd Lane to Cahill Drain)
- 3 lane cross-section south of the Cahill Drain
- Cycling lanes/wider curb lanes to accommodate on street cycling (without parking)
- Sidewalks on both sides of the road in the Town Centre
- Sidewalk on the west side of the road, south of the Town Centre
- Urban design features along entire corridor
- Enclosed drainage system along entire corridor (storm sewers)

Table 10 – Summary of Public Information Centre #1 Comments provides comments received after the first PIC meeting. Responses from the Study Team are included.

Subsequent to the PIC and the receipt of comments, a transportation analysis of the recommended solution was undertaken as noted in the next section of this report.

Table 9: Evaluation of Alternative Solutions

Improvements to Malden Road Alternative Solution Evaluation Matrix TRANSPORTATION AND PUBLIC TRANSIT				
	Alternative A	**Alternative B**	**Alternative C**	**Alternative D**
Description / **Evaluation Criteria**	**Do Nothing**	**Three-lane Road**	**Four-lane Road**	**Four-lane Road from Todd Lane to Cahill Drain and Three-lane Road south of Cahill Drain**
Transportation				
Improvements to Vehicular Flow	None	Not adequate in Town Centre area	Acceptable	Will require diversion of traffic to easterly extensions on new roads (Laurier, Reaume)
Improvements to Vehicular Safety	None	Safer driveway access through use of centre lane	Additional capacity provides potential for gaps in oncoming traffic to facilitate access to properties	Safer driveway access through use of centre lane and additional capacity in 4 lanes section provides potential gaps.
Traffic Calming	None	Roundabouts will assist in traffic calming, improve traffic operations at intersections and define improvement area	Roundabouts will assist in traffic calming, improve traffic operations at intersections and define improvement area	Roundabouts will assist in traffic calming, improve traffic operations at intersections and define improvement area
Public Transit	Possible	Possible	Possible	Possible
Physical Environment				
Impact on Terrestrial Environment	None No disturbance of natural terrestrial habitat	Low No significant natural terrestrial habitat (woodlots, wetlands) in study area Source of water, food and nesting sites may be reduced for common suburban wildlife	Low No significant natural terrestrial habitat (woodlots, wetlands) in study area Source of water, food and nesting sites may be reduced for common suburban wildlife	Low No significant natural terrestrial habitat (woodlots, wetlands) in study area Source of water, food and nesting sites may be reduced for common suburban wildlife
Impact on Aquatic Environment	None Mix of open and closed roadside drains (ditches) along Malden corridor No impacts to Turkey Creek and Cahill Drain in study area	Low No fish habitat in roadside drains (ditches) along Malden corridor Impacts to fish habitat in Turkey Creek and Cahill Drain during widening/replacement of bridges	Low No fish habitat in roadside drains (ditches) along Malden corridor Impacts to fish habitat in Turkey Creek and Cahill Drain during widening/replacement of bridges	Low No fish habitat in roadside drains (ditches) along Malden corridor Impacts to fish habitat in Turkey Creek and Cahill Drain during widening/replacement of bridges
Improvements to Drainage Network	None Mix of open and closed roadside drains (ditches) along Malden corridor	High All roadside drains (ditches) along Malden corridor to be enclosed	High All roadside drains (ditches) along Malden corridor to be enclosed	High All roadside drains (ditches) along Malden corridor to be enclosed
Social Environment				
Property Acquisition	No property to be acquired	Medium Property acquisition required to accommodate increased right-of-way width No buildings will be impacted	High Wider property acquisitions required to accommodate increased right-of-way width No buildings will be impacted	Medium Property acquisition required to accommodate increased right-of-way width No buildings will be impacted
Impacts to Mail Delivery	No changes to mail delivery	Low No changes anticipated for mail delivery	Low No changes anticipated for mail delivery	Low No changes anticipated for mail delivery
Impacts to Land Use	No changes to existing land uses	Medium Temporary disruption to existing land uses during construction	Medium Temporary disruption to existing land uses during construction	Medium Temporary disruption to land uses during construction
Economic Environment				
Disruption to Existing Businesses	No disruption	Medium Temporary During Construction	Medium Temporary During Construction	Medium Temporary During Construction
Cultural Resources				
Effect on Cultural Resources	Low No known cultural resources will be affected	Low No known cultural resources will be affected	Low No known cultural resources will be affected	Low No known cultural resources will be affected
Utilities				
Relocation of Existing Utilities	No relocation of utilities to take place	Moderate Some utility pole relocation required	High Significant utility pole relocation required	Moderate Some utility pole relocation required

Improvements to Malden Road Alternative Solution Evaluation Matrix TRANSPORTATION AND PUBLIC TRANSIT				
	Alternative A	**Alternative B**	**Alternative C**	**Alternative D**
Cost				
Capital Cost	None	High	Highest	Higher
Operational and Maintenance Cost	High Existing deteriorating conditions warrant high maintenance costs	Medium	Medium	Medium
Degree in which alternatives address Problem and Opportunity Statement	Does not address problem	Capacity issues in Town Centre	Fully addresses capacity issues	Requires traffic diversion to east-west collector to fully address future traffic demands
RECOMMENDED SOLUTION				**This alternative provides a balance between the needs of vehicles, cyclists, pedestrians and urban design features**

Improvements to Malden Road
Alternative Solution Evaluation Matrix
CYCLING

	Alternative E	Alternative F		Alternative G	Alternative H
Description / **Evaluation Criteria**	**Do Nothing**	**On-Street Cycling Facilities F1 – Without Parking**	**On-Street Cycling Facilities F2 – With Parking**	**Off-Street Cycling Facilities (Multi-use Trail)**	**Off-Right-of-Way Cycling Facilities**
Physical Environment					
Location	N/A	Can be located on each side in each direction (N/S)	Can be located on each side in each direction (N/S)	East side preferred because of location of Vollmer Centre, High School and existing use in part of corridor	Possible parallel to part of corridor set back some distance from Malden Road corridor
Cycling Connectivity	Does not extend full length of corridor	Can extend full length of corridor	Can extend full length of corridor	Can extend from Cahill Drain to south end of corridor	Does not extend full length of corridor Can connect to Malden Road on side streets Can connect to other recreational trail facilities New corridor needs to be defined and acquired
Improvements to Cycling Safety	Least safe	Permitted Reduces conflicts between cyclists, pedestrians and vehicles. Less safe for inexperienced cyclists	Increased potential conflicts with automobiles crossing the lane to access/leave parking spaces. Increased risk to cyclists associated with opening car doors	Safer for inexperienced cyclists and families, potential for conflict with pedestrians, other users	Safest
Impact on Physical Environment	None	Replace Ditches with storm sewers to accommodate wider right-of-way	Replace Ditches with storm sewers to accommodate wider right-of-way	Replace Ditches with storm sewers to accommodate wider right-of-way Conflicts with utility poles	Disturbance to drainage Other impacts depending on corridor
Roadway Crossings: a) At-Grade	N/A	N/A	N/A	Required at intersections and where cycling facility is present on the opposite side of the roadway. Recommended for mid-block locations where distance between intersections is great	Required where cycling facility is present on the opposite side of the roadway
b) Grade Separated	N/A	N/A	N/A	High cost and increased land requirements. Perceived safety concerns	High cost and increased land requirements. Perceived safety concerns
Social Environment					
Property Acquisition	None	Some property may be needed (wider lanes)	Some property may be needed (wider lanes), wider cycling facility required to prevent conflicts between cyclists and car doors	Some property may be needed (wider boulevard)	Property required
Impacts to Land Use	None	Impacts to landscaping and driveways. Aesthetic Improvements	Impacts to landscaping and driveways. Aesthetic Improvements	Impacts to landscaping and driveways Aesthetic Improvements	Existing land uses will be impacted. Additional Recreation asset will be provided, similar to those found west of Malden Road
Economic Environment					
Disruption to Existing Businesses	None	Disruptions during construction	Disruptions during construction	Disruptions during construction	Probably less disruptive depending on location of corridor
Utilities					
Relocation of Existing Utilities	None	Yes	Yes	Yes	Possibly

Improvements to Malden Road Alternative Solution Evaluation Matrix CYCLING					
	Alternative E	**Alternative F**		**Alternative G**	**Alternative H**
Cost					
Capital Cost	No costs	Higher	Higher	Higher	Probably higher
Impact on Operational and Maintenance Cost	No impact	Moderate	Moderate	Moderate	Moderate to higher
Degree in Which Alternative Addresses Problem and Opportunity Statement	Does not address problem	Addresses problem (Encourages and accommodates cycling activities, facilitates commuter cycling, improves safety)	Addresses problem (Encourages and accommodates cycling activities, facilitates commuter cycling, improves safety but less safe than Alternative F1)	Addresses problem (Encourages and accommodates cycling and pedestrian activities, facilitates recreational cycling, facilitates commuter cycling if sufficient width is provided, improves safety)	Addresses problem (Encourages and accommodates cycling and pedestrian activities, facilitates recreational cycling, facilitates commuter cycling if route is direct and sufficient width is provided, improves safety)
RECOMMENDED SOLUTION	**Not recommended**	**On-street cycling facilities (without parking) recommended for both sides of Malden Road throughout the entire corridor**	**Not Recommended**	**Off-street cycling facilities are recommended for the east side of Malden Road from Cahill Drain southerly**	**Not recommended as a stand-alone solution but could supplement and enhance the solution**

Improvements to Malden Road Alternative Solution Evaluation Matrix PEDESTRIAN FACILITIES			
	Alternative I	**Alternative J**	**Alternative K**
Description **Evaluation Criteria**	**Do Nothing**	**Sidewalks**	**Multi-use Trail**
Physical Environment			
Location	Sidewalk is in urban area, multi-use trail for part of corridor	Can install on one or both sides of right-of-way	Can install on both sides of right-of-way
Pedestrian Connectivity	Not continuous	Continuous	Continuous
Improvements to Pedestrian Safety	Less safe	Safest	Moderately safe – potential conflicts with cyclists
Impact on Physical Environment	No change	Disruption of landscape area and driveways	Disruption of landscape area and driveways
Roadway Crossings: a) At-Grade	N/A	Required at intersections and where sidewalk continues on the opposite side of the roadway. Recommended for mid-block locations where distance between intersections is too great.	Required at intersections and where sidewalk continues on the opposite side of the roadway. Recommended for mid-block locations where distance between intersections is too great.
b) Grade Separated	N/A	High cost and increased land requirements. Perceived safety concerns	High cost and increased land requirements. Perceived safety concerns
Social Environment			
Property Acquisition	None	Some	Some
Impacts to Land Use	None	Sidewalks fronting properties on west side will impact these properties as well as east side properties at south end of corridor	Impact to west side properties (currently not present) Less impact on east side (currently present in some locations)
Economic Environment			
Disruption to Existing Businesses	None	Disruption during construction	Disruption during construction
Utilities			
Relocation of Existing Utilities	None	Yes Some utility pole relocations required	Yes Some utility pole relocations required

Improvements to Malden Road Alternative Solution Evaluation Matrix PEDESTRIAN FACILITIES			
	Alternative I	**Alternative J**	**Alternative K**
Cost			
Capital Cost	None	Moderate	Moderate
Operational and Maintenance Cost	Moderate	Moderate	Moderate
Degree in Which Alternative Addresses Problem and Opportunity Statement	Does not address problem	Addresses problem	Addresses problem
RECOMMENDED SOLUTION		**Sidewalk on both sides in Town Centre. Sidewalk on west side, south of Town Centre**	**Multi-use trail on east side, from Cahill Drain southerly**

Improvements to Malden Road
Alternative Solution Evaluation Matrix
URBAN DESIGN

	Alternative L	**Alternative M**	**Alternative N**	**Alternative O**
Description / **Evaluation Criteria**	**Do Nothing**	**Town Centre**	**Transition**	**Residential**
Physical Environment				
Improvements to Streetscaping / Urban Aesthetics	Few streetscaping features	Possible with highest potential	Possible Limited right-of-way	Possible Limited right-of-way
Social Environment				
Property Acquisition	None	Isolated areas needed to make uniform 30m right-of-way	Not possible without some property acquisition along most of corridor	Not possible without some property acquisition along most of corridor
Impacts to Land Use	None	Enhance corridor appearance Softer impact of road improvements	Enhance corridor appearance Softer impact of road improvements	Enhance corridor appearance Softer impact of road improvements
Utilities				
Relocation of Existing Utilities	None	Relocation or removal of some or all utility poles Will improve effectiveness of urban design	Relocation of some or all utility poles Will improve effectiveness of urban design	Relocation of some or all utility poles Will improve effectiveness of urban design
Cost				
Capital Cost	None	High if significant utility pole relocation	High if significant utility pole relocation	High if significant utility pole relocation
Operational and Maintenance Cost	None	Relocation or removal of some or all of the utility poles will improve effectiveness of urban design features	Relocation of some or all of the utility poles will improve effectiveness of urban design features	Relocation of some or all of the utility poles will improve effectiveness of urban design features
Degree in Which Alternative Addresses Problem and Opportunity Statement	Does not address problem and opportunity statement	Addresses Problem and Opportunity Statement	Addresses Problem and Opportunity Statement	Addresses Problem and Opportunity Statement
RECOMMENDED SOLUTION		**Implement urban design features for full length of corridor**	**Implement urban design features for full length of corridor**	**Implement urban design features for full length of corridor**

Table 10: Summary of Public Information Centre #1 Comments

Overall, forty-six (46) individuals were recorded as attendees of Public Information Centre #1 (PIC #1). The following is a summary of the public's comments, submitted either in writing or spoken verbally at PIC #1.

Contact Information	Summary of Comments	Response
Dan Vincent 6165/6225 Malden Rd dvincent@primus.ca	▪ 4-lane down to 3-lane option does not help traffic situation in the 3-lane section; recommends 4-lanes throughout study area. ▪ Prefers sidewalks on both sides or multi-use pathways.	▪ The 4-lane to 3-lane option provides a balance between the needs of vehicles, cyclists, pedestrians, and urban design features with less of an impact than the 4-lane option.
Mary & Cliff Moss 6050 Malden Rd 519-978-0111	▪ Concerned that the 200-year old trees and their privacy evergreens at their property will be removed. ▪ Recommends syncing the timing of traffic lights in the Town Centre. ▪ Recommends benches along the Cahill drain for senior stops. ▪ Recommends more traffic lights and/or pedestrian lights due to safety of people/families crossing the busy street (ie. at Grillo)	▪ Arborist study to confirm removal or retention of trees within right-of-way. ▪ Traffic lights to be timed for synchronization. ▪ Benches to be installed along corridor.
Gillian Stefanczyk 1265 Stanton gstefanczyk@sympatico.ca	▪ Found little info addressing the pedestrian issue at Morton & Malden for people coming off the trail; recommends a better connection of the trail north of the Cahill drain to cross Malden. ▪ Prefers a 4-lane road south of the Cahill even if streetscaping stopped at the Cahill.	▪ Alternative Design Concepts during the next phase of the study will review possible solutions to pedestrian crossing at Morton & Malden.
Sandra Havens	▪ Prefers a 4-lane road throughout the study area, not just north of the Cahill drain. ▪ Recommends rest areas (benches) along the route.	▪ The 4-lane to 3-lane option provides a balance between the needs of vehicles, cyclists, pedestrians, and urban design

Contact Information	Summary of Comments	Response
		features with less of an impact than the 4-lane option. ▪ Benches to be installed along corridor.
Rob Lauzon 266 Ramblewood numbers@jet2.net	▪ Framework design recognizes uniqueness of the three areas. ▪ Questions when a traffic light between Cahill & Laurier will be installed. ▪ Prefers 3-lane option with pathways in the residential area. ▪ Recommends rest areas and benches along the route for seniors. ▪ Recommends S-shaped road for least amount of impact to properties.	▪ Benches to be installed along corridor. ▪ Alternative Design Concepts during the next phase of the study will review S-shaped curve in the road to minimize property acquisition.
Cecile Crouchman 8475 Baseline impressionism@sympatico.ca	▪ County-wide public transit system would reduce traffic congestion. ▪ Recommends on-street cycling lanes ▪ Eliminating the above recommendations would require expansion/widening of many other LaSalle roads.	▪ On-street cycling lanes to be implemented in the urban (4-lane) area and wider curb lanes to be implemented in the rural (3-lane) area. ▪ Public transit to be reviewed during the next phase of the study.
Wolfgang & Rosalia Virchnier 5670 Malden 519-966-2509	▪ LaSalle boundary limits incorrect on the plans. ▪ Would like a sanitary sewer without cost.	
Wayne Fortin 6045 Malden Rd 519-734-1331	▪ In support of a 25m right-of-way outside the Town Centre.	
Evelyn Bennett 7210 Malden 519-978-3169	▪ Recommends easier access in and out of the recreation complex, especially during peak travel times. ▪ Recommends a curb in front of her house, as well as the hydro lines buried to remove the hydro poles in front of her house.	▪ Alternative Design Concepts during the next phase of the study will review access at the recreation complex.
Livia Tavolieri 7075 Malden Rd	▪ In opposition to any widening of Malden Road, including the 4-lane down to a 3-lane option. (Currently has difficulties	▪ The Do Nothing alternative would not address the problem.

Contact Information	Summary of Comments	Response
ltavolieri@cogeco.ca	turning onto Malden.) ▪ Recommends that traffic leaving the recreation complex can do so via Bouffard or Laurier from the back.	
Anonymous	▪ In opposition to any widening of Malden Road. Currently has difficulties turning onto Malden.	▪ The Do Nothing alternative would not address the problem.
Matt Phelps 5705 Malden mfphelps9@yahoo.ca	▪ In opposition to roundabouts due to lack of education on drivers' part. ▪ In opposition to taking away "town charm" and moving towards a "city setting". ▪ In support of better sidewalks and trails, but in opposition to the road-widening itself.	▪ Alternative Design Concepts during the next phase of the study will roudabouts. ▪ Streetscaping & urban design components to enhance "town charm".
Kevin O'Neil 1465 Lisgar Drive eoneil@cogeco.ca	▪ Recommends multi-use pathways on both sides of Malden, delineated from vehicular portion of the roadway with fixed buffer. ▪ Recommends multiple pedestrian / bicycle crossings such as signals or grade-separated crossings. ▪ Recommends bike racks / stations along the route (large enough for bikes with trailers. ▪ Design should be encouraged for use of cycling for people who want to shop, work, travel, etc – not just for recreation. ▪ Design should include appropriate lighting throughout. ▪ Encourages local police to use bikes to patrol the trails.	▪ Multi-use pathway to be implemented on the east side of Malden south of the Town Centre, and sidewalks to be implemented on the west side of Malden in the rural area. ▪ On-street cycling lanes to be implemented in the urban (4-lane) area and wider curb lanes to be implemented in the rural (3-lane) area. ▪ Other recommendations to be reviewed during the next phase of the study.
Marguerite Wales 1855 Normandy St	▪ Recommends that developments which are used to increase the speed and flow of vehicular traffic be carefully examined for their potential simultaneous detriment to pedestrian traffic. ▪ Concerns for pedestrians "competing" with vehicles for use of turning lanes / through movements. ▪ Encourages the use of functional pedestrian features, during	▪ Pedestrian facilities to be improved for both function and safety. ▪ On-street cycling lanes to be implemented in the urban (4-lane) area and wider curb lanes to be implemented in the rural (3-lane) area.

Contact Information	Summary of Comments	Response
	all types of weather and during the day and night (i.e. wheelchair accessibility, signal buttons accessibility). ▪ Encourages snow removal practices that include sidewalk snow removal, especially at curb cuts. ▪ Encourages the full attention of drivers and pedestrians alike – both are encouraged to be alert. ▪ Recommends clear delineation of all driveways and sidewalks, as often times they are confusing along this corridor. ▪ Encourages best practices for wheelchair accessibility, young children, and families. ▪ Encourages cycling lanes, separate from pedestrians and vehicles. ▪ Recommends separating pedestrians from vehicles with respect to time and space – i.e. no vehicular turning allowed during timed pedestrian crossing. ▪ Recommends improvements to pedestrian accessibility at all intersections.	▪ Education material re: safe on-street cycling will be provided to the public during the next phase of the study.
Mrs. C. Welch 1525 Normandy 519-966-3098	▪ Looking forward to the improvements. ▪ Concerns with traffic signals at intersections at Normandy and at Sprucewood – many drivers continue through a red-light at these intersections, and it happens daily. ▪ Recommends photo detection / cameras to catch these drivers.	
Sean P. Davidson sdavidson@davidsonheritage.com 7145 Malden Road 519-734-8709	▪ Strongly recommends that all traffic to the soccer fields should be using Laurier Parkway, not the dirt road that runs along the south side of Sandwich Secondary School, which was to be specifically as a construction access road for the recreation centre. ▪ Instead, recommends an access road off of Bouffard Road to the complex and soccer fields. Feels this would eliminate	▪ Alternative Design Concepts during the next phase of the study will review access at the recreation complex.

Contact Information	Summary of Comments	Response
	traffic congestion on Malden Road, and enable users of the rec centre and soccer fields to access the facilities unabated by any traffic congestion. ▪ States that opening up access to the complex and soccer fields from Bouffard which is in an agricultural area would reduce the smog and greenhouse gases on Malden Road from the idling vehicles and the environmental impact to the surrounding residential neighbourhood and school yard. ▪ Feels that there is no pedestrian traffic in the Malden commercial area to warrant streetscape and urban design expansions. ("Streetscapes and strip malls do not compliment each other") ▪ Suggests that Malden Road Improvements could positive if done correctly and at the right time.	
General Comments as per Sheila Frise (Dillon)	▪ Inquiries about cost estimates for the options presented. ▪ Lack of support for roundabouts, especially if they are unpopular or ineffective. ▪ Inquiries about new traffic lights.	▪ Cost estimates will be provided upon completion of the Environmental Study Report in Phase 4 of the study.
General Comments as per Nicole Caza (Dillon)	▪ Concerns that a transition from 4-lane to 3-lanes will create a bottleneck effect. ▪ Concerns with amount of property acquisition required for 4-lane option, especially in the residential section. ▪ Concerns with driveway egress for the properties near the school and recreation complex. Recommendations for extending Laurier or constructing a new north-south link, east and parallel to Malden from the recreation complex to Bouffard. ▪ Recommendations for benches & shaded areas along the sidewalks and trails.	▪ The 4-lane to 3-lane option provides a balance between the needs of vehicles, cyclists, pedestrians, and urban design features with less of an impact than the 4-lane option. ▪ Alternative Design Concepts during the next phase of the study will review access at the recreation complex. ▪ Benches to be installed along corridor.

Contact Information	Summary of Comments	Response
General Comments as per Victor Ford (VFA)	▪ Recommendations for better cycling and pedestrian facilities along the entire length of the corridor. Cycling lanes and a separate multi-use path were viewed as desirable. ▪ Recommendations for an off-road multi-use trail link from the recreation complex and the high school east and parallel to Malden Road. ▪ Recommendations for improved pedestrian crossings across Malden Road. ▪ Recommendations for improved cyclist crossings across Malden Rd, particularly at the Cahill Drain, Morton Drive and Sprucewood. ▪ Encouragement for more multi-use trails, including improving the existing links. ▪ Recommendations for bicycle racks at key destinations. ▪ Recommendation to improve connections and crossing to Machette Park. ▪ Encourages urban design improvements in the Town Centre area which would suit the rural character of LaSalle (and not that of big-city streetscapes). ▪ One recommendation for 3 traffic lanes in the urban area, plus cycling lanes. (Not 4 traffic lanes.)	▪ Multi-use pathway to be implemented on the east side of Malden south of the Town Centre, and sidewalks to be implemented on the west side of Malden in the rural area. ▪ On-street cycling lanes to be implemented in the urban (4-lane) area and wider curb lanes to be implemented in the rural (3-lane) area. ▪ Pedestrian facilities to be improved for both function and safety. ▪ Streetscaping & urban design components to enhance "town charm".
General Comments as per Derek Weckers (Envision)	▪ Opposition to expansion of Malden Rd. ▪ Recommendations to re-route traffic, especially school/recreation complex traffic, to a new road southward off Bouffard and parallel to Malden and linking to the east side of the recreation complex.	▪ Alternative Design Concepts during the next phase of the study will review access at the recreation complex.

9.0 PREFERRED DESIGN

9.1 Transportation Network Improvements

The recommended solution was analyzed under future conditions. As a result of the screenline capacity analysis, it is recommended that Malden Road be widened to a five-lane cross-section from just north of the intersection of Todd Lane and Malden Road up to and including the intersection of Normandy Street. Malden Road should be widened to a three-lane cross-section from south of Normandy Street to south of Meagan Drive.

From the existing and future intersection operations analysis on the existing road network, a number of lane configuration improvements are recommended at the intersections in the study area. A summary of these improvements is depicted in ***Figure 7.0***.

It is recommended that signal timings be optimized at all signalized intersections within the study area.

9.2 Future Intersection Operations on Improved Road Network

Intersection operations at signalized and unsignalized intersections within the study area were analyzed under forecast 2021 PM peak hour traffic conditions with recommended road improvements in place. These analyses were facilitated using the Synchro 6.0 software package. Traffic signal timings were optimized. The results of the signalized intersection analysis are summarized in ***Table 11*** and the unsignalized intersection analysis is summarized in ***Table 12***.

Table 11: Future PM Peak Hour Signalized Operations on Improved Road Network

Cross Street	LOS	Delay (s)	v/c
Todd Lane	B	14.9	0.77
Delmar Avenue	B	10.7	0.42
Sprucewood Avenue	B	19.8	0.61
Normandy Avenue	B	16.1	0.58
Laurier Drive	A	9.3	0.42

In the 2021 PM peak hour, with road improvements in place, the signalized intersections are predicted to operated well, at good levels of service (LOS B or better), with short delays (> 20 seconds) and no capacity issues (v/c < 0.85). Overall, operations at signalized intersections

improved during the 2021 PM peak hour with road improvements in place when compared to 2021 PM peak hour operations on the existing road network. The 2021 PM peak hour operations at the intersection of Todd Lane and Malden Road, however, do not improve with the future road network modifications. The modifications proposed will add capacity on Malden Road, but not on the minor approaches. At this intersection on Todd Lane, there is a large volume of westbound left turns and a moderate amount of westbound right turns. Therefore, the additional lanes on Malden Road will only decrease operations on the westbound approach. An alternate solution of a roundabout is proposed for this intersection to improve future operations. The analysis for this option is discussed below.

Table 12: Future PM Peak Hour Unsignalized Operations on Improved Road Network

Cross Street	Movement	LOS	Delay (s)	v/c
Morton / Grillo Drive	Eastbound Approach	F	70.2	0.41
	Westbound Approach	C	17.7	0.03
Stuart Boulevard	Eastbound Approach	D	31.5	0.37
Reaume Road	Eastbound Left Turn	F	60.2	0.62
	Eastbound Through/ Right Turn	C	15.7	0.11
	Westbound Approach	D	34.7	0.07
Bouffard Road (West)	Eastbound Approach	D	29.9	0.48
Bouffard Road (East)	Westbound Approach	F	77.2	0.94

The unsignalized intersection operations within the study area under 2021 PM peak hour traffic conditions on the modified future road network are predicted to be improved compared to the future 2021 unsignalized intersection operations on the existing road network. This is largely a result of the addition of the centre two-way-left-turn lane along Malden Road throughout the study area.

9.3 Future Configuration of Bouffard Road and Malden Road Intersection

The intersection of Bouffard Road and Malden Road is currently offset by approximately 115 metres, between the east and west legs of the Bouffard Road approaches. Currently, Bouffard Road and Malden Road act as two separate unsignalized T-intersections. To improve capacity on both Malden Road and Bouffard Road, it is recommended that the two legs of Bouffard Road be aligned to meet at one intersection on Malden Road. This section summarized the results of

analyzing the re-aligned intersection under future conditions, both as a signalized and unsignalized intersection.

The results of analysing the re-aligned Bouffard Road and Malden Road intersection as an unsignalized intersection are summarized in ***Table 13.***

Table 13: Bouffard Road Aligned and Unsignalized Operational Analysis Results

Intersection	Movement	LOS	Delay (s)	v/c
Bouffard Road / Malden Road	Eastbound Approach	F	>200	>2.0
	Westbound Through / Right	F	>200	1.27
	Westbound Left Turn	F	>200	>2.0

As shown above, the re-aligned intersection of Bouffard Road and Malden Road, when modelled as an unsignalized intersection under future PM peak hour conditions, is predicted to operate at a failing level of service (LOS F) on both the eastbound and westbound approaches. The delays on these approaches are also predicted to be excessive, and capacity issues are also expected.

Table 14 summarizes the results of future PM peak hour analysis of the proposed signalized Bouffard Road and Malden Road intersection, under future conditions.

Table 14: Bouffard Road Aligned and Signalized Operational Analysis Results

Cross Street	LOS	Delay (s)	v/c
Bouffard Road	B	10.4	0.62

As indicated above, the signalized, re-aligned intersection operates at a good level of service (LOS B), well below capacity as a signalized intersection under future PM peak hour conditions. Signalized pedestrian crossings should also be implemented at this intersection.

9.4 Proposed Roundabout at Todd Lane and Malden Road

The analysis of intersection operations at Todd Lane and Malden Road under future PM peak hour traffic conditions with recommended road network improvements in place showed that

these road works did not result in operational improvements at this intersection. Future traffic volumes indicate a large number of westbound left turns and a moderate number of westbound right turns. Therefore, with the recommended widening of Malden Road to a five-lane crossing, the intersection operations decrease on the westbound approach due to increased conflict and delay for this approach. An alternate solution to intersection capacity issues at this location is the installation of a proposed roundabout. Analysis of the roundabout operations were undertaken using the methodology outlined by the Federal Highway Administration (FHWA) in the publication, *Roundabouts: An Informational Guide*, which offers an empirical approach based on British equations and which supports the calculation of additional measures of effectiveness (delay, queues). This analysis was conducted for a single lane roundabout. A summary of the results of the analysis is located in ***Table 15***.

Table 15: 2021 PM Peak Hour Roundabout Operations at Todd Lane and Malden Road Intersection

Approach	Delay *(veh/s)*	v/c	Queue *(m)*
Eastbound Approach	6.0	0.01	0.3
Westbound Approach	7.3	0.59	31.2
Northbound Approach	5.7	0.39	14.3
Southbound Approach	12.7	0.72	55.8

The FHWA methodology is a slightly conservative approach to analyzing roundabout operations. However, it reveals that the intersection can operate efficiently as a single-lane roundabout in future 2021 PM peak hour conditions. The delays and queue lengths improve compared to future intersection operations with signalized intersection control. An improvement to this single-lane roundabout design would be to add capacity to the roundabout with the implementation of a right-turn bypass lane on the westbound approach. This is the recommended design for the intersection of Todd Lane and Malden Road to improve future intersection operations.

9.5 Storage Length Requirements

Turning lane storage requirements are recommended based on future intersection operations and expected queue lengths. Recommended storage lengths and design requirements are summarized in ***Table 16.***

Table 16: Recommended Storage Length Requirements

Intersecting Road (with Malden Road)	Movement	Future Queue (m)	Required Storage (m)	Centre Turn Lane Design*
Todd Lane (if signalized not roundabout)	Southbound Left Turn	11.4	30	n/a
	Westbound Right Turn	2.9	15	n/a
Wyoming Avenue	Southbound Left Turn	0	0	Minor
Orford Street	Northbound Left Turn	0	0	Minor
Delmar Avenue / Retail Access	Westbound Left Turn	18.9	25	n/a
	Southbound Left Turn	13.8	20	Major
	Northbound Left Turn	7.6	20	Major
Sprucewood Avenue	Northbound Left Turn	19.7	25	Major
	Southbound Left Turn	7.0	20	Major
Normandy	Southbound Left Turn	42.1	45	Major
	Northbound Left Turn	2.5	20	Minor
Retail Access (between Normandy & Grillo)	Southbound Left Turn	n/a	15	15
	Northbound Left Turn	n/a	15	15
Morton Drive / Grillo Drive	Southbound Left Turn	0.2	0	Minor
	Northbound Left Turn	0.3	0	Minor
Omira Street	Southbound Left Turn	n/a	0	Minor
Edgemore Avenue	Southbound Left Turn	n/a	0	Minor
Suzanne Street	Southbound Left Turn	n/a	0	Minor
Stuart Blvd.	Southbound Right Turn	0	15	n/a
	Northbound Left Turn	1.7	0	Minor
Outram Avenue / Valiant Street	Southbound Left Turn	n/a	0	Minor
	Northbound Left Turn	n/a	0	Minor
Monty Street	Northbound Left Turn	n/a	0	Minor
Reaume Road	Southbound Left Turn	0.1	0	Minor
	Northbound Left Turn	1.1	0	Minor
Rosati Drive	Northbound Left Turn	n/a	0	Minor
Hollinger Avenue	Southbound Left Turn	n/a	0	Minor
Bouffard Road (West)	Northbound Left Turn	3.4	20	Major
Palmer Avenue	Southbound Left Turn	n/a	0	Minor
Bouffard Road (East)	Southbound Left Turn	9.1	20	Major
Laurier Drive	Southbound Left Turn	10.9	25	Major
	Northbound Left Turn	7.0	20	Major
	Eastbound Left Turn	32.5	35	n/a
	Southbound Right Turn	9.7	15	n/a
Meagan Drive	Southbound Left Turn	n/a	0	Minor

**** Refer to OTM Book 11, Figure 34***

9.6 Preferred Cross-Section Designs

Two cross-sections were selected as the preferred design for use along Malden Road. A three lane urban cross-section, including a centre turn lane, multi-use pathway, sidewalk and shared travel lanes in both directions to accommodate vehicles and cyclist are proposed from the location of the Cahill Drain to the southern limit of the study area. A five lane urban cross-section, incorporating a centre turn lane, bike lanes, pedestrian walkways and two travel lanes in each direction and urban design features is proposed from the Cahill Drain to the north limits of the study area. These cross-sections are shown below and in the "Preferred Design Figures" section, as ***Figure 8.0 and Figure 9.0*** respectively. During final design, the proposed cross-sections will be re-assessed to determine if there are any opportunities to provide narrower lane widths along Malden Road.

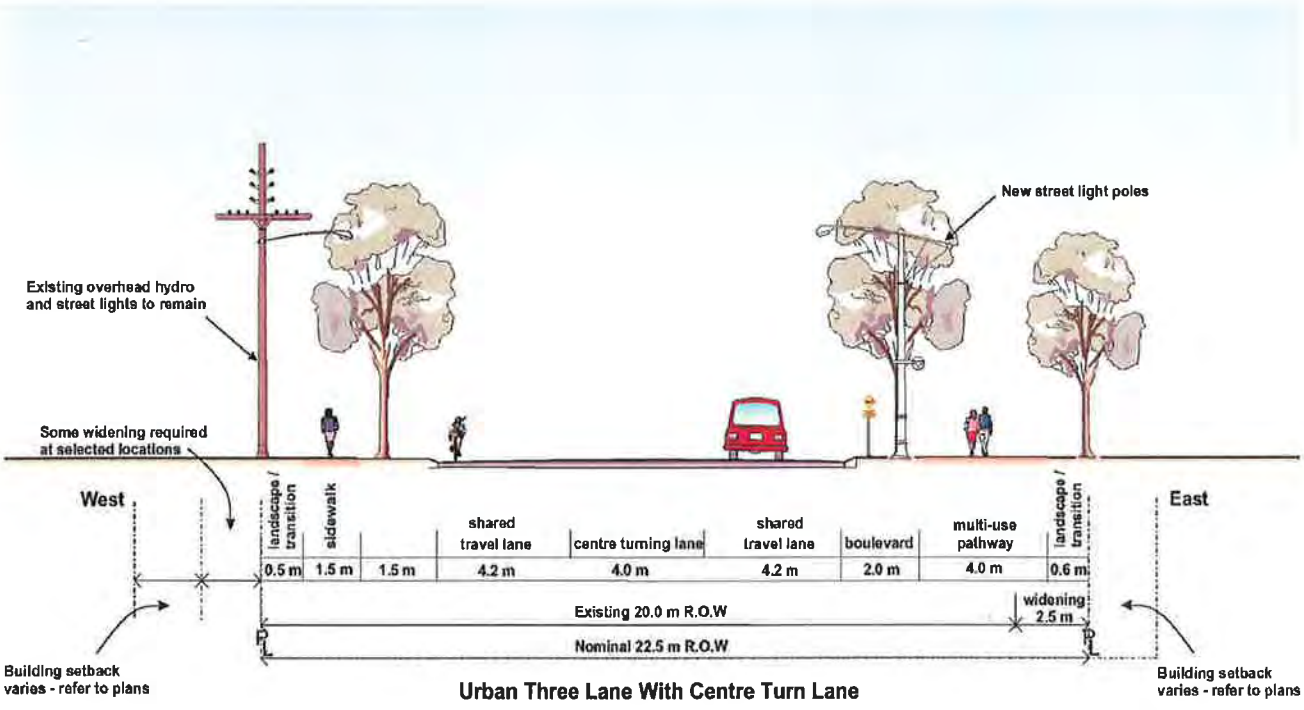


Figure 8.0 – 3-Lane Road with Centre Turn Lane

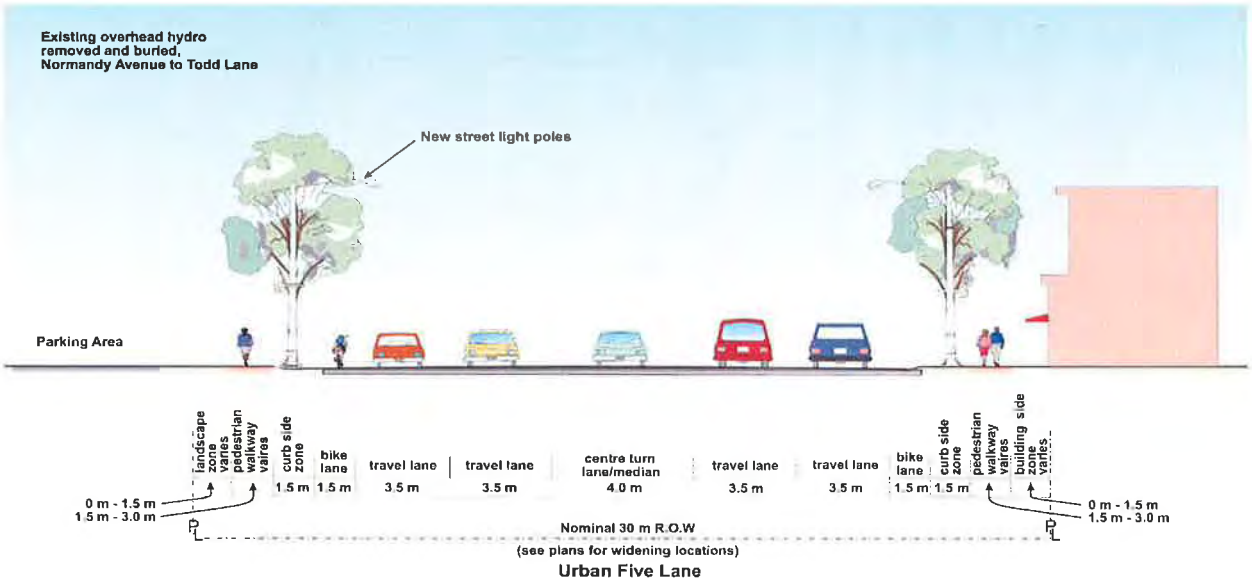


Figure 9.0 – 5-Lane Road

9.7 Cycling And Pedestrians

The preferred design for Malden Road will provide functional and attractive pedestrian and cycling facilities as integral components of a well-designed streetscape. Guiding principles or goals for these facilities were developed, presented and clarified through the stakeholder and public consultation process. These respond, in a general way, to the problems and opportunities identified within and near the study area, and are as follows:

1. Continuous, consistent cycling and pedestrian facilities along the Malden Road Corridor.

2. Improve pedestrian and cycling access between residential areas and key destinations.

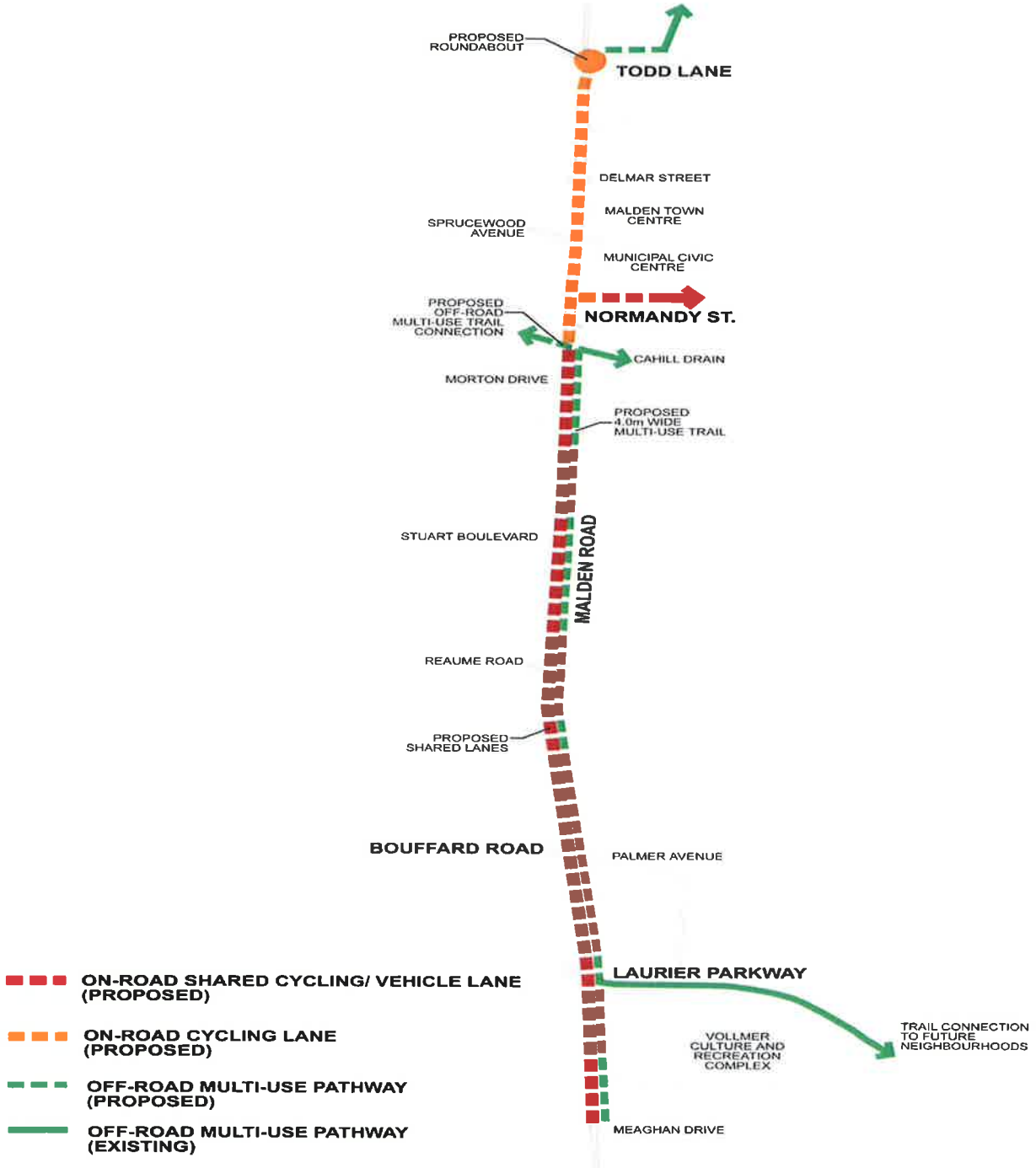
3. Connect the Malden Road corridor to open-spaces, trails, the Vollmer Culture and Recreation Complex, and improve cycling and pedestrian connections.

4. Improve pedestrian and cycling connections across Malden Road.

5. Improve and increase pedestrian and cycling facility use.

6. Build more cycling and pedestrian off-road pathways that will access open spaces and natural areas.

7. Possibly develop a new greenway corridor parallel to Malden Road with associated off-road cycling and pedestrian facilities.



Summary Plan of Cycling and Pedestrian Components of Preferred Design

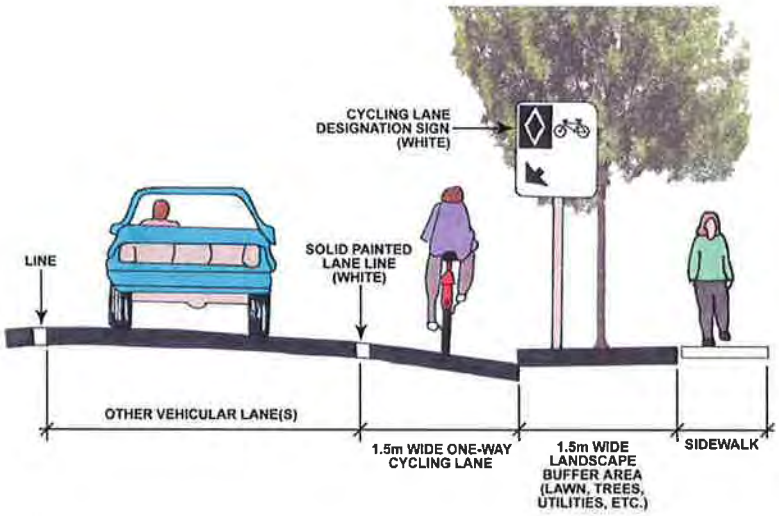
The specific details of the cycling and pedestrian components of the preferred design are described below. In conjunction with the components that address motorized traffic and urban design issues, the design of these components reflects the different conditions of and adjacent to Malden Road in the areas north and south of the Cahill drain. The descriptions are organized separately into these two areas, and a separate section has been included for cycling and pedestrian improvements that have been recommended as part of the preferred design, but which lay outside of the study area corridor. Refer to ***Appendix P: Cycling Facilities: Way-Finding & Other Signage*** for the recommended signage for on-road and off-road cycling facilities.

9.7.1 Northern, "Urban" Area (LaSalle Town Centre)

As outlined previously, within this section of the Malden Road corridor there are currently no cycling facilities, pedestrians are not well-served, and crossing Malden Road has been identified as a significant problem for both types of user.

That this section is the main business area of Malden Road in LaSalle and provides much-used services to numerous apartment buildings, seniors' homes, and established neighbourhoods suggests that higher-capacity, better and safer linear facilities and improved crossings of the road should be priorities.

Example of How the Preferred Design is Likely to Look in LaSalle's Town Centre Area.
Note: The Sidewalk, Landscaped Boulevard, and Designated Cycling Lane.



Cross-Section of Cycling and Pedestrian Components of the Preferred Design in LaSalle's Town Centre area. Note: The Sidewalks, Landscaped Boulevard, and Designated Cycling Lane.

The cycling and pedestrian facilities included in the preferred design attempt to address these problems, and are described as follows:

1. Sidewalks will be provided throughout this section of the study area. These will be continuous on both sides of the Road. They will range from 1.5 to 3.0-metres wide, with a barrier curb and 1.5-metre-wide boulevard separating them from the roadway. Adjacent to parts of the proposed roundabout at Todd Lane, there will be a multi-use pathway rather than a sidewalk, as described below.

   The sidewalks will serve the needs of pedestrians more adequately and safely. They will provide more space, be positioned consistently, and be set back further from the roadway. This will result in safer and more user-friendly pedestrian facilities. Tree plantings and other amenities recommended as part of the urban design component will also improve the pedestrian experience, especially by providing shade.

2. Designated on-road cycling lanes will be provided from south of the proposed Todd Lane roundabout to north of the Cahill Drain. These lanes will be on both sides of the road, 1.5-metres wide and continuous throughout this section. These lanes will be provided with a solid white painted line to separate them from motorized traffic, symbol painting within the

lane indicating its purpose, and designation signage. The facility design including signage and markings will conform to or exceed current standards and best practices. Transitions between these and different facilities to the north and south will be user-friendly and well-marked.

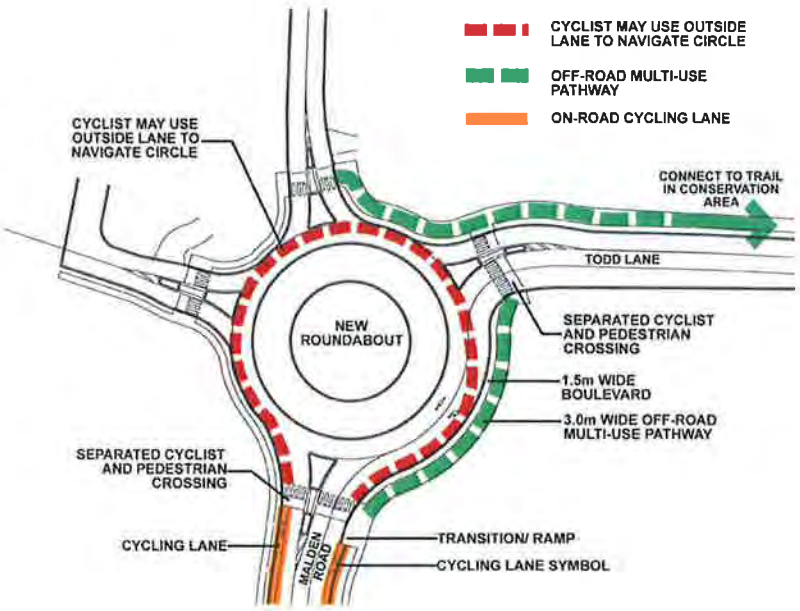
These cycling lanes will address the lack of designated cycling facilities in this area. They will raise the profile of cycling within the community, encouraging more residents to cycle, and will be safer than providing no facility.

3. At the Todd Lane roundabout, pedestrian and cycling facilities will vary somewhat from those immediately to the south.

   The on-road cycling facilities here will be a designated shared vehicular and cycling lane with a width of 4.2 metres and appropriate signage and pavement markings. The facility design including signage and markings will conform to or exceed current standards and best practices. Transitions between these and different facilities adjacent and to the south will be user-friendly and well-marked.

   As noted previously, the sidewalks on the north-east and south-east sides of the roundabout will be replaced by a 3.0-metre-wide multi-use pathway. This will provide a generous pedestrian facility, and with clear transitions or access points, will also provide an opportunity for cyclists to navigate the roundabout off of the roadway. The multi-use pathway will also connect to the east, as will be described below.

   The facilities for cyclists and pedestrians at the roundabout will respond to the special conditions at that location, and will provide a range of safer and user-friendly facilities for each user-type.



Plan View Highlighting Cycling and Pedestrian Components of the Preferred Design at the Proposed Malden Road and Todd Lane Roundabout.

4. Crossings of Malden Road will be improved and a new crossing added.

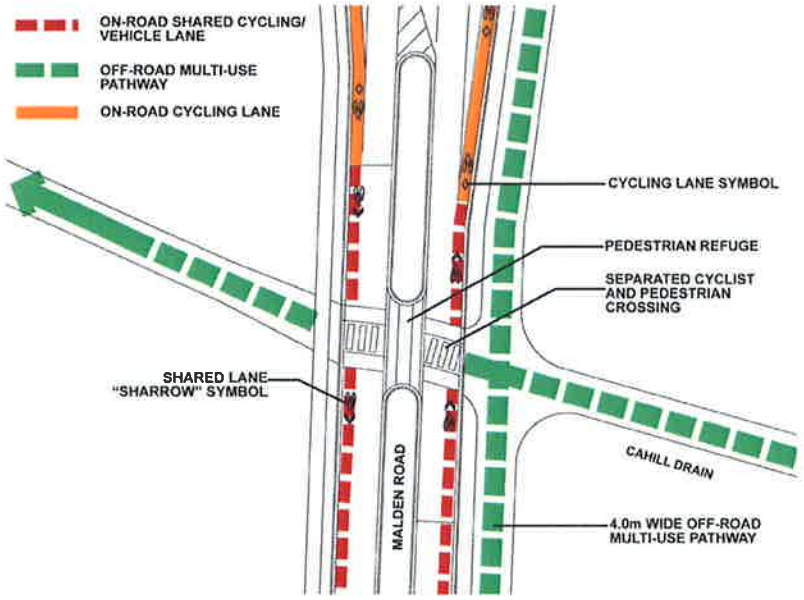
   The new cross-section of Malden Road will result in a reduced distance for pedestrians to travel to cross the road. Improvements to signalization that will provide pedestrians with additional time to cross the road have also been included.

   A new pedestrian and cyclist crossing will be added at the north side of the Cahill Drain. This crossing will be at-grade and provided with user-actuated crossing signals. The facility design of both the improved and the new crossings, including signage and markings will conform to or exceed current standards and best practices.

   The new crossing also addresses the opportunity to connect the Cahill Drain Trail across Malden Road, where it is currently discontinuous. It responds to concerns that cyclists will not use a below-grade or above-grade crossing, and the reality that cyclists and pedestrians want to follow the most direct desire line and not divert to cross at the intersection with Normandy Street to the north.

The crossing improvements and the new crossing will all contribute to addressing the problems presently experienced by cyclists and pedestrians trying to cross Malden Road. Resolving these problems will encourage safer crossing of the streets by all users, and improve user-friendliness of facilities for each user type, and motorists as well.

Example of an At-Grade Roadway Crossing Utilizing "Zebra Stripping"



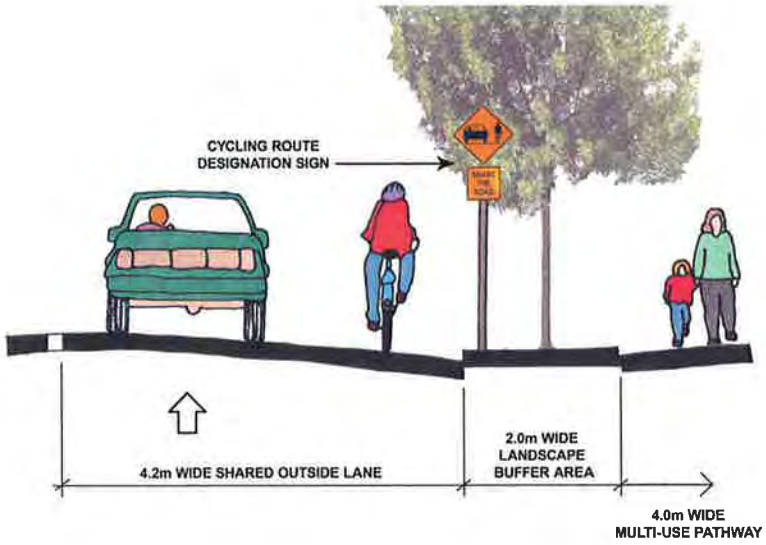
Plan View Highlighting Cycling and Pedestrian Components of the Preferred Design at the Proposed Mid-Block Crossing of Malden Road at the Cahill Drain

9.7.2 Southern Area

As outlined previously, within this section of the Malden Road corridor cyclists and pedestrians are both very poorly served. There are no on-road cycling facilities. The west side of the roadway has no cycling or pedestrian facilities, and the multi-use pathway on the west side suffers from significant design and safety flaws and is frequently misused by motorists. As well, similar to areas further north, crossing Malden Road has been identified as a significant problem for both types of user.

That this section connects residential neighbourhoods with schools and recreational facilities suggests that better, safer linear facilities and more numerous safe crossings of the road should be considered as priorities.

Example of a How the Preferred Design is Likely to Look in the Southern Part of the Study Area. Note: The Multi-Use Pathway, Landscaped Boulevard and Shared Outside Lane



Cross-Section of Cycling and Pedestrian Components of the Preferred Design in the Southern Part of the Study Area. Note: The Multi-Use Pathway, Landscaped Boulevard and Shared Outside Lane.

The cycling and pedestrian facilities included in the preferred design attempt to address these problems, and are described as follows:

1. Sidewalks will be provided on the west side of the road, continuously through this section of the study area. They will be 1.5 metres wide, with a barrier curb and 2.0-metre-wide landscaped boulevard separating them from the roadway.

   These sidewalks will serve the needs of pedestrians more adequately and safely. They will provide a facility where none exists currently, be positioned consistently, and be set safely back from the roadway. This will result in a safer and more user-friendly pedestrian facility. Tree plantings and other amenities recommended as part of the urban design component will also improve the pedestrian experience, increase safety and provide shade.

2. Designated shared vehicular and cycling lanes will be provided from north of the Cahill Drain to the southern extent of the study area. These lanes will be on both sides of the road, with a consistent width of 4.2 metres and appropriate signage and pavement markings. The facility design including signage and markings will conform to or exceed current standards and best practices. Transitions between these and different facilities to the north will be user-friendly and well-marked.

These shared vehicular and cycling lanes will address the lack of designated cycling facilities in this area. They will raise the profile of cycling within the community, encouraging more residents to cycle, and will be safer than providing no facility.

Examples of Signage and Painted Designation Markings for Shared Outside Lanes

3. A 4-metre-wide multi-use pathway will be provided from north of the Cahill Drain to Laurier Drive. This pathway will be provided on the east side of Malden Road, and not on the west side. It will have an asphalt surface with consistent width of 4.0 metres. It will be separated from the roadway with a barrier curb and 2.0-metre-wide boulevard. It will have appropriate signage and pavement markings including a broken yellow centre dividing line in the middle of the path to separate each direction of travel. The facility design, including signage and markings, will conform to or exceed current standards and best practices. Transitions between these and different facilities to the north will be user-friendly and well-marked.

   This multi-use pathway will replace the inconsistent facility currently provided in this area. It will be more generous and safer than the existing facility due to its separation from the road, and will be less likely to be parked on.

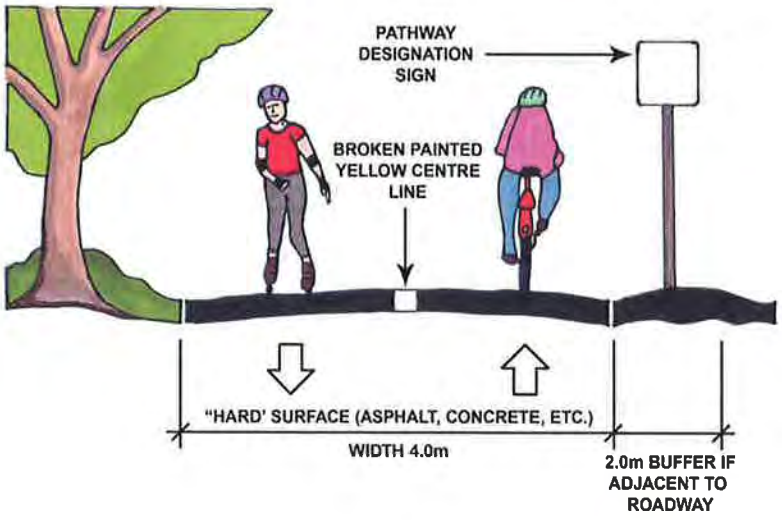
This facility will help to raise the profile of cycling within the community, encouraging more residents to cycle. It will be more appropriate for less confident cyclists or cyclists that prefer not to cycle on the road, including especially children and families. It also provides ample space for pedestrians and in combination with tree planting in the boulevard, will be a strong visual element in the community.

Located on the east side of Malden Road, it provides a natural connection to the Vollmer Culture and Recreation Complex, Sandwich Secondary School, and between residential neighbourhoods and the Town Centre to the north.

4. The preferred design includes a new pedestrian crossing at the realigned signalized intersection at Bouffard Road.

   It is recommended that future opportunities be sought to provide additional pedestrian crossings of Malden Road.

Example of an Existing Multi-Use Trail

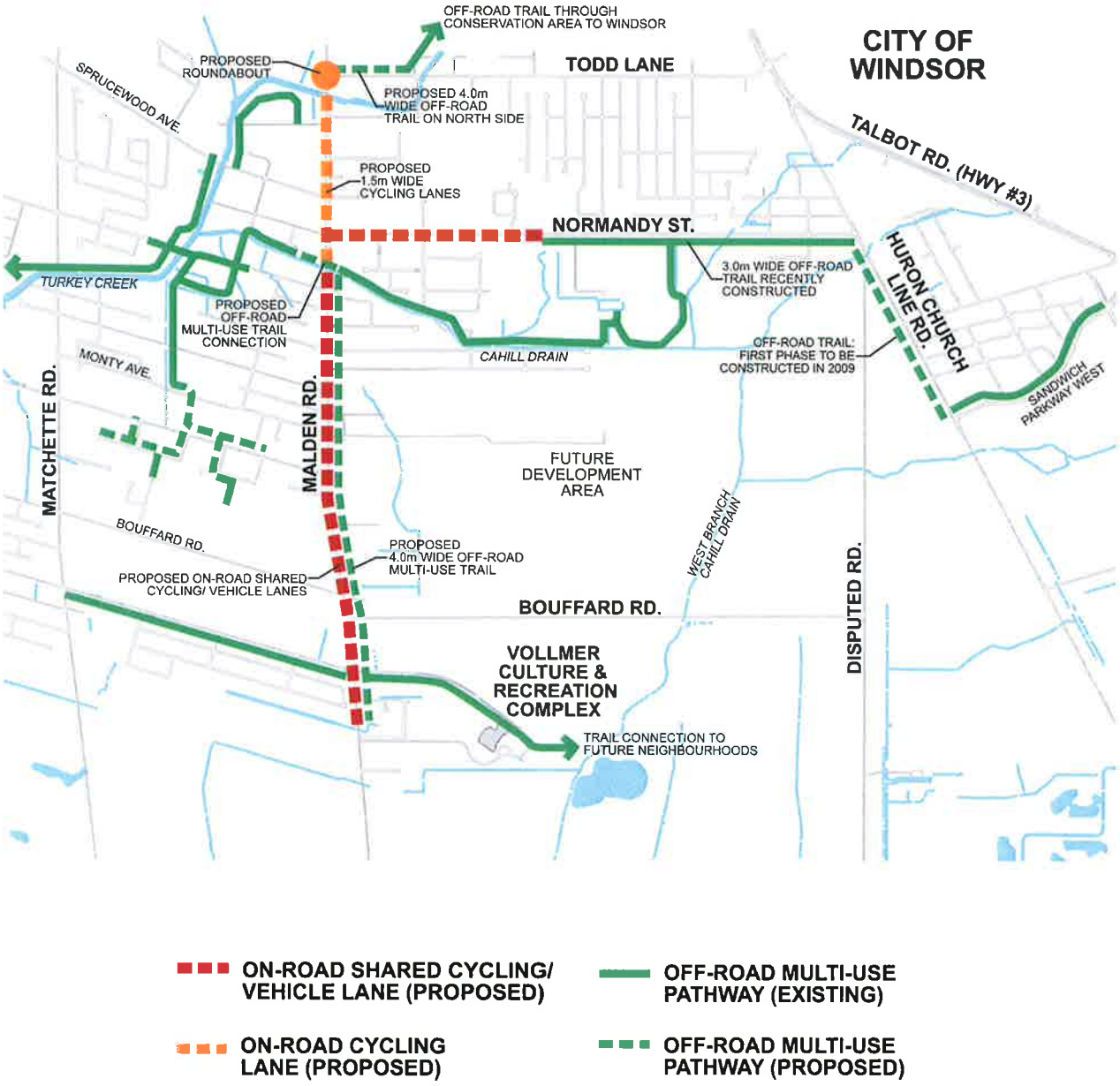


Cross-Section of a Multi-Use Pathway Component of the Preferred Design, within the Southern Part of the Study Area

9.7.3 Cycling and Pathway Connections Beyond the Study Area

In addition to proposed additional and enhanced cycling and pedestrian facilities within Malden Road, it is important to address cycling and pedestrian connections beyond the study area. In some cases, this is a matter of ensuring that transitions between new facilities and those that cross over Malden Road are properly designed. In other cases, opportunities have been identified to extend existing or proposed facilities, or to make new connections to nearby cycling and pedestrian facilities.

Successfully making these connections will improve the overall function and connectivity of cycling and pedestrian facilities within the Town and beyond, and will raise the profile of walking and cycling within the community, encouraging more residents to participate in these activities.



Summary Plan of Cycling and Pathway Connections Beyond the Study Area

Proposed and existing cycling and pathway connections are shown on the Summary Plan of Cycling and Pathway Connections. The major proposed and existing connections, starting from the north end of the study area, are as follows:

1. Malden Road north of this segment (beyond the municipal boundary, in Windsor) is also under-serviced for both pedestrians and cyclists. Encouraging the City of Windsor to connect their cycling and pedestrian facilities along Malden Road, to LaSalle would be a positive additional improvement.

2. A new pathway connection is proposed to connect the proposed multi-use pathway at the north-east of the roundabout at Todd Lane to the trails to and through the Spring Garden ANSI, which connects north from Todd Lane just east of Malden Road. This pathway, on the north side of Todd Lane, will be a 3.0-metre-wide, asphalt-surfaced multi-use pathway with a minimum setback of 1.5-metres from the roadway. The facility design including signage and markings will conform to or exceed current standards and best practices. Transitions between this and the facilities at the roundabout and in the ANSI will be user-friendly and well-marked.

   This pathway will take advantage of an identified opportunity to connect new facilities in Malden Road to important cycling and pedestrian features nearby, improving the overall function and connectivity of these facilities within the Town and beyond. It will also address the lack of designated cycling or pedestrian facilities on Todd Lane. The connection will raise the profile of walking and cycling within the community, encouraging more residents to participate in these activities, and provide safer, convenient access for many residents to Spring Garden ANSI.

3. Designated shared vehicular and cycling lanes are being provided as part of a separate project, on both sides of Normandy Street, connecting from the east side of Malden Road. This connects further east to a multi-use pathway, proposed facilities on Huron Church Line Road, Sandwich Parkway West, and beyond.

   While these facilities are not part of the scope of this project, it is important to ensure that transitions between these facilities and the cycling lanes on Malden Road be user-friendly, well-marked, and include signage and markings that conform to or exceed current standards and best practices.

A successful connection here will help to improve the overall function and connectivity of cycling and pedestrian facilities within the Town and beyond, and will raise the profile of walking and cycling within the community, encouraging more residents to participate in these activities.

4. A new pathway connection is proposed to connect the existing Cahill Drain Trail, which is discontinuous at Malden Road. This section pathway, connecting west from Malden Road, will be a 3.0-metre-wide, asphalt-surfaced multi-use pathway. The facility design including signage and markings will conform to or exceed current standards and best practices. Transitions between this pathway and the existing section of pathway further west, as well as the connections of the Cahill Drain Trail to the Malden Road cycling and pedestrian facilities (on both sides) will be user-friendly and well-marked.

   This pathway connection will cross Malden Road at the new mid-block crossing, as discussed previously.

   This pathway will take advantage of an identified opportunity to connect new facilities in Malden Road to important cycling and pedestrian features nearby, improving the overall function and connectivity of these facilities within the Town and beyond. The connection will raise the profile of walking and cycling within the community, encouraging more residents to participate in these activities, and provide safe, convenient access for many residents to Spring Garden ANSI and Windsor.

5. An existing multi-use pathway crosses Malden Road at Laurier Drive, and connects the west side of town to the Vollmer Culture and Recreation Complex. A future eastward extension of this pathway is planned, connecting these areas to future neighbourhoods. Transitions between this pathway to the Malden Road cycling and pedestrian facilities (on both sides) will be user-friendly and well-marked, and will include signage and pavement markings that conform to or exceed current standards and best practices.

6. At this time, no consideration has been given to implementing any additional pedestrian or cycling facilities in Malden Road, south of the study area. Adjacent land uses in this area are primarily agricultural, with no planned developments, suggesting that there the demand for cycling facilities may be restricted to tour-cycling-type users, who are generally comfortable cycling on this type of roadway without designated cycling improvements.

9.7.4 Differences Between the Preferred Design and the Latest Design Presented to the Public

The preferred design, as described above and shown in the illustrations included with this report, is consistent with what was shown at the second Public Information Centre, held on October 30th, 2008, with only minor adjustments. These adjustments were made in response to input from the public, project stakeholders and Town Staff. These adjustments are summarized as follows:

1. The landscaped boulevard between the roadway the multi-use pathway and sidewalk south of the Cahill Drain has been increased to 2 metres in width to improve the safety of these facilities and to provide a stronger urban design.

2. Trees have been included on the pedestrian and cycling facility sketches in the landscaped boulevard between the roadway the multi-use pathway and sidewalk south of the Cahill Drain. This has been done to ensure consistency with urban design illustrations for these areas.

3. The sketch of the "Shared Vehicle and Cycling Lane" has been adjusted to show the correct "Share the Road" signs.

9.7.5 Preferred Design – Cycling and Pedestrians – Conclusion

These exciting, enhanced cycling and pedestrian facilities, in combination with roadway and urban design improvement aspects of the preferred design will transform Malden Road from a corridor designed with a narrow focus on automobile movement into a dynamic, high-quality "complete street" corridor. Active transportation alternatives and aesthetic considerations will be balanced and integrated with vehicular traffic. It will be a functional and attractive space to live in, to do business in, to visit, or to pass through.

The proposed improved pedestrian and cycling facilities included in the preferred design will provide for improved, more continuous and safer cycling and pedestrian activities in the Malden Road corridor and beyond. All new facilities will conform to or exceed current standards and best practices. The profile of walking and cycling within the community will be significantly raised, encouraging more residents to participate in these activities. This will help the Town and individual residents to improve health and quality-of-life, and will move LaSalle in the direction of a more sustainable future for the community.

9.8 Urban Design

9.8.1 Todd Lane Northern Town Centre Gateway

Both a new roundabout and an improved and widened bridge crossing Turkey Creek signal arrival into LaSalle from Todd Lane. This location presents an excellent opportunity to create a uniquely green northern gateway to LaSalle's Town Centre. Naturalization and habitat improvements to the shoreline, slopes and immediately adjacent table lands of Turkey Creek can be combined with detailed design treatment of the new Todd Lane roundabout that include treating planting, public art, special lighting, benches and paving as major civic elements. The streetscape treatment in this area signals the special nature of arriving or departing the Town Centre by elevating LaSalle's particular 'sense of place.'

A number of elements stand out:

1. *A naturalized Turkey Creek displays a variety of sub-emergent, emergent, shoreline, slope and meadow land plant species support the ecological integrity of Turkey Creek and provide a demonstration of the Town's commitment to protect its natural heritage.*
2. *Provide 4-season feature horticultural displays in a 3m wide strip adjacent to the outer side of the pedestrian walkway/multi-use path.*
3. *The multi-use pathway, sidewalks and pedestrian crossings surrounding the roundabout are lit with pedestrian scaled luminaires and poles and 'Zebra' crosswalks and provide an important visual clue for drivers and pedestrians.*
4. *Pedestrian activated crossings and refuge islands across Todd Lane and Malden Road are designed as integrated urban design features of the roundabout.*
5. *Benches are provided at regular 15m intervals along the property side perimeter of the multi-use path.*
6. *The width of the pedestrian walkway as it approaches the Turkey Creek bridge is equal to the width of the multi-use path plus an additional metre on the bridge for a creek viewing platform accommodating benches and additional feature pedestrian lighting.*

9.8.2 LaSalle Town Centre - Todd Lane to the Cahill Drain

The LaSalle Town Centre area exhibits a 5 lane roadway cross-section 'book-ended' on its north end by the Todd Lane/Turkey Creek Gateway and on its south end by the Cahill Drain. Much of Malden Road in this character area is lined by parking lots.

With little flexibility or width available with the public ROW it's extremely important that pedestrian nodes at intersections are generous and the sidewalk treatment within these intensified pedestrian nodes should have decorative details and be designed with Urban Braille criteria (*a system of tactile information that meets the needs of the visually impaired by utilizing both colour and texture contrasts that provide warning signals and clues related to orientation*). Sidewalks are to be consistent in both alignment and surface treatment and continuous. Vehicular access and egress points that break this continuity need to be minimized in number and in width.

Pedestrian crosswalks across roadways should be constructed of materials with contrasting colour and texture, and serve as visual and auditory cues to slow vehicles (such as patterned, coloured concrete, or contrasting concrete pavers).

A stronger built edge adjacent to the right-of-way is preferable to fronting new parking lots directly adjacent to the pedestrian path. At a minimum, where this is not possible, new parking lots should be designed with a 3m landscape buffer setback (wide enough to include ground and shrub cover and shade tree planting) that will screen cars, diminish their impact in the pedestrian realm and provide a greener boulevard. A 1.5m strip of unit pavers immediately adjacent to the roadway curb will accommodate boulevard trees in structural soil spaced roughly on 10m intervals, and light poles with both traffic and pedestrian heads every 30m.

9.8.3 Southern LaSalle Town Centre Gateway at Cahill Drain

The Cahill Drain is the transition point between the 3-lane road way cross-section and the 5-lane section of LaSalle Town Centre. The off-road multi-use path running north from Laurier Parkway on the east side of Malden Road ends here, connecting eastward to a trail running along the north shore of the Cahill Drain and northerly, transitioning to an on-road cycle lane.

Moving north from Grillo Drive the middle left turn lane of the 3-lane roadway is replaced with a planted median that also provides a mid-road and pedestrian refuge over the Cahill Drain. Specially treated, enlarged 'merge' zones signal this area as a trailhead reducing potential pedestrian and cycle conflicts before the roadway widens to five lanes signaling arrival into the Town Centre.

A number of elements stand out:

1. *The urban design elements of lighting, public/civic art and/or signage used at this gateway recalls LaSalle's heritage, and are designed as an integrated whole.*

2. *The naturalization of the Cahill Drain in this area displays a variety of sub-emergent, emergent, shoreline; slope and meadow land plant species improve the ecological integrity of Cahill Drain and provide a demonstration of the Town's commitment to protect its natural heritage.*
3. *A mixed palette of native plant materials (shrubs, trees and ground covers) from the Cahill Drain is extended up to a 1.5m mown edge on the property side of the multi-use path.*
4. *The multi-use pathway, sidewalks and pedestrian crossings are lit with pedestrian scale luminaires and poles.*
5. *Urban design elements (lighting, civic gateway features and public art opportunities) are integrated with the planting programme for the median.*
6. *A enlarged 'spill over' area of paving where the Cahill Drain Trail meets the multi-use pathway north of the Cahill Bridge on the east side of Malden Road acts as a trail head, pedestrian queuing and rest zone, with benches and additional pedestrian lighting for the pedestrian activated crossing of Malden Road.*
7. *Provide benches on either side of Malden Road at this location.*

9.8.4 Mixed-Use Transition Area - Cahill Drain to Reaume Road

Some urban design treatments of the LaSalle Town Centre are continued in this section, such as a 1.5m continuous pedestrian walkway adjacent to the roadway on the west side of Malden Road and the curbside placement of compound luminaires (pedestrian and traffic) and street trees. Existing driveways to/from commercial and residential properties need to be of minimal width in order to limit sidewalk breaks.

Pedestrian crosswalks across intersections and driveways should be constructed of materials in contrasting colour and texture, which will serve as visual and auditory cues to pedestrians, cyclists and drivers and will slow vehicles (such as patterned, coloured concrete, or contrasting concrete pavers).

The on-road cycle lane on the east side of Malden Road ends just north of the Cahill Drain and the 4m multi-use off road path begins. A Town managed front-yard tree planting program is proposed with canopy trees provided on the property side of the multi-use path to help differentiate the public right-of-way from the private realm, and to provide an additional landscape feature and residential buffer.

9.8.5 Estate Residential/Vollmer Gateway - Reaume Road to Meagan Drive

Some urban design features continuous throughout the corridor also apply in the Estate Residential/Vollmer Gateway Area. Pedestrian crosswalks across intersections and driveways should be constructed of materials in contrasting colour and texture, which will serve as visual and auditory cues to pedestrians, cyclists and drivers and will slow vehicles (such as patterned, coloured concrete, or contrasting concrete pavers).

The on-road cycle lane on the east side of Malden Road ends just north of the Cahill Drain and the 4m multi-use off road path begins at Laurier Parkway.

A front-yard tree planting program is proposed with canopy trees provided on the property side of the multi-use path to help differentiate the public right-of-way and the private realm.

9.8.6 Laurier - Vollmer Community Gateway

This institutional and community centre gateway provides a transition point between more rural areas to the south, LaSalle's urban area, the new residential area surrounding the Vollmer Community Complex and the Complex itself which is a regional draw. It provides a special opportunity to combine the use of feature planting, public art, special lighting, benches and paving to create a major civic element and southern anchor to LaSalle's urban area.

A large planted median combined with enhanced corner nodes, civic signage and an improved landscaped treatment for the 'front yard' of the high school signals this transition.

The design of the intersection where the off-road multi-use path that began at the north end of the Cahill Drain turns east at Laurier Parkway to connect to the Vollmer Complex should be designed and integrated with the design and treatment of the landscaped area of Sandwich High School facing Malden Road and the design and treatment of the enlarged median at this location. The intersection also acts as a trail head, and a pedestrian queuing and rest zone, and should include streetscape furnishings and lighting with the pedestrian and trail user in mind.

In summary, the recommended design and subsequent preferred design consists of:

Town Centre (between Todd Lane and the Cahill Drain):

- 5 lane cross-section with a left turn centre lane at intersections and a raised landscaped median elsewhere
- Roundabout and Gateway Feature at Todd Lane
- Cycling lanes / wider curb lanes to accommodate on street cycling
- Signalized intersections at Delmar, Sprucewood and Normandy
- Sidewalks on both sides of Malden Road
- Interconnection of trail system along Normandy, Huron Line, Sandwich West Parkway and Todd Lane
- Pedestrian signal for trail crossing north of the Cahill Drain
- Urban design features on both sides of Malden Road, including boulevards and streetscaping
- Enclosed drainage system (storm sewers)
- Removal of hydro poles and burial of overhead hydro
- New pedestrian and street lighting
- Complete acquisition of 30 m corridor

South of the Town Centre (between the Cahill Drain and Meagan Drive):

- 3 lane cross-section with a continuous left turn centre lane
- Share the road lanes
- Signalized intersection at Bouffard and Laurier
- Sidewalk on the west side of Malden Road
- Multi-use trail on the east side of Malden Road
- Urban design features on both sides of Malden Road, including boulevards and streetscaping
- Laurier-Vollmer Community Gateway in front of Sandwich High School
- Enclosed drainage system (storm sewers)
- Removal of utility poles on the east side of Malden Road
- 2.5m widening on the east side of the road and isolated widening (both sides) at intersections

Table 17 provides an evaluation of the Recommended Design.

Table 18 provides a summary of comments received at the Public Information Centre with responses.

As a result of public and agency comments, refinements to the Preferred Design shown at PIC #2 have been made as noted below.

They are shown on the Preferred Design Figures ***(Figures 8.0 to 12.0)*** and include:

- Insertion of a fence at the south-east corner of Todd Lane/Malden Road, along the property line.
- The asphalt pathway at Normandy Road/Malden Road was changed to a 1.5m sidewalk, including landscaping features.
- The roundabout was widened at the approaches/throats at each leg to accommodate truck traffic.
- The trail on Mike Raymond Drive was moved to Laurier Drive on the urban design drawings.