To: Mayor and Members of Council

From: Mary Hall, Director
Development Approval & Planning Policy

Meeting: March 8, 2016

Subject: Mayfield West Phase 2 – Transportation Master Plan

RECOMMENDATIONS

That Report DP-2016-12 regarding the Mayfield West Phase 2 – Transportation Master Plan be received;

That the Mayfield West Phase 2 - Transportation Master Plan attached as Schedule "A" to Report DP-2016-12 be approved;

That staff be directed to issue a Notice of Study Completion to initiate a 30-day public review period in accordance with the requirements of the Municipal Class Environmental Assessment (EA);

That Staff be directed to initiate and complete a Municipal Class EA Study based on the recommendations contained in the Mayfield West Phase 2 – Transportation Master Plan, attached as Schedule A to this report;

That the Ontario Ministry of Transportation (MTO) be requested to collaborate with the Town to expedite the east-west Spine Road connection/Highway 410 interchange modifications at Hurontario Street;

That capital project 11-92 – Mayfield West Phase 2 – be increased by an upset limit of $410,000 (Including non-refundable HST) for the Municipal Class EA Studies and relevant consulting works to be completed by the Town and funded by the Mayfield Station Developer Group;

That the Mayor and Clerk be authorized to enter into and sign a further amendment to the Funding Agreement with the Mayfield Station Developer Group dated March 4, 2008 for the Mayfield West Phase 2 Secondary Plan with respect to the scope of work and the total budget allocated to this project;

That a copy of the Report DP-2016-12 with the Council resolution be forwarded to the Ontario Ministry of Transportation, Region of Peel, the City of Brampton, Toronto Region Conservation Authority and Orangeville Railway Development Corporation, for information.

EXECUTIVE SUMMARY

The Mayfield West Phase 2 - Transportation Master Plan (MW2-TMP) was undertaken as a part of the preparation of the Secondary Plan for development within lands generally encompassing north of Mayfield Road, east of Chinguacousy Road, south of the Etobicoke Creek and west of Hurontario Street in the Town of Caledon (MW2) to guide the provision of fully integrated transportation infrastructure and services.

The MW2-TMP was carried out in accordance with the phases 1 and 2 of the Municipal Class Environmental Assessment (EA) process to formulate a comprehensive and innovative transportation strategy focusing on a sustainable, connected and pedestrian/cyclist friendly community.

The MW2-TMP provides a strategic balanced transportation framework that supports a broad range of travel options including walking, cycling, and public transport as well as fully connected road network.

Staff is seeking Council's approval of the MW2-TMP and the direction to issue the Notice of Study Completion to initiate a 30-day public review period in accordance with the requirements of the Municipal Class EA process.

DISCUSSION

Purpose

The purpose of this report is to:

- Highlight the findings and recommendations of the MW2-TMP
- Request approval of the MW2-TMP to implement the recommended improvements

Background

In 2008, the Town of Caledon approved the initiation of the secondary planning process for Mayfield West Phase 2 on the basis of planning considerations endorsed by Council in 2006 and 2007.

As part of the secondary planning process, Paradigm Transportation Solutions Limited was retained to prepare the MW2-TMP within lands generally encompassing north of Mayfield Road, east of Chinguacousy Road, south of the Etobicoke Creek and west of Hurontario Street to guide the provision of fully integrated transportation infrastructure and services.

The resulting MW2-TMP builds on the analysis, findings and recommendations contained in Paradigm's Mayfield West Phase 2 Traffic Impact studies A and B which were completed in 2008 and 2010 respectively. The final draft of the MW2-TMP is based on the framework plan endorsed by Town Council on September 3, 2013.

Mayfield West Phase 2 Transportation Master Plan Process

The key objective of the MW2-TMP is to provide a comprehensive transportation strategy for the Secondary Plan Area which focuses on achieving a sustainable, connected and pedestrian/cyclist friendly community; ensuring that road, transit, pedestrian and cyclist facilities are planned in an integrated manner to support the long-term needs of the Town of Caledon.

The MW2-TMP was undertaken by the Town of Caledon in accordance with Phases 1 and 2 of the Municipal Class Environmental Assessment (EA) process. This process is designed to ensure that Phase 1 (identification of the problem or opportunity) and Phase 2 (identification of alternative solutions and a preferred solution) of the Municipal Class EA process are satisfied.

A key requirement of the Municipal Class EA process is a meaningful and effective consultation with agencies, stakeholders and the public throughout the study. The MW2-TMP study process followed a comprehensive consultation process that included:

- Formal Notice of Study Commencement
- Organization of and meetings with Stakeholder Advisory Group
- Organization of and meetings with Technical Advisory Group
- Public Information Centres at key steps in the study
- Special workshops and meetings with special interest groups to discuss specific issues
- Emails, telephone calls, letters, discussion and enquiry at Planning Front Counter

The MW2-TMP provides a balanced transportation plan that supports a broad range of travel options, including walking, cycling, public transit as well as a fully connected roadway network. The plan includes a comprehensive network of pedestrian walkways and trails as well as a full network of on-street bike lanes and off-road bicycle trails that support healthy lifestyles. Public transit services along with a central transit hub will provide an alternative commuting mode that is well integrated with other existing and planned public transit services in the Region. The road network consists of a comprehensive network of local streets, collector roads and three arterial roads that are well integrated with existing and planned Municipal, Regional and Provincial roads in the surrounding area. The comprehensive MW2-TMP study report is available for review upon request at the Clerk's Office.

The key strategic recommendations for each of the elements of MW2-TMP are highlighted below:

a) Road Network Plan

The proposed arterial roads provide mobility within MW2 as well as connections to the surrounding Municipal arterial roads, Regional roads and Provincial highways, as follows:

- An east – west Spine Road that will connect Chinguacousy Road and McLaughlin Road along with a connection to the Highway 410 interchange with Valleywood Boulevard and Hurontario Street. The details of this roadway connection will require further investigation in partnership with the MTO. The Spine Road provides important connectivity between the primary activity areas within MW2.
- McLaughlin Road extending north from Mayfield Road, generally along the current alignment.
- Chinguacousy Road extending north from Mayfield Road, generally along the current alignment.

Supporting the road network are designated collector roads providing connectivity between the neighbourhoods within MW2 as well as connections to the arterial roads. The collector roads will also accommodate, walking, cycling and public transit services within the community. The plan identifies locations within the road network where traffic calming measures should be considered to help minimize potential impacts of traffic on the community environment.

The proposed road network plan includes two road crossings of the Orangeville Brampton Railway (OBRY) within MW2. One crossing will be at the Spine Road and the

MW2-TMP recommends that provisions be made for gate protection at this crossing. The second crossing will be Collector Road A and the MW2-TMP determined that warning signals and signage will provide sufficient safety at this crossing.

b) Public Transit Plan

Public transit services are an important component of the MW2-TMP. The plan recommends local bus services integrated with the transit services in adjacent urban areas and connecting to GO Transit rail stations and other main activity centres within the City of Brampton. Local bus services within MW2 are proposed.

A transit hub located within the mixed use commercial area of MW2 will provide connectivity between the local bus services as well as with GO Transit routes and with a planned bus rapid transit service on the Hurontario Street corridor. The MW2 transit hub located within or adjacent to the mixed use commercial area and the designated employment areas will also encourage the use of public transit for travel to and from these activity centres. Detailed design guidelines have been included within the MW2-TMP for the effective accommodation of bus operations on the collector streets and arterial roads within MW2.

Although, identified as a long-term service strategy, the proposed transit hub is anticipated to serve as a terminus for the planned future extension of the Main Street Bus Rapid Transit from Brampton. It will provide linkages with key transit nodes including the Mississauga City Centre, Brampton Gateway Terminal, Downtown Brampton and Brampton GO Station.

c) Pedestrian and Cycling Plan

A comprehensive pedestrian and cycling plan has been developed within the MW2-TMP to encourage healthy lifestyles and to reduce vehicular travel within MW2. The pedestrian and cycling facilities within MW2 have been planned to be connected to and fully integrated with the trails and cycling routes in the surrounding areas of Caledon, Brampton and Peel Region.

The pedestrian facilities are planned to meet the needs of leisure walkers, hikers and runners and will consist of on-street sidewalk facilities on arterial roads, collector streets and most local streets; greenway and open space trails adjacent to the natural areas; multi-use trails along the available corridors across MW2 and trail linkages to ensure connectivity within neighbourhood areas. The cycling facilities are planned to meet the needs of commuter, utilitarian and recreational cyclists who typically represent a wide range of cycling ability and confidence. The cycling plan includes wide bike lanes on the arterial roads, bike lanes and/or widened pavement along collector roads and off road cycling trails. The plan also outlines supporting measures to accommodate cyclists and to achieve a reasonable safe interface between cycling activity and vehicle traffic.

d) Supporting Transportation Policies

As part of the MW2-TMP process, important transportation policies were developed to further support the Town’s vision for the MW2 community. A comprehensive parking strategy is outlined which is designed to provide optimal parking levels to meet the expected parking demand at new developments within the community while avoiding excessive parking supply. Guidelines have been developed based on recent industry experience and studies for the amount of parking that should be provided on site for different types of land use. The guidelines include a suggested approach for managing on street parking in residential areas and guidelines for the provision of bicycle parking in new development. The MW2-TMP also outlines an approach and guidelines to travel demand management strategies to encourage the use of sustainable modes of transportation and minimize single occupant vehicle trips.

e) Implementation- Road Improvements

Implementation of the MW2-TMP should be closely coordinated with other related projects; namely the GTA West Corridor Environmental Assessment Study and improvements to Mayfield Road planned by the Region of Peel. Environmental Assessment studies will be necessary to finalize the design details of the major roadway projects within MW2.

The connection of the Spine Road to Hurontario Street and/or the Highway 410 interchange will require an appropriate study to be completed in partnership with the MTO. Municipal Class EA studies will need to be completed for the Spine Road and McLaughlin Road within the Secondary Plan area and a Municipal Class EA study will also be required for Chinguacousy Road prior to development of the areas adjacent to that roadway.

Key Issue: Spine Road Connection with Hurontario Street/Highway 410 Interchange

It should be noted that the recommended road network for MW2 is designed to accommodate the population and employment growth targets of approximately 10,348 new residents (3,369 residential dwelling units), 3800 new jobs.

The integral part of the network is the key piece of infrastructure which runs as an east-west arterial roadway extending from Hurontario Street to Chinguacousy Road serving as the internal spine road. It provides direct access to the various development areas within the MW2 area. The Spine Road is pivotal in providing east-west capacity to support development, as well as accommodating transit service and linking the community with the proposed Transit Hub.

In accordance with an agreement entered into between the Town and the Mayfield Station Landowners Group, the Town will not approve any application under the *Planning Act* or register any plan of subdivision until such time that satisfactory arrangements have been made with MTO for the provision of vehicular access and connection of the Spine Road to the Hurontario/Highway 410 interchange.

At this point the MTO has indicated a willingness to work with the Town to undertake improvements at the Hurontario/Highway 410 interchange to support the Spine Road connection.

Realizing the importance of the Spine Road connection for MW2 community, Staff recommends that the MTO be requested to work with the Town to expedite this crucial connection.

FINANCIAL IMPLICATIONS

Development Approval & Planning Policy staff has reviewed the cost estimate to complete MW2. In order to carry out the environmental assessment studies to support the recommendations of Mayfield West Transportation Master Plan, Staff has determined that a municipal class environmental assessment studies are required.

The Municipal Class EA Study will include McLaughlin Road from Mayfield Road to the south, to the Greenbelt Plan area to the north and the Spine Road from Chinguacousy Road in the west and to Hurontario Street/Highway 410 to the east.

The additional cost for the above EA Study and relevant consulting work is estimated to cost $ 410,000.00 (Including non-refundable HST) to be completed within the time-frame of 18 months. After the request for tender process is completed the budget will be adjusted accordingly to reflect the final cost.

The current budget for 2011capital project 11-92 – Mayfield West Phase 2 – West, in the amount of $931,016, funded by Mayfield Station Developers Group (MSDG). The table below reflects the past actuals and current budget.

Table 1:

Mayfield West Phase 2 Secondary Plan

	Study Components	(A) * Actual 2008-2010	(B) Revised Budget	(C) Projected Total Fees
1	Cultural Heritage Survey	44,237	0	**44,237**
2	Agricultural Impact Assessment	53,514	0	**53,514**
3	Water & Wastewater Servicing Study	50,337	0	**50,337**
4	Commercial Needs Assessment	48,469	0	**48,469**
5	Employment Land Needs Assessment	14,726	0	**14,726**
6	Transportation Impact Study	58,677	0	**58,677**
7	Noise & Vibration Assessment	46,876	0	**46,876**
8	Community Design Consultant (USI)	196,057	0	**196,057**
9	Comprehensive EIS & MP	409,778	245,552	**655,330**
10	Community Design Plan (NAK)	0	297,361	**297,361**
11	Transportation Master Plan	1,384	139,810	**141,194**
12	Water & Wastewater Servicing Plan	0	16,293	**16,293**
13	Fiscal & Economic Impact Assessment	3,161	79,720	**82,881**
14	Miscellaneous Expenses	11,768	5,358	**17,126**
15	TRCA Review Fee	50,000	135,000	**185,000**
16	Planning Consultant	0	0	**0**
18	Contingency	0	11,922	**11,922**
	Total:	**988,984**	**931,016**	**1,920,000**

* Funded by previous years budgets

Since the consultants that Caledon retained for the purpose of preparing the MW2 secondary plan and the necessary studies to support the secondary plan are funded by MSDG under a Funding Agreement with Caledon, the Funding Agreement must be amended to reflect the revised cost estimate.

COUNCIL WORK PLAN

1. **Growth: To plan for complete communities as required under the Growth Plan**

    - Residential and employment expansion for Mayfield West.

ATTACHMENTS

Schedule A: Mayfield West Phase 2 Secondary Plan Transportation Master Plan Final Report, Paradigm Transportation Solutions Limited, December 2015.

Prepared by: Kant Chawla

Approved by: Mary Hall

paradigm
TRANSPORTATION SOLUTIONS LIMITED

Mayfield West Phase 2 Secondary Plan Transportation Master Plan Final Report

Paradigm Transportation Solutions Limited

December 2015

Project Summary

Project Number
101380P

December 2015

Client
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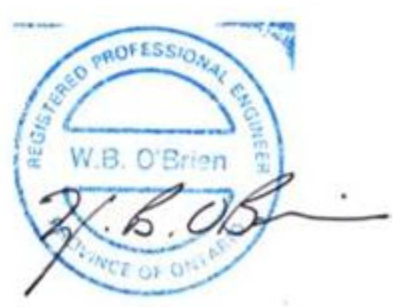
Mayfield West Phase 2 Secondary Plan Transportation Master Plan Final Report

List of Revisions

Version	Date	Author	Description
1	July 2014	PTSL	Draft Report
2	October 2015	PTSL	Final Report
3	December 2015	PTSL	Final Report (updated)

Signatures and Seals



Signature

Disclaimer

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Executive Summary

The Mayfield West Phase 2 (MW2) Secondary Plan area is located generally north of Mayfield Road, east of Chinguacousy Road, south of the Etobicoke Creek and west of Hurontario Street in the Town of Caledon. As part of the preparation of the Secondary Plan for development within this area, a Transportation Master Plan (TMP) has been prepared to guide the provision of fully integrated transportation infrastructure and services to support the Secondary Plan.

Transportation Master Plan Process

The key objective of the TMP is to provide a comprehensive and innovative transportation strategy for the MW2 Secondary Plan Area which focuses on achieving a sustainable, connected and pedestrian/cyclist friendly community; ensuring that road, transit, pedestrian and cyclist facilities are planned in an integrated manner to support the long-term needs of the Town of Caledon. To achieve this objective, the TMP has followed the nine guiding principles endorsed by Town Council during the development of the Secondary Plan.

In preparing the TMP, the Master Plan process set out in the Municipal Class Environmental Assessment (Class EA) has been followed. This process is designed to ensure that Phase 1 (identification of the problem or opportunity) and Phase 2 (identification of alternative solutions and a preferred solution) of the Municipal Class EA process are satisfied. A key requirement of the Municipal Class EA process is meaningful and effective consultation with agencies, stakeholders and the public throughout the study. The TMP study process followed a comprehensive consultation process that included:

- Formal Notice of Study Commencement
- Organization of and meetings with Stakeholder Advisory Group
- Organization of and meetings with Technical Advisory Group
- Public Information Centres at key steps in the study
- Special workshops and meetings with special interest groups to discuss specific issues
- Preferred Transportation Strategy for Mayfield West Phase 2

Through the evaluation of alternative transportation strategies for MW2, the TMP recommends adoption of a balanced transportation plan that supports a broad range of travel options, including walking, cycling, public transit as well as a fully connected roadway network. This plan is consistent with and supportive of the guiding principles endorsed by Town Council and will provide residents with efficient and effective mobility within the community and beyond. The plan includes a comprehensive network of pedestrian walkways and trails as well as a full network of on-street bike lanes and off-road bicycle trails that will encourage and support healthy lifestyles. Public transit services along with a central transit hub will provide an alternative commuting mode that is well integrated with other existing and planned public transit services in the Region. The road network will consist of a comprehensive network of local streets, collector roads and three arterial roads that are well integrated with existing and planned Municipal, Regional and Provincial roads in the surrounding area.

Road Network Plan

The recommended road network plan for MW2 is illustrated in Figure E.1. The proposed arterial roads provide mobility within MW2 as well as connections to the surrounding Municipal arterial roads, Regional roads and Provincial highways, as follows:

- An east – west Spine Road that will connect Chinguacousy Road and McLaughlin Road as well as having a connection to Hurontario Street and/or the Highway 410 interchange with Valleywood Blvd. The details of this roadway connection will require further investigation in partnership with the Ministry of Transportation of Ontario. The Spine Road provides important connectivity between the primary activity areas within MW2.
- McLaughlin Road extending north from Mayfield Road, generally along the current alignment.
- Chinguacousy Road extending north from Mayfield Road, generally along the current alignment.

Supporting the road network are designated collector roads providing connectivity between the neighbourhoods within MW2 as well as connections to the arterial roads. The collector roads will also accommodate, walking, cycling and public transit services within the community. The plan identifies locations within the road network where traffic calming measures should be considered to help minimize potential impacts of traffic on the community environment.

The proposed road network plan includes two road crossings of the Orangeville Brampton Railway (OBRY) within MW2. One crossing will be at the Spine Road and the TMP recommends that provisions be made for gate protection at this crossing. The second crossing will be at Collector Road A and the TMP determined that warning signals and signage will provide sufficient protection at this crossing.

Public Transit Plan

Public transit services are an important component of the TMP. The plan recommends local bus services integrated with the transit services in adjacent urban areas and connecting to GO Transit rail stations and other main activity centres within the City of Brampton. Local bus services within MW2 are proposed, as shown in Figure E.2.

A transit hub located within the mixed use commercial area of MW2 will provide connectivity between the local bus services as well as with GO Transit routes in this part of the Region and with a planned bus rapid transit service on the Hurontario Street corridor. The MW2 transit hub located within or adjacent to the mixed use commercial area and the designated employment areas will also encourage the use of public transit for travel to and from these activity centres. Detailed design guidelines have been included within the TMP for the effective accommodation of bus operations on the collector streets and arterial roads within MW2.

Pedestrian and Cycling Plan

A comprehensive pedestrian and cycling plan has been developed within the TMP to encourage healthy lifestyles and to reduce vehicular travel within MW2. The pedestrian and cycling facilities within MW2 have been planned to be connected to and fully integrated with the trails and cycling routes in the surrounding areas of Caledon, Brampton and Peel Region.

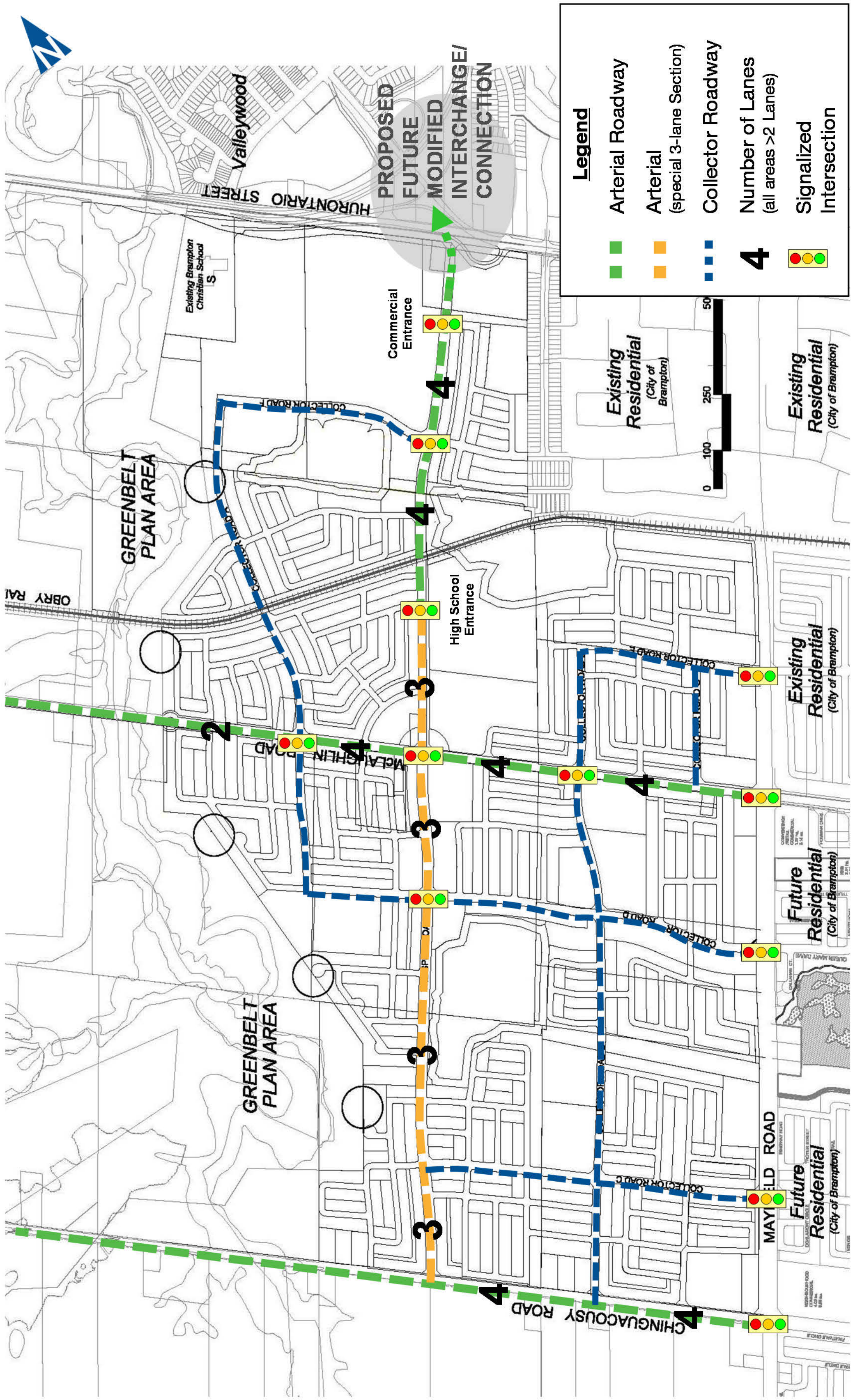
The pedestrian facilities are planned to meet the needs of leisure walkers, hikers and runners and will consist of on-street sidewalk facilities on arterial roads, collector streets and most local streets; greenway and open space trails adjacent to the natural areas; multi-use trails along the available corridors across MW2 and trail linkages to ensure connectivity within neighbourhood areas. The cycling facilities are planned to meet the needs of commuter, utilitarian and recreational cyclists who typically represent a wide range of cycling ability and confidence. The cycling plan includes wide bike lanes on the arterial roads, bike lanes and/or widened pavement along collector roads and off road cycling trails. The plan also outlines supporting measures to accommodate cyclists and to achieve a reasonable safe interface between cycling activity and vehicle traffic. The overall pedestrian and cycling plan is illustrated in Figure E.3.

Supporting Transportation Policies

To further support the Town's vision for the MW2 community, the TMP has developed important supporting transportation policies. A comprehensive parking strategy is outlined which is designed to provide optimal parking levels to meet the expected parking demand at new developments within the community while avoiding excessive parking supply. Guidelines have been developed based on recent industry experience and studies for the amount of parking that should be provided on site for different types of land use. The guidelines include a suggested approach for managing on street parking in residential areas and guidelines for the provision of bicycle parking in new development. The TMP also outlines an approach and guidelines to travel demand management strategies to encourage the use of sustainable modes of transportation and minimize single occupant vehicle trips.

Implementation

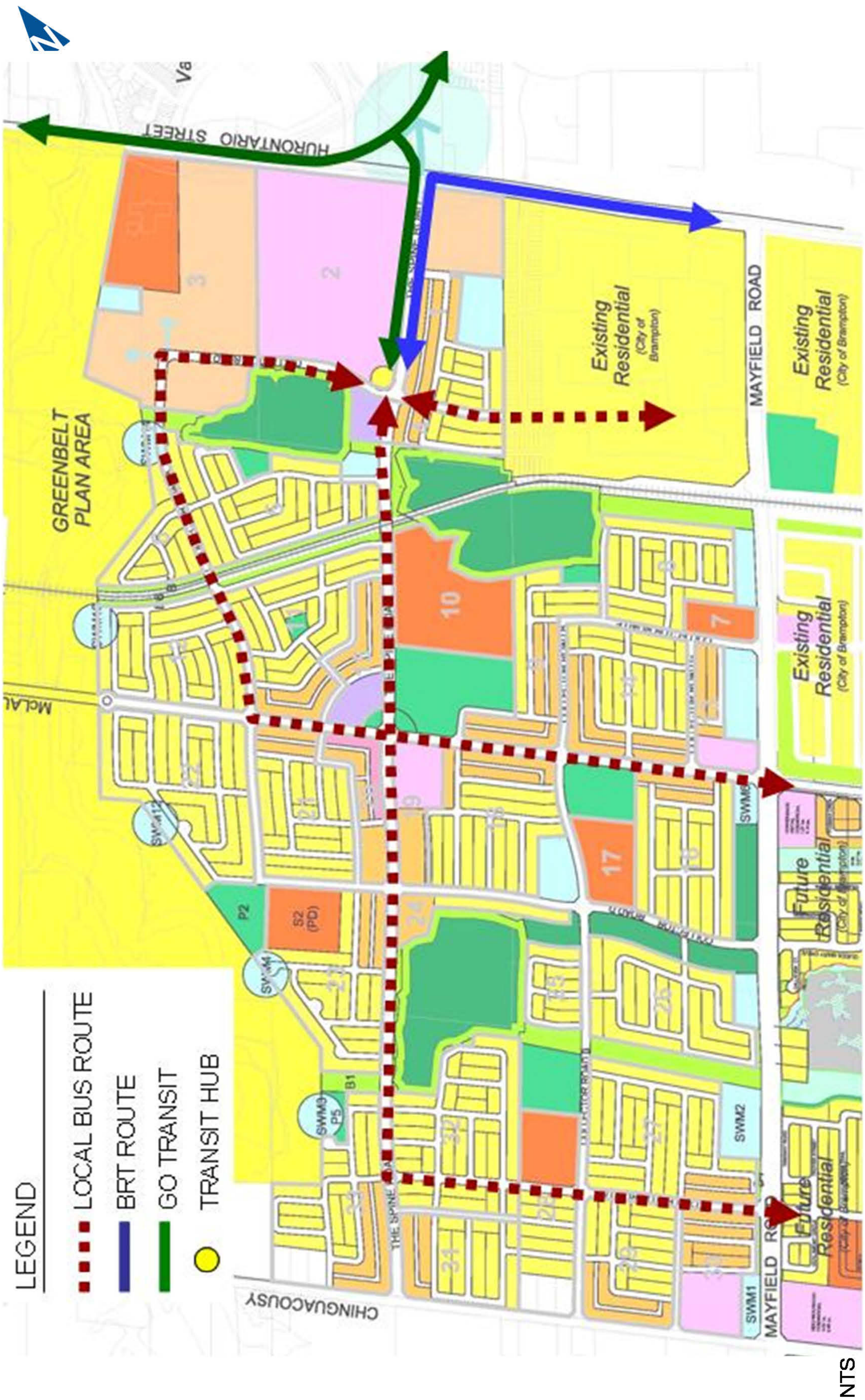
Implementation of the TMP should be closely coordinated with other related projects; namely, the GTA West Corridor Environmental Assessment Study and improvements to Mayfield Road planned by the Region of Peel. Environmental Assessment studies will be necessary to finalize the design details of the major roadway projects within MW2. The connection of the Spine Road to Hurontario Street and/or the Highway 410 interchange will require an appropriate study to be completed in partnership with the Ministry of Transportation of Ontario. Class EA studies will need to be completed for the Spine Road and McLaughlin Road within the Secondary Plan area and a Class EA study will also be required for Chinguacousy Road prior to development of the areas adjacent to that roadway.



Recommended Road Network Plan

Figure E.1

paradigm TRANSPORTATION SOLUTIONS LIMITED



Transit Plan

Figure E.2

Mayfield West Phase 2 Secondary Plan Transportation Master Plan
101380P

Cycling and Trails Plans

Figure E.3

Mayfield West Phase 2 Secondary Plan Transportation Master Plan
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1 Introduction

1.1 Study Context and Purpose

In 2008, the Town of Caledon approved the initiation of the secondary planning process for Phase Two of the Mayfield West Rural Service Centre (Mayfield West Phase 2) on the basis of planning considerations endorsed by Council in 2006 and 2007. Mayfield West is one of three rural service centres in the Town of Caledon, the other two being Bolton and Caledon East.

Secondary Plans are land use plans for areas of the Town, such as groups of neighbourhoods or other defined areas, that require detailed direction with respect to land use, community design, natural heritage and transportation. They provide a framework for the future development of new communities and employment zones by means of land use plans and policies, and are adopted by Official Plan Amendment into the Official Plan to ensure that the intent is legally binding.

The secondary planning process for Mayfield West Phase 2 has been on-going and is organized as follows:

- Phase 1: Existing Conditions, Characterization, Opportunities and Constraints
- Phase 2: Selection of Preferred Land Use Scenario and ROPA Application
- Phase 3: Draft Secondary Plan
- Phase 4: Final Recommendations and Official Plan Amendment

The Secondary Plan has been carried out through a number of integrated studies that have included a land use plan, environmental plan, servicing plan, fiscal plan and a transportation master plan. A preferred land use framework plan was endorsed by Council in September, 2013 and reflects the Guiding Principles, set out by the Town and this provided a basis to complete the related planning studies, including the transportation master plan.

Paradigm Transportation Solutions Limited (PTSL), in conjunction with Vandermark Consulting and AMEC Environment & Infrastructure, was retained to prepare a Transportation Master Plan (TMP) for the planned Mayfield West Phase 2 community in fulfillment of clause 7.12.5.4 of Official Plan Amendment No. 208 (OPA 208).

The resulting TMP builds on the analysis, findings and recommendations contained in Paradigm's Mayfield West Phase 2 Traffic Impact Studies A and B which were completed in 2008 and 2010, respectively. The Transportation Master Plan is based on the framework plan prepared by NAK Design Strategies which was endorsed by Town Council on September 3, 2013.

The TMP has been undertaken to identify and assess, at a strategic level, the transportation requirements necessary to support the growth and development of Mayfield West Phase 2 while considering the long-range transportation needs of the community in relation to land use planning. The TMP is intended to fulfill phases 1 and 2 of the Municipal Class EA process which establishes the need and justification for roads. However, the final design of the proposed arterial road network (i.e. alignment, lane configuration, traffic calming locations, signage details, etc.) are subject to subsequent completion of the Class EA process for individual roads or groups of roads (i.e. project).

The key objective of the TMP is to: **"Develop a comprehensive and innovative transportation strategy for the Mayfield West Phase 2 Secondary Plan Area which focuses on achieving a sustainable, connected and pedestrian/cyclist friendly community; ensuring that road, transit, pedestrian and cyclist facilities are planned in an integrated manner to support the long-term needs of the Town of Caledon."**

1.2 Guiding Principles

In May 2009, Town Council endorsed nine guiding principles for Mayfield West Phase 2. The guiding principles serve to define the overall directions for the community and reflect the interests of public agencies, advisory committees, stakeholders, landowners and residents. The nine guiding principles are summarized as follows:

1. Achieve net ecological gain, when practical, possible and advisable;
2. Adopt an integrated design process;
3. Foster a local identity rooted in the spirit of the Town of Caledon;
4. Establish the structure for a close knit small town that fosters self sufficiency;
5. Achieve a range and mix of housing;
6. Promote walking, cycling and transit opportunities;
7. Maximize conservation and innovation;
8. Ensure community connectivity and integration at all scales; and
9. Support adaptive change.

A number of supporting transportation principles have been derived from the above noted guiding principles which serve as the framework for the development of a fully integrated, sustainable transportation network which supports intensification of the lands and complements the mix of land uses anticipated for Mayfield West Phase 2. The supporting transportation principles are summarized as follows:

- Balance street transportation functions with pedestrian street zone and land use;
- Establish hierarchy of roadways and transportation;
- Human-scale street right-of-ways and pavement widths;
- Address the need for on-street parking as a key function of streets within residential areas;
- Provision for dedicated on-street bike lanes as part of the overall cycling network;
- Consideration of roundabouts where pedestrian and cycling flows will not be compromised; and
- Consideration of road standards that achieve a uniquely urban, compact "village" character.

1.3 Goals & Objectives of the Transportation Master Plan

The intent of the Mayfield West Phase 2 TMP is to:

1. Develop a comprehensive transportation plan that supports the recommended land use plan while achieving accessibility and providing mobility in a manner that is fully consistent with the guiding transportation principles;
2. Develop a Transportation Master Plan Study that adheres to Phases 1 and 2 of the Municipal Class Environmental Act (MCEA) and integrates infrastructure requirements for existing and future land use through the consideration of environmental assessment planning principles. A key goal of the TMP is to identify the needs of future development, identify alternative transportation strategies to meet the needs of future development, and determine the most appropriate transportation strategy that balances transportation needs within context of external constraints;
3. Identify and address the opportunities and constraints associated with the current transportation network, including but not limited to current policy framework, existing and proposed land uses, transportation elements including street network capacity, transit availability and the opportunity to develop a Transit Hub; and
4. Evaluate the transportation network future potential, to a 2031 horizon, in order to:
    - Explore and refine the optimal mix of land uses, built form, densities and distribution with the goal of creating a complete community;
    - Consider and address issues pertaining to land use integration and connectivity between the Study Area and lands east of Highway 10;

- Through community input, develop a long-term vision and development framework for the Study Area as a basis for creating, testing, recommending and implementing transportation policies as part of the Secondary Plan;
- Establish in the policy framework transitional measures used to support the evolution of the Secondary Plan Area from its current state to the planned vision;
- Identify any roadway infrastructure improvements required to support the preferred land use concept as well as identify opportunities for integration between existing and new infrastructure; and
- Prepare guiding transportation policies for inclusion in the Mayfield West Phase 2 Secondary Plan.

1.4 Environmental Assessment Process

1.4.1 Class EA Process

The Municipal Class Environmental Assessment (MCEA)[1] provides a planning process in accordance with the Environmental Assessment (EA) Act for municipal infrastructure projects. The Class EA establishes a process whereby projects defined within the Municipal Class EA and any subsequent modifications can be planned, designed, constructed, operated, maintained and rehabilitated. These projects generally do not require project specific approval under the EA document, providing the approved planning process is followed.

The successful completion of the Municipal Class EA process follows five key phases:

- Phase 1 – Identify the problem or opportunity;
- Phase 2 – Identify alternative solutions to address the problem or opportunity through consideration of the existing environment, and then establishing a preferred solution;
- Phase 3 – Examine alternative methods of implementing the preferred solution;
- Phase 4 – Complete an environmental study report (ESR) that documents the study rationale, planning, design and consultation process of the project; and
- Phase 5 – Complete contract drawings and documents, then proceed to construction and operation.

Class EA Master Plans are defined as long-range plans which integrate infrastructure requirements for existing and future land use with

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[1] Municipal Class Environmental Assessment; (Municipal Engineers Association), October 2000 (as amended in 2007 & 2011).

environmental assessment planning principles. The Class EA Master Plan process examines infrastructure systems or groups of related projects in order to outline a framework for implementation of subsequent projects and/or developments with environmental protection and mitigation measures integrated into the project. At a minimum, Master Plans are required to address Phases 1 and 2 of the Municipal Class EA process. The work undertaken in the preparation of a Master Plan study should recognize the planning and design processes of the Class EA and should incorporate key principles of successful environmental assessment planning. It is required that public and stakeholder agency consultation take place during each phase of the study process, specifically at the initiation of the Master Plan Study and at the selection of the preferred alternative.

The Class EA Master Plan typically differs from project-specific studies in several key respects. Long-range infrastructure planning enables the proponent (i.e. Town of Caledon) to comprehensively identify transportation needs and establish broader infrastructure options. The opportunity to integrate transportation with land use planning also enables the Municipality to consider different perspectives when looking at the full impact of the decision making process.

Many municipalities undertake Transportation Master Plans (TMPs) in order to define long-term transportation objectives as a supplement to transportation needs identified through the Official Plan development process. A Transportation Master Plan integrates existing and future land-use planning and the planning of transportation infrastructure with the principles of environmental assessment planning. Transportation Master Plans build upon the analysis and detailed policies developed throughout municipal Official Plans. Therefore, it must be recognized that the link between Transportation Master Plans and Official Plans is fundamental. While Official Plans are approved under the Ontario Planning Act, typically they are developed through a process which applies the principles of EA planning. As such, Official Plans provide a planning and technical basis for undertaking infrastructure environmental assessment studies.

Transportation Master Plans are developed through a stakeholder consultation process that involves consultation with the public, government technical agencies and other municipalities. If developed in accordance with Section A.2.7 of the Municipal Class EA, at a minimum, a TMP will address Phases 1 and 2 of the Municipal Class EA process. As a result, a TMP can provide the basis for carrying out follow-up EA studies for project-specific improvements.

The Mayfield West Phase 2 Transportation Master Plan adheres to the planning processes of the Municipal Class EA, incorporating the key principles of successful environmental planning set out under the Ontario Environmental Assessment Act. Once complete, the TMP will be filed and made available for review by the public and/or any public agency that expresses interest in the study. Requests to the Minister of the Environment for a Part II Order (to require an Individual EA) are possible only for specific projects identified in the Master Plan, not in the Plan itself.

1.4.2 Requirement of Individual EA Studies

The EA process addresses projects by classifying them into different "Schedules" according to their environmental significance (Schedule A, A+, B or C). The level of complexity and the potential impacts of a project will determine the Schedule of the project that, in turn, will determine which phases need to be addressed. A detailed description of each Schedule can be found in the EA document.

The Mayfield West Phase 2 Transportation Master Plan addresses Phases 1 and 2 of the Municipal Class EA process, taking a strategic, system-wide approach to planning for new services and infrastructure. For many future infrastructure projects, the requirements of Phases 1 and 2 will have been satisfied through the development of this TMP. Alternatively, Phases 1 and 2 may need to be revisited for more comprehensive projects. For Schedule B projects, it will be necessary to fulfill the consultation and documentation requirements. For Schedule C projects, it is necessary to fulfill the additional requirements of Phases 3 and 4, and consider site-specific issues which are beyond the scope of the Master Planning process.

For all major infrastructure improvements requiring the completion of Phases 3 and 4, the Town of Caledon is required to prepare a detailed inventory of the natural, social and economic environment. This analysis is undertaken in order to identify the potential impacts of alternatives alignments for new or expanded infrastructure while attempting to mitigate any impacts that cannot be avoided. Depending on the complexity or magnitude of the project, the analysis may involve detailed environmental studies to ensure that sufficient and appropriate information is available on which to base ensuing decisions, and allow the public to fully understand the environmental implications of the project.

In addition to describing the potential impacts of a project, appropriate mitigating measures should be identified and evaluated. For example, if a new bridge is being considered to extend an existing road, the Town of Caledon must identify all measures necessary to minimize the negative impacts to residents and the surrounding environment as a result of the undertaking.

1.5 Study Area

Consistent with the previous traffic work completed for Mayfield West Phase 2, the study area references a future expansion of the Mayfield West Rural Service Centre settlement boundary which generally covers the area south of the Etobicoke Creek greenbelt, located west of Highway 10. The study limits are illustrated in **Figure 1.1** and are generally defined as Highway 10 to the east, Mayfield Road and the City of Brampton boundary to the south, Chinguacousy Road to the west and the Etobicoke Creek greenbelt to the north. It is noted that the need for future improvements to Old School Road including the intersection of McLaughlin Road and Old School Road has been recognized within this study.

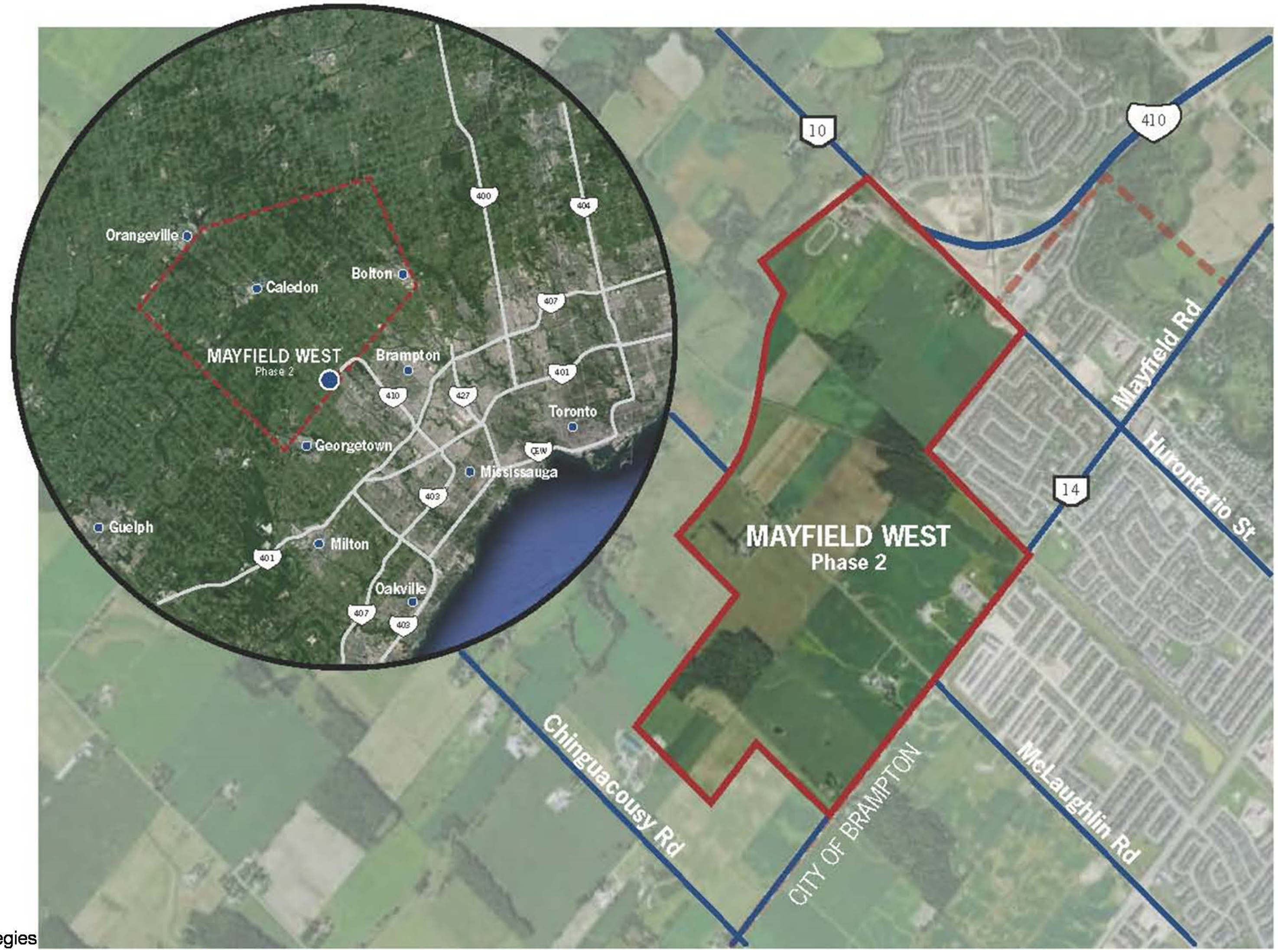


Image Source:
NAK Design Strategies

paradigm TRANSPORTATION SOLUTIONS LIMITED

Study Area

Figure 1.1

2 Development of Land Use Plans

2.1 Transportation Input into Land Use Plans

Previous traffic work included the preparation of an existing conditions report[2] in January, 2009 which evaluated the existing transportation system and identified future transportation improvements, as identified by the hierarchy of government agencies (Ministry of Transportation of Ontario, Regional Municipality of Peel, City of Brampton and the Town of Caledon). Future transportation improvements planned outside the study area are summarized as follows:

2.1.1 Future Transportation Plans

Ministry of Transportation of Ontario (MTO)

- Extension of Highway 410 to provide a continuous controlled access four-lane freeway connection (completed in 2009);
- Report entitled “Highway 410/10 Interchange” prepared by MTO in 1992 outlining possible ultimate conceptual configurations to accommodate future development and increases in traffic related to possible urban development west of Highway 10;
- Installation of traffic control signals at the intersection of Highway 10 and Old School Road (completed in 2010);
- Long-range study of the GTA-West Corridor which has been identified as a new transportation corridor connecting between Highway 400 and Highway 401 east of Milton (study is currently on-going).

Region of Peel

- Improvements to Mayfield Road to widen to an ultimate six-lane cross section by 2031;
- Improvements to Mississauga Road to widen to an ultimate six-lane cross section by 2023.

City of Brampton

- Numerous improvements, as identified in the Transportation and Transit Master Plan, to occur within the 2021 horizon including improvements (widening) of Sandalwood Parkway, Creditview Road and McLaughlin Road;
- Additional future improvements anticipated to occur within the 2031 horizon including widening of Chinguacousy Road;

[2] Mayfield West Phase 2 Secondary Plan, Transportation Impact Study – Part A Existing Conditions; (Paradigm Transportation Solutions Ltd.), January 2009.

- In addition to arterial road improvements, the City of Brampton is planning for future expansion of bus rapid transit service (BRT) along Hurontario Street.

Town of Caledon

- On-going development within Mayfield West Phase 1 (located east of Highway 10).

2.1.2 Identification and Assessment of Alternative Land Use Scenarios

A future conditions report[3] was prepared in May, 2010 which assessed three alternative land use scenarios for the Mayfield West Phase 2 lands and undertook subsequent analyses of traffic impacts associated with each alternative. The purpose of the future conditions report was to provide input into the development of appropriate land use concepts for Mayfield West Phase 2 and to identify the traffic impacts associated with each of the proposed concepts.

Three alternative land use scenarios were developed by the land use planning team and used as the basis of the future conditions analyses. The following summarizes the key components of each land use scenario:

- Scenario A
  - Scenario A consisted of new development located between McLaughlin Road and Hurontario Street, extending north of Mayfield Road. This scenario included a large employment area north of Etobicoke Creek between Highway 10 and McLaughlin Road. Additional development areas were located east of Hurontario Street, adjacent to Mayfield West Phase 1.
- Scenario B
  - Scenario B consisted of new development areas primarily located between Chinguacousy Road and Hurontario Street, extending north of Mayfield Road with a large employment area located north of Etobicoke Creek between Highway 10 and McLaughlin Road.
- Scenario C
  - Scenario C consisted of new residential and commercial development located west of Hurontario Street, extending to Chinguacousy Road. Two employment areas were located adjacent to Mayfield West Phase 1 on either side of Heart Lake Road. No new development was proposed north of Etobicoke Creek.

[3] Mayfield West Phase 2 Secondary Plan, Transportation Impact Study – Part B Future Conditions; (Paradigm Transportation Solutions Ltd.), May 2010.

Traffic impacts associated with each of the three alternative land use scenarios were found to be generally similar in terms of impacts to the broader area roadway network with the majority of traffic increases occurring along Mayfield Road and on the Highway 410 corridor to the south. Through the future conditions report it was identified that in order for the Mayfield West Phase 2 lands to develop to projected density targets, major geometric improvements are required at the Highway 410/Valleywood Boulevard interchange, and a new east-west arterial roadway connection would be required between Highway 410 and Chinguacousy Road. The report also identified that new rail crossings would be required, while identifying opportunities to provide enhanced transit, cycling and pedestrian infrastructure.

In terms of evaluating the transportation impacts associated with each of alternative, **Table 2.1** summarizes the qualitative review which was undertaken as part of the future conditions study which was used in the selection and recommendation of preferred land use concept.

TABLE 2.1: LAND USE SCENARIO COMPARISON – TRANSPORTATION IMPACTS

<table>
<tr><th>Evaluation Criteria</th><th>Land Use Scenario A</th><th>Land Use Scenario B</th><th>Land Use Scenario C</th></tr>
<tr><td rowspan="2">Impact to Broader Transportation Network</td><td>Results in minor impacts to adjacent arterial roadways south of Mayfield Road;

Increased peak hour traffic on Highway 410.</td><td>Results in minor impacts to adjacent arterial roadways south of Mayfield Road;

Increased peak hour traffic on Highway 410.</td><td>Results in minor impacts to adjacent arterial roadways south of Mayfield Road;

Increased peak hour traffic on Highway 410.</td></tr>
<tr><td colspan="3">Negligible difference between the three alternative Land Use Scenarios. All scenarios result in little impact to the broader transportation network and do not result in unacceptable increases in congestion.</td></tr>
<tr><td rowspan="2">Impact to Local Transportation Network</td><td>Results in the need to widen / provide localized improvements along McLaughlin Road, Kennedy Road and Heart Lake Road;

Results in increased traffic demands through Mayfield West Phase 1;

Requires a new road connection with Robert Davies Drive.</td><td>Results in the need to widen and provide localized improvements along Chinguacousy Road and McLaughlin Road;

Requires reconfiguration of the Highway 410 and Valleywood Interchange.</td><td>Results in the need to widen and provide localized improvements along Chinguacousy Road, McLaughlin Road and a widening of Heart Lake Road;

Results in increased traffic demands through Mayfield West Phase 1;

Requires reconfiguration of the Highway 410 and Valleywood Interchange.</td></tr>
<tr><td colspan="3">All three scenarios require widening and localized improvements to the adjacent arterial network. Scenarios B and C result in interchange improvements and are anticipated to have a greater impact to the local transportation network.</td></tr>
<tr><td rowspan="2">Potential Rail Crossing</td><td>Results in two new rails crossings.</td><td>Results in two new rail crossings.</td><td>Results in one new rail crossing.</td></tr>
<tr><td colspan="3">Scenario C has the least impact in terms of requiring additional rail crossings of the Orangeville Rail Line. It is noted that the rail line has a low volume of train traffic and as such, at-grade crossings are anticipated. Should train traffic increase in the future, there may be a need to examine the potential for grade-separated crossings.</td></tr>
</table>

2.1.3 Selection of Preferred Land Use Scenario

In August 2010, Town Council endorsed planning considerations and a preferred scenario for Mayfield West Phase 2 which took into consideration the results and recommendations made as part of the background and future conditions studies (inclusive of the traffic analysis for the three alternate land use scenarios). The resulting 2010 & 2012 planning considerations are summarized in Table 2.2.

TABLE 2.2: 2010 & 2012 PLANNING CONSIDERATIONS

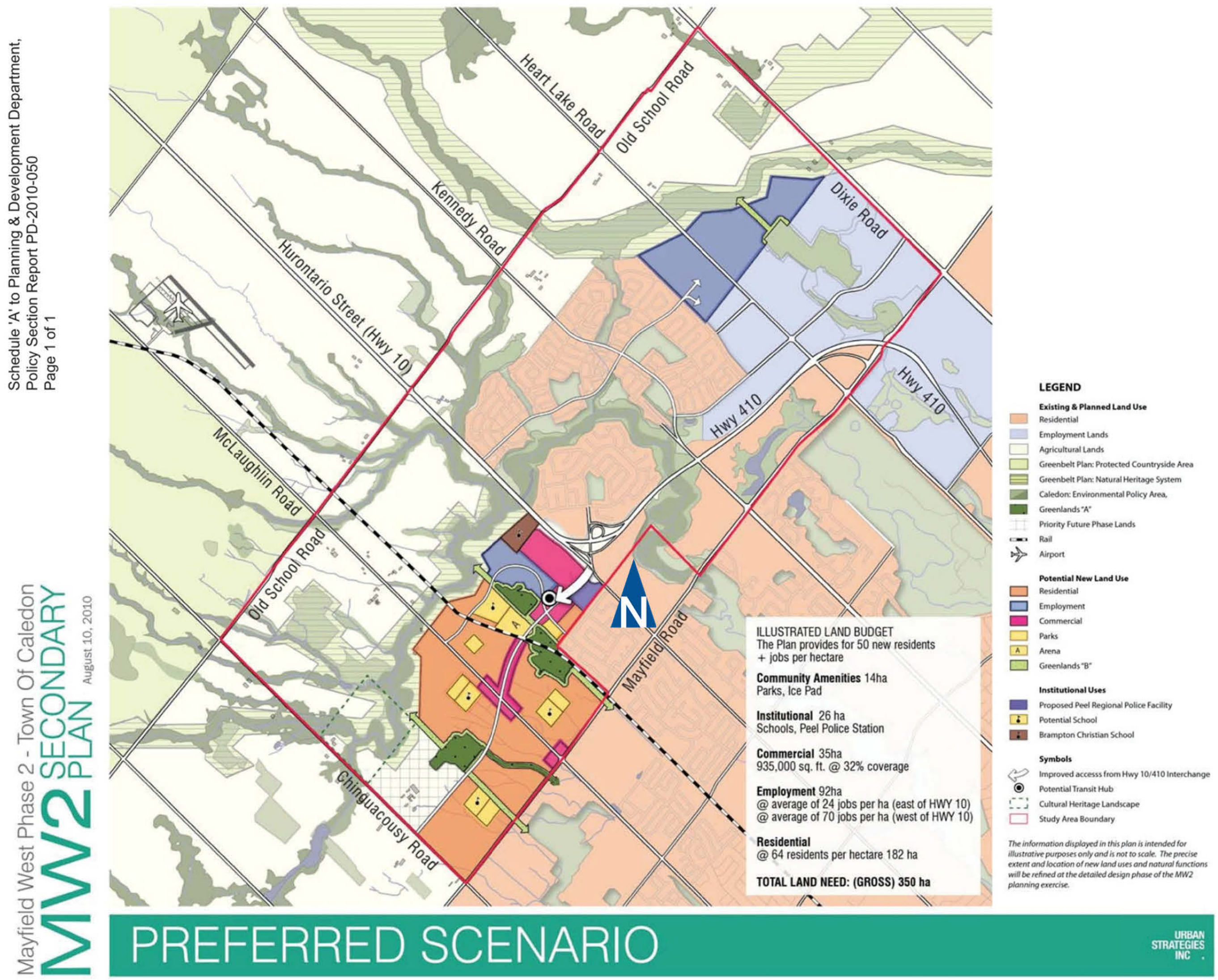
MW2: Planning Considerations (2010 & 2012)	
Population	11,638
Population-Related Jobs	2,907
Employment Area Jobs	2,988
Total:	**17,533**
Land Area (ha)	350
Density	50.1

A preferred scenario was developed which served to identify key locations for future growth within Mayfield West Phase 2, as well as confirming intended land uses within the Study Area. The preferred scenario consisted of approximately 350 hectares of land within an expanded settlement boundary focused on lands located west of Hurontario Street. Highlights of the preferred scenario (2012) are summarized as follows:

- 183 hectares of new residential lands located west of Highway 10 to accommodate 11,638 new residents, achieving and average overall density of 64 residents per hectare;
- 16 hectares of new employment lands located west of Highway 10, to be developed as prestige business / office park uses, comprising of low to mid-rise office and commercial uses, resulting in an average density of approximately 70 jobs per hectare;
- 35 hectares of new commercial lands inclusive of a commercial corridor along the proposed east-west Spine Road. Additional commercial lands consist of a smaller commercial area proposed on the north-east and north-west corners of the intersection of Mayfield Road and McLaughlin Road;
- Development of a transit hub located adjacent to the commercial centre with the purpose of serving high order transit along the Hurontario Street corridor and accommodating future potential local transit service; and
- A minimum of 43 hectares of lands associated with the protection and enhancement of the natural heritage system including existing

woodlots, wetlands, headwater features and associated buffers and green linkages.

At this time it was noted that the location, scale and range of land uses located west of Highway 10 would be significantly constrained without major geometric improvements at the Highway 410 and Valleywood Boulevard interchange. It was determined that major improvements were required in order to provide sufficient access to the lands west of Highway 10 as well as provide for additional roadway capacity adjacent to and within the study area lands. The preferred scenario, as endorsed in 2010, is illustrated in **Figure 2.1**.



NTS

Preferred Land Use Scenario

Figure 2.1

2.2 Framework Plan

Building upon the preferred scenario identified in 2010; two conceptual framework plans were developed in 2012, by the land use planning consultant which focused on refining the type and location of land uses within the Study Area. Through consultation with land owners and special interest groups, the conceptual framework plans were further refined in order to develop a recommended framework plan which was based on revised planning considerations (as summarized in **Table 2.3**).

TABLE 2.3: 2013 PLANNING CONSIDERATIONS

MW2: Planning Considerations (2013)	
Population	10,348
Population-Related Jobs	2,635
Employment Area Jobs	1,164
Land Area (ha)	207.5
Density (pop & jobs/ha)	68.2

The overall planning area was reduced by way of a land budget which resulted in reduced planning considerations and a reduction in overall population by approximately 3,670. The overall land area decreased by approximately 143 hectares while density targets increased by approximately 33%, resulting in a revised density target of 66.9. Although the resulting planning area was reduced and development of such lands has been deferred to a future date, infrastructure considerations are being based on the extent of the entire Mayfield West Phase 2 study area, inclusive of lands east of Chinguacousy Road, in order to identify and recommend infrastructure needs required as part of future development.

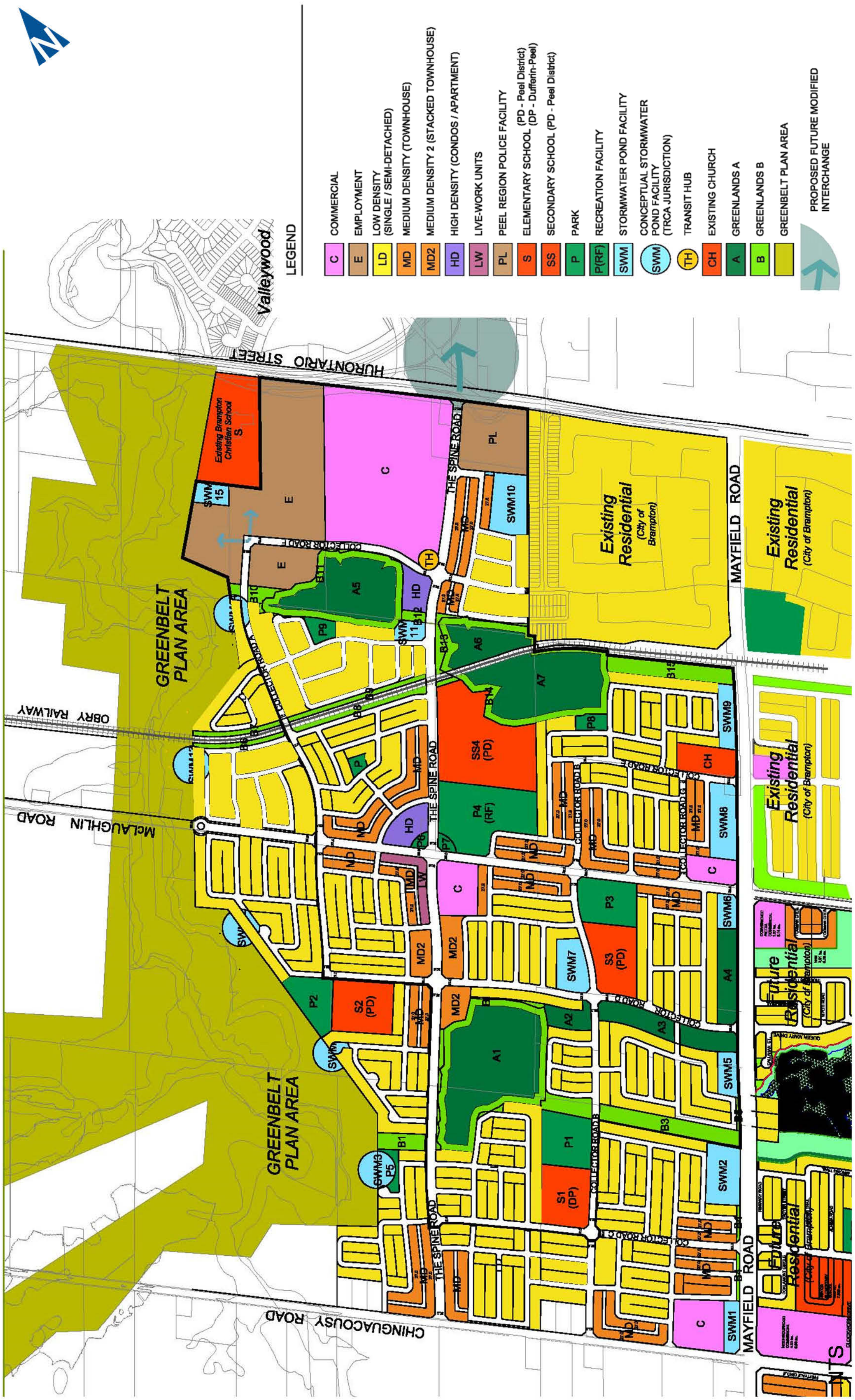
The recommended framework plan (as illustrated in **Figure 2.2**) was endorsed by Council and adopted in 2013. The Council endorsed framework plan provides opportunity to reduce dependency on the private automobile and promote a healthy and active lifestyle through the development of a mixed-use, transit-supportive, cyclist and pedestrian friendly community plan. Key components of the framework plan include:

- Transit-Oriented Development
    - Compact and transit-supportive road and block layouts;
    - Pedestrian-friendly streets with direct, logical and safe connections to local destinations;
    - Provision of a mix of housing types and densities;

- Public open spaces (i.e. "Village Centre") to be the focus of neighbourhood and community activity; and
- Land uses planned in a manner that considers future transit service to ensure transit-supportive development.

- Street Pattern
  - Provision of an east-west Spine Road which is planned as the "central character avenue" for the community which links the commercial mixed-use and employment centres with a higher density, mixed-use node at McLaughlin Road;
  - Provision of a fine grid of neighbourhood collector roadways that provide key access to the primary east-west and north-south arterial roadways, designed in a way that will accommodate future transit service.
- Residential Lands
  - Achieves a range and mix of housing types including detached, semi-detached, street townhomes, mid-rise apartments and live/work units;
  - New schools and community parks are planned to compliment the population growth and support the residential development;
- Commercial Centre
  - Provides for a regional-scale commercial centre adjacent to Highway 10 with opportunity for various formats and size of commercial uses in close proximity to Hurontario Street while integrating the development of a transit hub. Smaller commercial nodes are strategically planned throughout the Study Area.
- Transit Hub
  - A multi-modal transit hub (as defined by Metrolinx) is proposed within the regional-scale commercial centre. The proposed location is endorsed by GO Transit / Metrolinx staff and supports future inter-regional, intra-regional and local transit service to and from Mayfield West. Preliminary discussions have indicated that both GO Bus and BRT service are anticipated to utilize the transit hub.
- Mixed-Use Node ("Village Centre")
  - Identified as a character area which will form the "heart" of the community. The "Village Centre" mixed-use node is envisioned to serve as the primary gathering space within the community with the focus of creating a "main street" character along the Spine Road with reduced building setbacks, provision of strong pedestrian linkages and on-street parking to support the proposed work-live uses.

- Employment Centre
    - Employment lands located adjacent to and west of Highway 410 with provision for prestige-type employment uses located in close proximity to the commercial mixed-use centre and transit hub. Higher-density employment uses such as office/business park are envisioned;
- Natural Heritage System
    - The adopted framework plan presents a hierarchy of active and passive-use park locations. Larger parks will integrate major, multi-neighbourhood recreational functions while smaller parks will serve as neighbourhood centres and provide passive-use opportunities with minor active facilities (i.e. playgrounds). Multi-functional park facilities are located within close proximity of schools to allow for shared-use; and
    - Collectively, the elements of the natural heritage system will provide for interconnected greenlands and open space system while providing enhanced opportunities for passive recreation activity and encouraging active transportation throughout Mayfield West Phase 2.



Endorsed Framework Plan

Figure 2.2

Mayfield West Phase 2 Secondary Plan Transportation Master Plan
101380P

3 Public Consultation

3.1 Importance to the Planning Process

Meaningful and effective consultation with agencies, stakeholders and the public is a critical component of the environmental assessment planning process and development of a successful Transportation Master Plan Study. The Town's public consultation strategy actively involved key agencies, local municipalities, stakeholders and local residents early, and often, throughout the study process.

Recognizing that public and agency consultation is a key requirement of the Municipal Class EA, the TMP consultation program included the following:

- Focus Group meetings with key Stakeholders;
- Technical Advisory Committee meetings with key agencies and Member Municipalities;
- Council and Community Workshops; as well as
- Public Information Centres which were held at critical points in the study process in order to provide local residents an opportunity to engage in the planning process and provide valuable input to the project team.

The following provides a summary of public and agency involvement for the TMP. More detailed documentation of the full public and agency involvement process leading to the completion of a draft Transportation Master Plan report in August 2014 is contained in **Appendix A1**. Following the circulation of the draft report in August 2014 for comments by interested stakeholders, further investigation and consultation activities were undertaken as documented further in this report.

3.2 Elements of Consultation

3.2.1 Notice of Study Commencement

The Town of Caledon issued a Notice of Study Commencement and Public Information Centre for the Mayfield West Phase 2 Secondary Plan on October 11, 2008. The notice was placed in the Caledon Enterprise and indicated that the Rural Service Centre of Mayfield West was being planned as a compact, well integrated community through a series of phased expansions. The advertisement noted that the Transportation Study would fulfill the requirements for Phases 1 and 2 of the Municipal Class EA.

3.2.2 Stakeholder Advisory Group

A stakeholder advisory group (SAG) was formed which included representation from interested agencies and identified groups, local land owners, Town of Caledon staff and members of the Project Team. Specific responsibilities of the SAG included:

- Providing input and advice to the Project Team in their respective areas of expertise and/or interest;
- Consulting with other members of Town staff to obtain consolidated comments and input; and
- Keeping landowners and Town staff informed of study progress.

A summary of SAG meetings is provided in **Table 3.1**.

TABLE 3.1: STAKEHOLDER ADVISORY GROUP MEETING

Meeting	Date	Location	Purpose
1	17 April 2008	Caledon	Study Introduction
2	4 December 2008	Margaret Dunn Valleywood Library	Review of Technical Studies
3	18 June 2008	Margaret Dunn Valleywood Library	Presentation of Land Use Scenarios
4	3 December 2013	Town Hall, Caledon East	Review of Endorsed Framework Plan
5	27 February 2014	Town Hall, Caledon East	Review Traffic Work and proposed Cross Sections
6	17 March 2014	Town Hall, Caledon East	Review design of the Spine Road through the Village Centre
7	10 July 2014	Brampton Fairgrounds	Presentation of TMP and Community Design Plan progress

3.2.3 Technical Advisory Committee

A technical advisory committee (TAC) was formed which included representation from the Ministry of Transportation of Ontario (MTO), GO Transit / Metrolinx, Peel Region, the City of Brampton, Brampton Transit, Town of Caledon staff and members of the Project Team. The purpose of the TAC was to review study materials, technical analyses, study findings and resulting recommendations as well as to provide input and feedback regarding key elements of the study. Specific responsibilities of the TAC included:

- Providing input and technical expertise to the Project Team in their respective areas of interest;
- Consulting with other members of their agency in order to obtain and submit consolidated comments and input; and
- Keeping their respective agency informed of the study progress, conclusions, decisions made throughout the process as well as key study recommendations / commitments.

A summary of TAC meetings is provided **Table 3.2**:

TABLE 3.2: TECHNICAL ADVISORY COMMITTEE MEETING

Meeting	Date	Location	Purpose
1	25 September 2008	Town Hall, Caledon East	Introduce study, review transportation work plan, discussion with agencies to identify preliminary issues and request data / information.
2	18 November 2008	Caledon Community Complex	Review study progress, review findings of the Traffic Analyses (Part A Report – Existing Conditions Report), review guidelines for land use concepts and request additional data / information.
3	19 December 2009	Town Hall, Caledon East	Review study progress and results of background technical studies and resulting land use options. Presentation of the traffic assessment results (Part B – Future Conditions Report) and discussion of identified & anticipated transportation issues. Identification of need for significant geometric improvements to Highway 410 / Valleywood interchange in order to support development of MW2.
4	26 May 2014	Town Hall, Caledon East	Review study progress and presentation of Council endorsed Framework Plan. Review of traffic forecasts, transit service concept and trails / bikeways network. Identification and discussion of key issues including status of GTA-West Corridor EA Study, Highway 410 / Valleywood interchange improvements, high-order transit service provision within study area as well as discussion around character and function of the Spine Road.

3.2.4 Public Information Centres

Four public information centres (PIC's) were held at key points throughout the course of the study:

PIC #1 – December 11, 2008

The first Public Information Centre (PIC) was held on Thursday December 11th, 2008 from 6:00 PM to 9:00 PM at the Margaret Dunn Valleywood Library, Caledon. Advertisements of Study Commencement and the upcoming PIC were published in both the Caledon Enterprise and Brampton Guardian on the following dates:

- Caledon Enterprise – October 11th & 18th, 2008;
- Brampton Guardian – October 10th & 17th, 2008.

Letters of invitation were mailed directly to property owners and stakeholders.

The purpose of the first PIC was to introduce the Mayfield West Phase 2 Secondary Plan Study including the Transportation Impact Study (TIS), overall study objectives and project background. The PIC also detailed the steps to be undertaken as part of the planning process and requested public input. A total of 28 individuals attended the meeting, each of which were provided with handout materials which included a copy of the PIC presentation and a questionnaire to be completed after the meeting.

Questions and comments were discussed with attendees.

PIC #2 – June 25, 2009

The second PIC was held on Thursday 25 June 2009 from 7:00 PM to 9:00 PM. Advertisements were published as follows:

- Caledon Enterprise
- Brampton Guardian

Letters of invitation were mailed directly to property owners and stakeholders.

The purpose of PIC #2 was to review the Council endorsed guiding principles which formed the framework for the Mayfield West Phase 2 Secondary Plan, review the design and planning objectives that guided the creation of Development Scenarios based on the wide range of recommendations that emerged from the numerous technical background studies which were undertaken as part of the Secondary Plan process, and to present the resulting development scenarios (3) and obtain public input. A number of members of the public attended the meeting, each of which were provided with handout materials which included a copy of the PIC presentation and a questionnaire to be completed after the meeting.

Questions and comments were discussed with attendees.

PIC #3 – 25 February 2010

The third PIC was held on Thursday 25 February 2010 from 7:00 PM to 9:00 PM. Advertisements were published as follows:

- Caledon Enterprise
- Brampton Guardian

PIC #4 – 4 September 2014

The fourth PIC was held on Thursday 4 September 2014 from 7:00 PM to 9:00 PM at the Brampton Fairgrounds. Advertisements were published as follows:

- Caledon Enterprise
- Brampton Guardian

3.2.5 Project Team Workshops and Meetings

Several project team workshops and topic-specific meetings were held in order to help advance the study and deal in-depth with specific issues. Depending upon the topic to be discussed, these workshops and meetings were generally attended by members of the consulting team and staff from the Town of Caledon.

A number of transportation-related meetings were held to discuss the travel demand modeling process, function and design of the proposed roadway network, vision of the Village Centre, pedestrian and cycling components of the plan as well as rail operations and requirements for rail crossing warning systems. The outcomes of these workshops and meetings contributed to the overall development of the roadway, transit, pedestrian and cycling plans as well as development of supporting policies. A special meeting was held with representatives of the Town of Orangeville and the Orangeville Brampton Railway in August 2014 to discuss the plans for integrating the railway line passing through the Mayfield West Phase 2 Secondary Plan area with the proposed transportation plan.

3.3 Follow-up Consultation of Draft Transportation Master Plan

The draft Transportation Master Plan report was completed by August 2014 and was circulated to interested parties for review and comment. Numerous comments were received and are provided in **Appendix A2** of this report. Based on the comments provided, the draft plan was reviewed and refined to better reflect the input from the various stakeholders.

Some of the comments from the Ministry of Transportation of Ontario (MTO) suggested further traffic investigations should be undertaken, based on more recent traffic counts data and considering a broader study area. Recognizing this input, a further comprehensive Transportation Assessment Study (TAS) was undertaken by LEA Consulting Ltd, in cooperation with the study team. The final report of the TAS is discussed further in this report and a copy of the TAS report is included as an appendix to this report. A number of meetings and discussions were held during these follow-up activities and are documented in **Appendix A2** of this report.

4 Identification of Problems/Opportunities

4.1 Problem Identification

The new Mayfield West Phase 2 development will require a supporting transportation system to provide reasonable accessibility and mobility for residents and future employment uses. The Council endorsed Framework Plan (2013) has been designed to accommodate approximately 10,000 residents and 3,700 jobs in the area located west of Hurontario Street and Highway 10 and north of Mayfield Road. The larger Mayfield West Phase 2 planning area extends westerly to Chinguacousy Road and northerly to the Etobicoke Creek Greenbelt and is anticipated to accommodate over 15,000 residents and about 6,000 jobs.

The Mayfield West Phase 2 planning area currently has very limited roadway infrastructure, consisting primarily of a two-lane frontage road located along the west side of Hurontario Street / Highway 10 and McLaughlin Road. Chinguacousy Road will also provide access to the development as will Mayfield Road as it bounds the south side of the planning area. However, these existing roads have significant limitations in terms of capacity constraints and ability to service the proposed urban boundary expansion:

- The existing frontage road located along the west side of Hurontario Street / Highway 10 is a two-lane rural roadway which is controlled by stop sign control at its intersection with Hurontario Street. In its current configuration, the roadway has very limited traffic capacity and due to its close proximity to the Highway 410/Valleywood interchange as well as an existing signalized intersection at Hurontario Street and Collingwood Avenue, the geometric improvements required in order to achieve significant capacity gains are not feasible without significant changes to the existing roadways;
- Preliminary traffic analyses conducted as part of the background studies concluded that the Highway 410/Valleywood Boulevard interchange will require major geometric improvements in order to accommodate significant levels of traffic connecting to and from the area west of Hurontario Street / Highway 10;
- Both McLaughlin Road and Chinguacousy Road are two-lane roads with rural cross-section and are currently designated as collector roads in the Caledon Official Plan. In their current configuration, these roadways provide limited capacity to accommodate future traffic volumes and the existing rural cross-section is not considered appropriate for an urbanized environment;
- Peel Region is planning to improve and widen Mayfield Road adjacent to the Mayfield West Phase 2 development. However, Mayfield Road is a major Regional road and access to and from this road would only be feasible at specific, well-spaced locations,

typically in the form of a street intersection. As a result, Mayfield Road is expected to have available capacity in order to accommodate future travel demands generated by new development, but direct access to and from Mayfield Road will be restricted and will require a supporting street network within the new development.

A number of guiding principles for the future development of Mayfield West Phase 2 were endorsed by Town Council in 2009 and clearly identify a desire to support a sustainable form of development. As a result, these transportation-related principles infer an increased reliance on mass transportation (i.e., public transit) and active forms of transportation (walking and cycling) in order to meet the mobility needs of future residents.

4.2 Problem Statement

The following problem statement has been developed to guide the Mayfield West Phase 2 Transportation Master Plan; "The Mayfield West Phase 2 planning area currently lacks a transportation system that will be capable of accommodating anticipated future travel needs generated by the planned new community in an efficient, effective and sustainable manner."

4.3 Opportunities

Notwithstanding the limitations of the existing infrastructure in relation to supporting the planned Mayfield West Phase 2 development, a number of opportunities have been identified that will help support the development of a sustainable transportation system. Opportunities have been identified as follows:

- The Highway 410 corridor has spare capacity which is anticipated to satisfactorily accommodate external travel needs related to the planned development of Mayfield West Phase 2. The pre-design study[4] for the Highway 410 extension shows an ultimate vision for the Valleywood Boulevard/Highway 10/Highway 410 interchange that would enable the provision of an arterial road connection to the lands west of Highway 10. In the planning of the Highway 410 extension north to connect to Highway 10, the Ministry of Transportation of Ontario (MTO) prepared conceptual plans of possible modifications to the Highway 410/10 interchange at Valleywood Boulevard to accommodate urban development on the west side of Highway 10 and these plans were agreed upon by the Ministry and the City of Brampton, Town of Caledon and Regional Municipality of Peel[5]. This

[4] Highway 410 Extension Pre-Design Study (Bovaird Drive to Highway 10, W.P. 22-79-00); (prepared for the Ontario Ministry of Transportation by Cole, Sherman and Associates), May 2000.
[5] Highway 410/10 Interchange: Possible Ultimate Conceptual Configurations to Accommodate Future Development and Increases in Traffic, MTO Central Region Planning & Design Section, June 23, 1992.

work established the basis for the existing interchange to provide a higher capacity road connection between Highway 410/Highway 10 and the Mayfield West Phase 2 development lands;

- While the existing McLaughlin Road and Chinguacousy Road configuration are not adequate to support the planned new development, these two roadways currently intersect with Mayfield Road and extend northerly into the rural areas of Caledon and southerly into the City of Brampton. In effect, these two roads form part of an existing established larger area grid pattern road network. As the adjacent land use currently consists of rural farmland, potential for widening and localized improvements required to accommodate the planned urban development are not anticipated to result in significant impact to the adjacent environment;
- Peel Region has plans to widen Mayfield Road which will provide substantial additional capacity to accommodate future east–west travel needs that will result from the development of Mayfield West Phase 2. Furthermore, the planned improvements to Mayfield Road will result in the opportunity to provide new collector road connections at planned intersections where collector roads in the City of Brampton are planned to connect to Mayfield Road;
- The City of Brampton currently provides local bus services to the areas south of Mayfield Road. The existing transit routes could potentially be extended into the Mayfield West Phase 2 development area providing the new development with direct access to public transit services that would provide key connections with the Mount Pleasant GO Station and Downtown Brampton. An operating agreement between the Town of Caledon and Brampton Transit would be necessary, but this shared service agreement would be an efficient and effective approach to providing the development with public transit service, thereby reducing dependence on private automobile travel;
- The Metrolinx plans for bus rapid transit (BRT) service indicates a future rapid transit line along the Hurontario corridor to the north limit of the City of Brampton. This service currently operates further south within Brampton as an express bus service. As development within the City of Brampton continues and future development occurs within Mayfield West, opportunity exists in which to extend the existing express bus service further north. The northerly extension would require a terminus which would typically be located at or near a major activity centre. The commercial node proposed as part of Mayfield West Phase 2 could serve as a key terminus and be designed in a manner which would be consistent with the requirements of a transit hub. The opportunity to incorporate a transit hub within Mayfield West Phase 2 would provide future residents, employers and employees with the opportunity to access higher order public transit service which would provide key connections to other areas of Peel Region as well as GO Transit inter-regional services;

- Currently, there are a number of well developed trail systems located within both the Town of Caledon and City of Brampton. Within the City of Brampton, there are north-south trails existing in the Etobicoke Creek valley as well as planned trails for the Fletcher Creek valley. Within the Town of Caledon there is a major east–west trail system (Trans-Canada Trail) located north of the Mayfield West Phase 2 planning area. Existing City of Brampton infrastructure includes provision for multi-use trails and bike lanes near the Mayfield West Phase 2 planning area, while Peel Region has plans to provide future east–west multi-use trails along the north and south sides of Mayfield Road. In addition, Peel Region has developed, and is moving forward with the implementation of a Region-wide active transportation plan. The presence of the existing trail system provides opportunity to interconnect with a larger area trails system which supports the development of an internal trail system within Mayfield West Phase 2;
- The City of Brampton has cycling facilities and a network of urban streets that can readily accommodate cyclists travelling to and from Mayfield West Phase 2. This creates the opportunity to provide a local internal network of cycling facilities that will accommodate both commuter and casual cyclists travelling to destinations within the City of Brampton; and
- The endorsed Framework Plan achieves a well-balanced development with both residential and employment opportunities located within Mayfield West Phase 2 which will enable some residents to both work and live within the community, rather than commuting long distances to employment in other municipalities. The potential to accommodate both residential and employment activity within relatively short distances provides increased opportunity for local residents to travel by alternate modes of travel, thereby reducing the dependency on the private automobile.

5 Assessment of Alternative Strategies

5.1 Alternative Transportation Strategies

At a strategic level, three alternative approaches have been considered in determining how to meet the accessibility and mobility needs of the Mayfield West Phase 2 community. These alternatives are described as follows:

5.1.1 Auto-Oriented Strategy

Under this strategy, the accessibility and mobility needs of the community would be accommodated by emphasizing and accommodating automobile travel needs. Mayfield West Phase 2 is an outlying suburb of the Greater Toronto Area (GTA) and typically, these communities are automobile oriented and depend heavily upon a high level of service on the adjacent roadway system. Following this strategy, the community would be provided with a full network of arterial, collector and local roadways which would be designed to operate with high levels of service and minimal congestion during peak periods. This strategy would result in the creation of a major east-west arterial roadway (i.e., the Spine Road) connecting to a new Highway 410 interchange. The major east-west arterial roadway would require a minimum of four travel lanes throughout the study area, with provision for additional turning lanes (i.e. exclusive left and right-turn lanes) where required.

This strategy would also require the provision of major north–south arterial roadways (i.e., McLaughlin Road and Chinguacousy Road) to connect with upgraded arterial roads at Mayfield Road and Old School Road. These north-south arterial roads would require four travel lanes with provision for additional turning lanes where required. A full network of continuous collector roads would be required within the development area, connecting to the network of arterial roads and providing connections to local streets.

As described, this alternative would not likely accommodate transit service other than the existing services located south of Mayfield Road within the City of Brampton. Little emphasis would be placed on diverting travel needs from use of the private automobile to public transit. Provision for pedestrians and cyclists would be limited largely to sidewalks on the new roads.

5.1.2 Transit-Oriented Strategy

Under this alternative, emphasis would be given to accommodating a substantial share of travel demand by public transit services. This alternative would likely consist of a major transit station which would serve as the northerly terminus of the Hurontario bus rapid transit (BRT) line, providing north–south high capacity express bus service along Hurontario Street with connections to the Brampton City Centre, Mississauga City Centre and Port Credit. Potentially, this BRT line would be upgraded to a light rail transit line in the longer term. The rapid transit line would likely provide connection to three GO Rail lines (Lakeshore West, Milton and Kitchener) which provide service to downtown Toronto and other parts of the GTA.

Under this strategy, the Mayfield West Phase 2 development would be extensively serviced by local transit and all areas would be within a 400 metre walking distance to a bus stop. This alternative would likely require at least three or four local bus routes. Future bus routes could be provided through an agreement with Brampton Transit, although it is not certain that there are three or four bus routes readily available that could be extended into the Mayfield West Phase 2 planning area.

With a greater emphasis being placed on public transit, the network of arterial and collector roadways within the development would likely be downsized, typically consisting of one through lane in each direction with auxiliary turn lanes at key intersections. The required geometric modifications to the Highway 410 / Valleywood interchange would be reduced in scale considerably from the modifications envisaged under the auto-oriented strategy.

5.1.3 Balanced Transportation Strategy

The emphasis of a balanced transportation strategy is to provide a reasonable range of alternative transportation modes to ensure that travelers have choices available to them, with supporting policy in place to encourage reduced usage of the private automobile. The balanced transportation strategy is intended to provide well developed walking and cycling infrastructure, as well as a reasonable level of public transit service in order to encourage healthier lifestyles.

As described, the balanced strategy would consist of a reduced scale east–west arterial roadway (i.e., the Spine Road) which would be downsized through the Village Centre and the lower density residential areas to make it more conducive to pedestrian and cycling activities, as well as to compliment adjacent pedestrian-scale development. McLaughlin Road and Chinguacousy Road would be continue to be developed as north-south urban arterial roadways, but would include on-street bike lanes and would have reduced number of lanes as compared to the auto-oriented strategy.

A balanced transportation strategy would include a complete network of bicycle lanes for both commuter and recreational cyclists as well as a continuous, integrated multi-use trail system which would provide east-west and north-south connections throughout the community. Public transit service would consist of local transit routes connecting to key destinations, as well as provision for a transit hub located near the higher activity commercial node and employment areas located west of Highway 10 which would serve as a terminus for the future extension of Brampton Transit express bus service.

5.2 Evaluation of Alternative Transportation Strategies

5.2.1 Overview of the Evaluation Process

Three alternative transportation strategies were developed for Mayfield West Phase 2 and subsequently evaluation. The evaluation of alternatives has been undertaken in accordance with the requirements of the Municipal Class EA process and was guided by the overarching goals and objectives of the Transportation Master Plan Study as discussed in **Section 1.3**.

The alternative transportation strategies proposed as part of the Master Planning exercise were evaluated against each other using indicators within each criteria group, resulting in the recommendation of a preferred alternative.

5.2.2 Evaluation Criteria

In order to evaluate and assess the three alternative transportation strategies developed for Mayfield West Phase 2, four key areas for evaluation were identified and further divided into relevant screening criteria, as summarized in **Table 5.1**.

TABLE 5.1: SCREENING CRITERIA

Evaluation Criteria	Objective	Indicator
Transportation	To provide for a transportation environment where residents, employees and other persons can travel within and to/from the community safely, with ease and efficiency; while accommodating all modes of travel, specifically encourage active modes of transportation.	• Mobility • Accessibility • Alternate Modes • Compatibility
Natural Environment	To minimize impact to the natural and man-made environment. This includes curtailing the carbon footprint as well as mitigating impact to vegetation and wildlife habitat.	• Air Quality • Noise Impacts
Social Environment	To ensure that the preferred alternative has a positive impact, supports the development of a vibrant and sustainable Village Centre, provides connectivity between the uses and activities within the neighbourhood and emphasizes a healthy lifestyle.	• Supports the Village Centre • Connectivity • Support for walking and cycling
Economic Environment	To ensure that the preferred alternative results in affordable transportation infrastructure while avoiding the need for extensive rights of way. Aims to provide a comprehensive transportation system that supports vibrant, sustainable and economically healthy businesses within the community.	• Support for planned residential and employment growth areas • Capital Cost • Operating Cost

5.2.3 Evaluation of Alternatives

Each of the three proposed alternative transportation strategies were assessed using the evaluation criteria summarized in **Table 5.1**. The recommended alternative under each evaluation area is highlighted and has been based on qualitative measures which were used to compare the relative advantages and disadvantage of each alternative (reasoned argument assessment). The resultant evaluation is summarized in **Table 5.2**.

TABLE 5.2: EVALUATION SUMMARY

Evaluation Criteria	Alternative 1 Auto-Oriented Strategy	Alternative 2 Transit-Oriented Strategy	Alternative 3 Balanced Transportation Strategy
Transportation			
Mobility	High level of mobility for auto users	High dependency on public transit results in reduce travel mobility for users	Availability of a range of travel modes provides a high level of mobility for all users
Accessibility	High level of accessibility for auto users	Reduced level of accessibility when compared to the auto-oriented strategy	Balanced approach achieves a high level of accessibility within the community for both commuter and local traffic
Support for Alternative Modes	Little consideration for alternate modes of travel	Supports public transit but has little consideration for other modes of travel, specifically cycling	Balanced approach strongly supports all modes of transportation including public transit, cycling and walking
Compatibility with Existing and Planned Infrastructure	Requires new interchange at Highway 410 in order to accommodate auto demands	Higher reliance on public transit results in reduced road infrastructure requirements	Requires improvements to the Highway 410 interchange as well as a pedestrian / cyclist connection into the Valleywood Subdivision
Summary	Overall, the Balanced Transportation Strategy is preferred as it achieves high levels of mobility and accessibility for all users, supports the use of alternate modes and results in moderate infrastructure requirements.		
Natural Environment			
Air Quality	Higher levels of auto use will generate higher levels of emissions, resulting in more impact to the natural environment	A reduced reliance on the private automobile will result in lower levels of emissions and less impact to the natural environment	Although auto usage will continue to generate moderate levels of emissions, increased transit usage combined with walking and cycling are expected to result in reduced levels of emissions and less overall impact to the natural environment
Noise Impacts	Highest level of noise impact	Moderate level of noise impact	Moderate level of noise impact
Summary	In terms of transportation impacts to the natural environment, both the Transit-Oriented and Balanced Transportation Strategies are anticipated to result in less impact given a lower reliance on automobiles. However, the Balanced Transportation Strategy has potential to further reduce the carbon footprint, therefore resulting in the least impact when compared to the other alternatives. As such, the Balanced Transportation Strategy is preferred from a Natural Environment perspective.		

TABLE 5.2 (CONTINUED): EVALUATION SUMMARY

Evaluation Criteria	Alternative 1 Auto-Oriented Strategy	Alternative 2 Transit-Oriented Strategy	Alternative 3 Balanced Transportation Strategy
Social Environment			
Supports establishment of a vibrant Village Centre	High levels of auto traffic may conflict with desired Village Centre activities	Transit-Oriented strategy is considered supportive of desired Village Centre activities and community identity	Balanced strategy is considered most supportive of desired Village Centre activities and serves to achieve the desired community identity as a vibrant meeting place
Connectivity	Provides for good internal connectivity for motorists, but results in poor connectivity for other users, particularly children and other vulnerable road users	Moderate level of connectivity assuming that all residents will be located within a 400 metre walking distance to a transit stop but may not provide adequate connectivity for other users such as children	Wide range of travel choices meets the connectivity needs of all users including vulnerable road users
Support for walking and cycling	Little to no emphasis on maintaining a healthy lifestyle as cycling and walking are not promoted or accommodated	Higher reliance on public transit requires patrons to walk to nearby transit stops, thereby supporting walking and contributing to a healthier lifestyle	High reliance on alternative modes of travel including active transportation, providing an emphasis on achieving a healthier lifestyle
Summary	Overall, the Balanced Transportation Strategy is preferred as an emphasis on alternate modes of travel, particularly walking and cycling, support the development of a vibrant and sustainable Village Centre as well as provide for the highest level of connectivity and results in a strategy that not only encourages, but emphasizes the importance of a healthy lifestyle.		
Economic Environment			
Support for Planned Growth	Supports planned residential and employment growth through a primary reliance on the private automobile	Supports planned residential and employment growth and encourages a higher reliance on public transit through provision of connections to higher order transit services (i.e. Brampton BRT and GO Bus service)	Supports planned residential and employment growth through a balanced approach that recognizes the role auto, transit and active modes of travel play
Capital Cost	Highest capital cost associated with new road construction and greatest right-of-way requirements	Lower capital costs associated with new road construction (as per the reduced right-of-way requirements) but results in increased capital costs associated with transit services	Realizes some reduced capital cost associated with new road construction but requires expenditures for pedestrian, cycling and transit infrastructure
Operating / Maintenance Cost	Moderate operating / maintenance costs	Moderate operating / maintenance costs	Moderate operating / maintenance costs
Summary	Overall, the Balanced Transportation Strategy is preferred as it strikes a balance between capital costs and long-term maintenance costs.		

5.3 Selection of Preferred Transportation Strategy

In considering the evaluation of the alternative transportation strategies, it is apparent that the transit-oriented and balanced transportation options are most compatible with the guiding principles that have been established as part of the Mayfield West Phase 2 Transportation Master Plan. However, a number of limitations were identified as pertaining to the transit-oriented strategy:

- Considering that the Mayfield West Phase 2 community is an outer suburb of the GTA, it is unlikely that a heavily transit-oriented strategy can provide the level of overall commuter mobility required to accommodate those residents who have jobs in various other municipalities across the GTA;
- The Town of Caledon currently does not have its own public transit service and as such, would depending on contracting services from another municipality, such as the City of Brampton, or a private transit operating company in order to deliver the services needed to support an efficient transit-oriented transportation system; and
- An efficient and viable transit-oriented strategy will require significant capital investments in order to provide for transit infrastructure, as well as on-going maintenance and operating costs. The magnitude of these capital and operating costs is unknown, but experience in other communities demonstrates that it may be substantial and/or cost prohibitive.

Based on the evaluation summarized in Table 5.2 and considering the limitations noted above, the Balanced Transportation Strategy has been identified as the preferred transportation alternative for the Mayfield West Phase 2 community. The recommended Balanced Transportation Strategy has been developed in order to support the identified levels of development and has kept with the broad transportation system principles set out in the Official Plan[6]:

- Adopt a multi-modal transportation system approach that offers safe, convenient and efficient movement of goods, services and people, including persons with disabilities;
- Provide for an adequate network of roads, highways, transit, pedestrian, bicycle and rail links between the Town and adjacent municipalities;
- Promote the development of an efficient and cost effective transportation system which is well-integrated with the Town's land use planning goals, objectives and policies;

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[6] Town of Caledon Official Plan – Town Structure and Land Use Policies (Section 5.9.2); Office Consolidation, June 2014.

- Promote a collaborative and coordinated approach with the Province, Metrolinx, the Region of Peel and City of Brampton to pursue integrated transportation planning; and
- Support the sustainability objectives and policies of the Official Plan in the development of a transportation system that is responsive to the three pillars of sustainability (economic, environmental and social/cultural).

This strategy has formed the basis in which the roadway, transit, walking and cycling components of the Transportation Master Plan were developed.

6 Future Travel Demand

The primary objective of travel demand forecasting is to determine the expected travel demands associated with the planned land uses (as per the endorsed Framework Plan) and to identify infrastructure requirements and policy initiatives required in order to satisfy anticipated traffic demands.

The forecasting approach used throughout the Transportation Master Plan study recognizes the importance of the role that all modes of travel play in accommodating future residential and employment growth. In order to assess the adequacy of existing and planned infrastructure adjacent to the Mayfield West Phase 2 Study Area, forecasts of future travel demands have been developed which represent full build-out of the Mayfield West Phase 2 lands including future development areas east of Chinguacousy Road and north to the Greenbelt Plan Area. A nominal horizon year of 2031 has been used for the analysis of the future travel demands as the full build-out of Study Area lanes is anticipated to occur by this horizon, as well as the fact that the 2031 horizon year is consistent with modeling and transportation planning activities undertaken by both Peel Region and the City of Brampton.

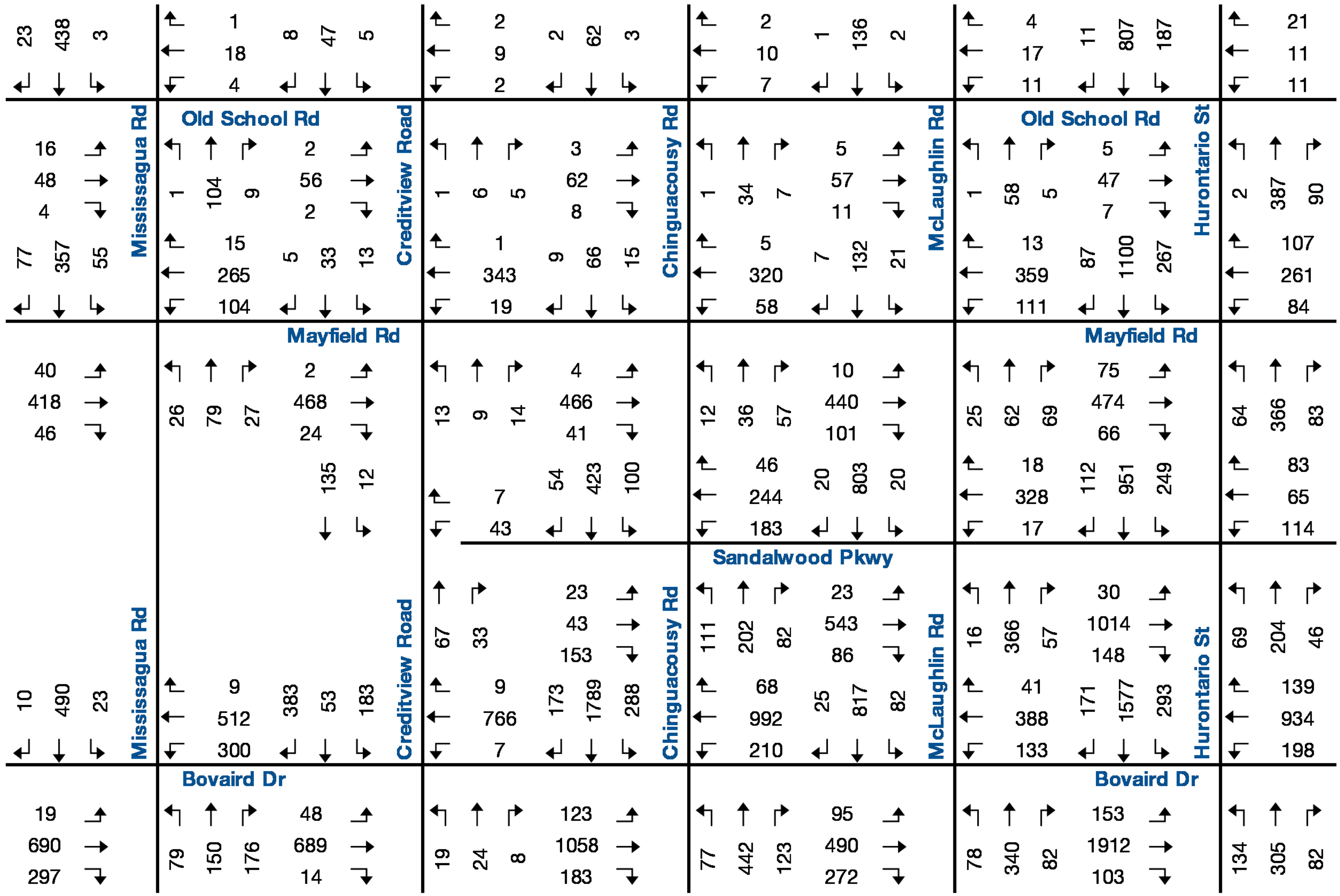
6.1 Existing and Future Background Traffic Estimates

6.1.1 Existing Traffic Estimates

An estimation of existing traffic conditions throughout the Study Area was established as part of the Mayfield West Phase 2 Transportation Impact Study – Part A Report and were based on a review of intersection turning movement count data provided by the Ministry of Transportation of Ontario (MTO), Peel Region and the City of Brampton and reflected 2008 peak hour traffic volumes (as illustrated in **Figure 6.1** and **Figure 6**.2). Analysis of existing traffic conditions was conducted as part of the TIS and concluded that the key areas of congestion were generally found to occur south of the Study Area, within the City of Brampton, with a number of intersections along the Bovaird Drive corridor operating near or at capacity.

6.1.2 Future Background Traffic Estimates

Estimates of future background traffic were established as part of the Mayfield West Phase 2 Transportation Impact Study – Part B Report and were developed utilizing growth factors and planned land use development and roadway improvements inclusive of the 2031 horizon. The estimated 2031 future background peak hour traffic volumes are illustrated in **Figure 6.3** and **Figure 6.4**. Analysis of future background traffic conditions was undertaken as part of the analyses and concluded that the Highway 410 / Valleywood interchange would not be able to support traffic increases associated with the development of the lands located west of Highway 10 without requiring significant geometric improvements and/or reconstruction of the interchange which would be subject to a future EA Study.

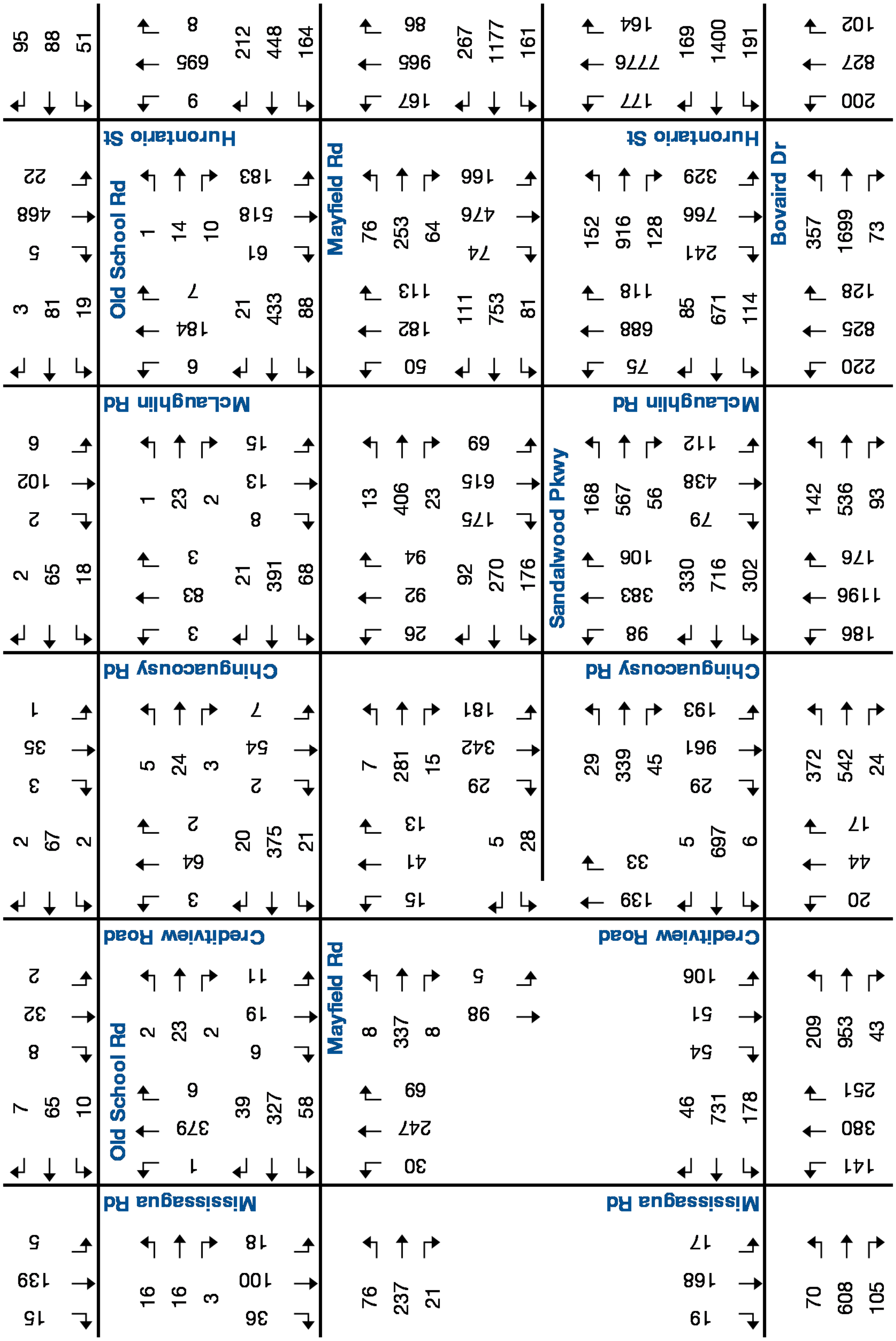


Source: MW2 Transportation Impact Study – Part A Existing Conditions (AM Peak Hour - 2008)

paradigm TRANSPORTATION SOLUTIONS LIMITED

Existing Traffic – AM Peak Hour

Figure 6.1



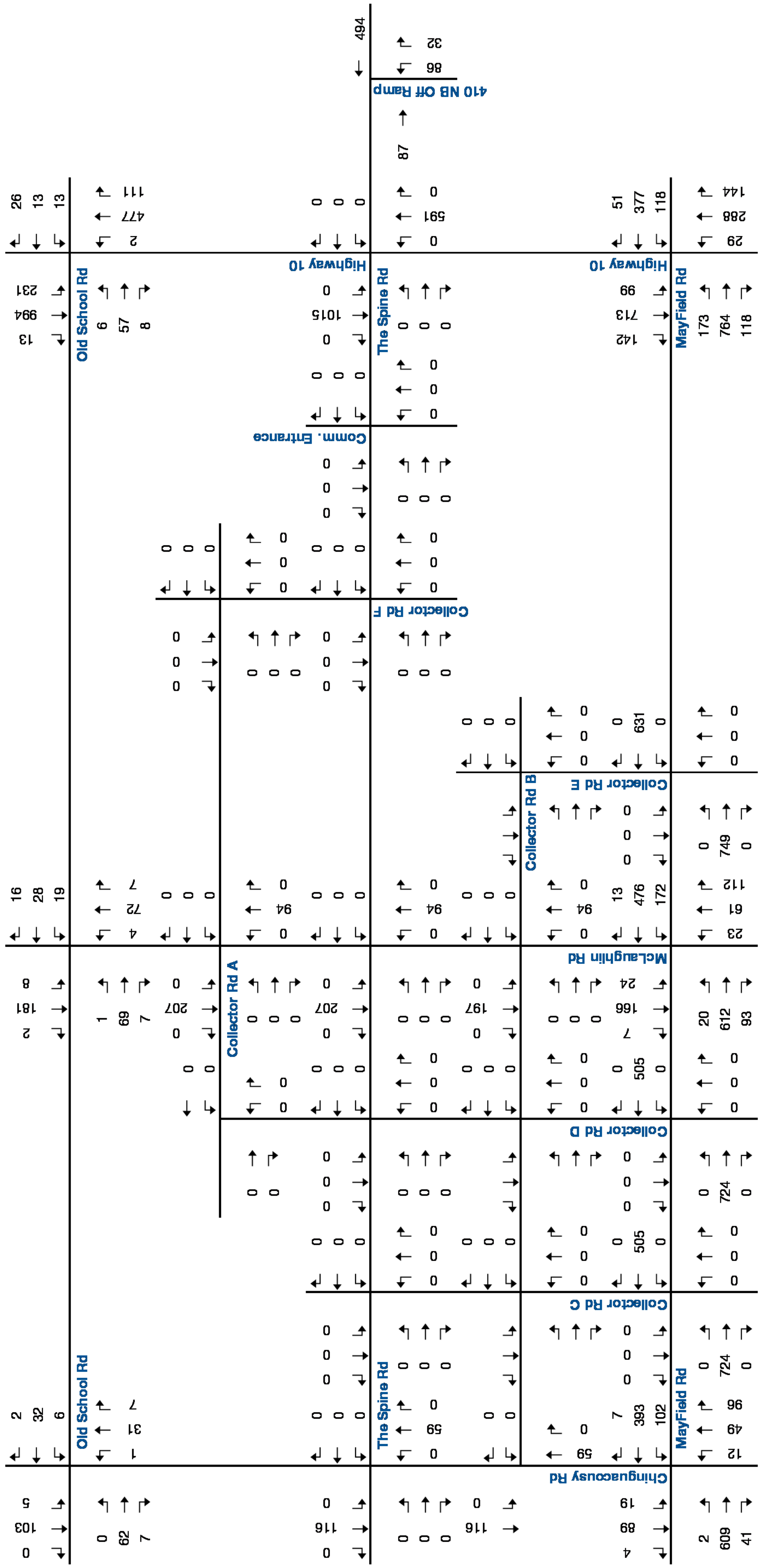
Source: MW2 Transportation Impact Study – Part A Existing Conditions (PM Peak Hour - 2008)

Existing Traffic – PM Peak Hour

Figure 6.2

paradigm TRANSPORTATION SOLUTIONS LIMITED

Mayfield West Phase 2 Secondary Plan Transportation Master Plan
101380P

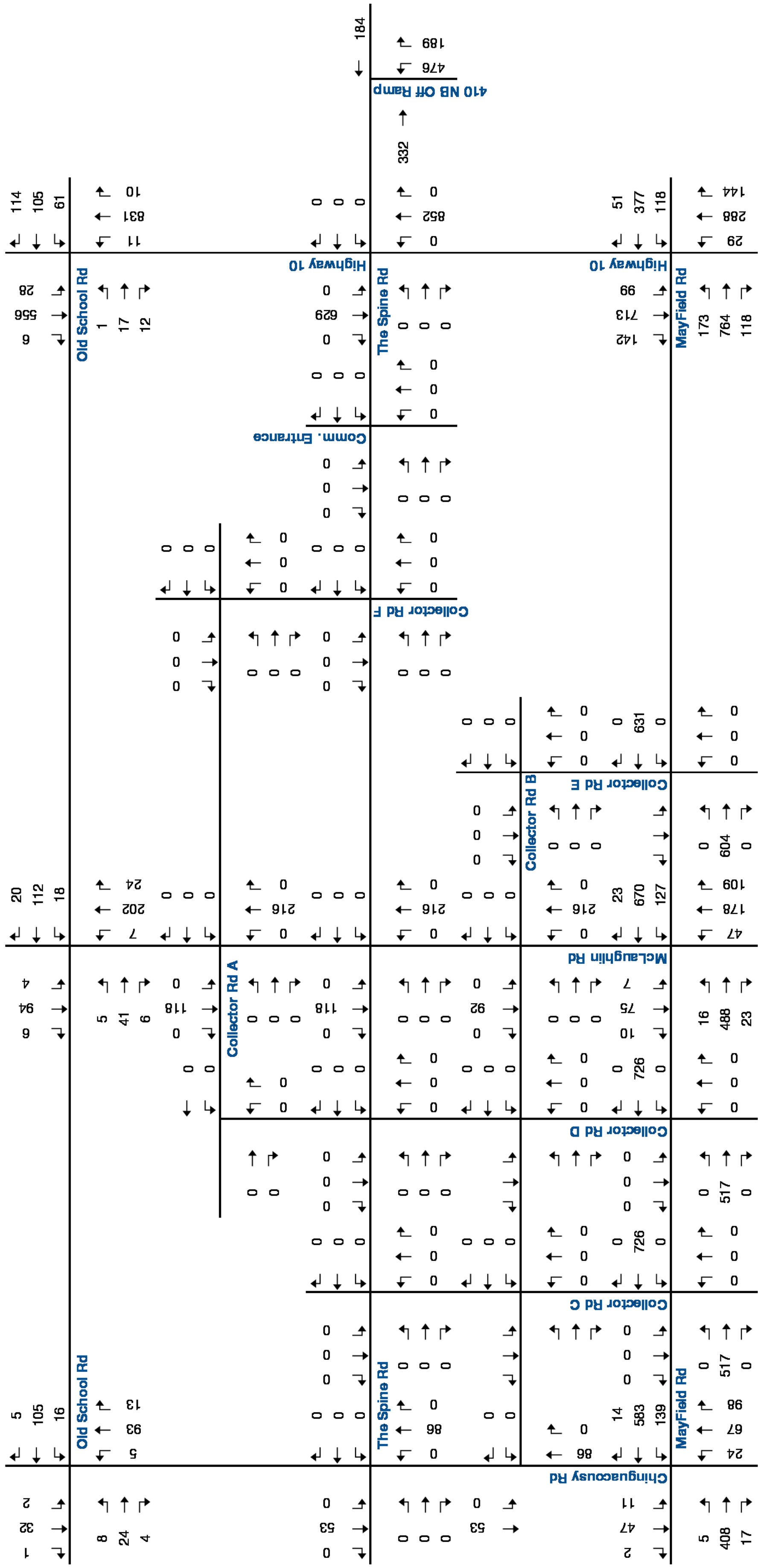


Future Background Traffic – AM Peak Hour

Figure 6.3

paradigm TRANSPORTATION SOLUTIONS LIMITED

Mayfield West Phase 2 Secondary Plan Transportation Master Plan
101380P



Future Background Traffic – PM Peak Hour

Figure 6.4

Mayfield West Phase 2 Secondary Plan Transportation Master Plan
101380P

6.2 Development Concept

6.2.1 Land Use

For the purposes of undertaking traffic assessments as part of the TMP, land use allocation (as per the adopted Framework Plan) was summarized into five key land use types, as summarized in **Table 6.1**.

TABLE 6.1 LAND USE ALLOCATION

Land Use	Density
Residential	
• Low Density	3,212 units
• Medium Density	1,597 units
• High Density	308 units
Commercial	66,100 m^2 GFA
Employment	
• Business Park	1,164 employees
Schools	
• Elementary Schools	2,525 students
• Secondary School	1,500 students
• Daycare	68 students
Other	
• Police Services	650 employees
• Church	14,973 m^2 GFA

6.3 Planned and Programmed Roadway Network Improvements

The estimation and assessment of future travel demands considered the impact of future roadway improvements anticipated to occur within a close proximity to the Study Area which may have varying levels of impact to future traffic operations. In particular, the planned widening of Mayfield Road, future improvements to Chinguacousy Road and McLaughlin Road, as well as the need for considerable interchange improvements has been identified. These and other planned transportation improvements are summarized as follows:

6.3.1 Region of Peel

Improvements recommended as part of Mayfield Road from Chinguacousy Road to Heart Lake Road Class EA Study include:

- Mayfield Road from Chinguacousy Road to Hurontario Street, widening from two to four lanes with urbanized south side cross-section inclusive of a boulevard multi-use trail (by 2021);
- Mayfield Road from Chinguacousy Road to Hurontario Street, widening from four to six lanes inclusive of centre median (where appropriate) with urbanized cross-section and boulevard multi-use trails on both the north and south sides of the roadway (by 2031);
- Reduce southbound left-turn lanes at Hurontario Street from dual left-turn lanes to a single left-turn lane (by 2021); and
- Provide for additional turning lanes at key intersections including Chinguacousy Road, McLaughlin Road, Hurontario Street and new collector roads associated with development south of Mayfield Road (by 2021).

6.3.2 City of Brampton

The City of Brampton Roads Capital Program (2014 – 2023) identifies the following improvements:

- McLaughlin Road from Wanless Drive to Mayfield Road, widening from two to four lanes (by 2017); and
- Chinguacousy Road from Wanless Drive to Mayfield Road, widening from two to four lanes (by 2018).

6.3.3 GTA West Corridor Environmental Assessment Study

The Provincial Growth Plan identified a conceptual future transportation corridor that generally extends east from Guelph to the area east of Caledon and includes policy directions requiring that transportation corridors be identified and protected. As such, the Ontario Ministry of Transportation (MTO) has commenced the formal EA process to examine long-term transportation problems and opportunities to the year 2031 including the consideration of alternative solutions to provide better linkages between Urban Growth Centres in the GTA West Corridor Preliminary Study Area.

At the time of writing of this report, the EA Study has concluded that there is a need for a future transportation corridor and alternative alignment options for the corridor were under investigation. The Transportation Development Strategy Report[7] is complete and the project has been investigating route alternatives for a new transportation corridor within the Route Planning

[7] GTA West Corridor Environmental Assessment Study - Transportation Development Strategy Report; (Ontario Ministry of Transportation), November 2012.

Study Area. Consultation with MTO staff has indicated that the next Public Information Centre for the GTA West Corridor Study is anticipated for late 2015 or early 2016, at which time a preferred corridor alignment will be presented to the public. In terms of potential connections with Highway 410, the feasibility of providing a connection to Highway 410, east of the Mayfield West Phase 2 Study Area, and subsequent identification of interchange requirements will likely be determined by the end of 2015.

Although the Transportation Development Strategy Report identifies that the transportation corridor traverses through the Mayfield West Phase 2 Study Area, the MTO has no commitments to have this corridor in place by 2031. As such, a traffic assessment scenario inclusive of the GTA-West corridor has not been undertaken as part of the TMP study.

6.4 Trip Generation

The expected travel demands associated with the full build-out of Mayfield West Phase 2 are a direct function of type and density of land use proposed within the Secondary Plan area. Generally speaking, residential land uses generate travel demands based on the number of dwelling units within a specific area, the type of dwelling provided and/or the expected population of new residents. Non-residential land uses tend to generate travel demands based on the type of use (i.e. commercial, industrial, institutional, etc.), the number of employees anticipated within the Study Area and the types of services offered.

The Institute of Transportation Engineers (ITE) publishes a document titled Trip Generation (9th Edition)[8] which provides a method for calculating trip production and attraction as a function of an independent variable for specific land uses. The data contained in the ITE Trip Generation provides statistically valid, empirically based estimates of trip generation characteristics for various types and sizes of development based on travel demand patterns observed in communities throughout North America. Local sources can also be used to estimate trip generation characteristics of different land uses such as local trip generation studies and Transportation Tomorrow Survey (TTS) data which provide trip origin/destination data as well as travel mode.

Estimation of travel demand for the Mayfield West Phase 2 Study Area has been based on observed and/or estimated trip generation rates published by the ITE for each of the anticipated land uses. In estimating the trip generation for the development, the following ITE land use types have been assumed:

[8] Trip Generation 9th Edition; (Institute of Transportation Engineers), December 2012.

- Land Use Code 210 – Single Family Detached (Low Density Residential)
- Land Use Code 230 – Residential Condominium / Townhouse (Medium Density Residential)
- Land Use Code 220 – Apartment (High Density Residential, 4 to 8-storey apartment building)
- Land Use Code 520 – Elementary School
- Land Use Code 530 – High School
- Land Use Code 565 – Daycare
- Land Use Code 770 – Business Park
- Land Use Code 814 – Speciality Retail (Live-Work)
- Land Use Code 820 – Shopping Centre

6.4.1 Modal Split

Assumptions regarding the share of future trips which will use auto, transit and other non-motorized modes of travel were based on a review of the Transportation Tomorrow Survey (TTS)[9] data and recognized the desire to for a balanced transportation strategy which provides accessibility to local transit service, as well as promotes active modes of transportation. For the purposes of estimating future travel demands, the following mode share targets were assumed:

- Residential – 5% Modal Split Reduction
- Institutional (Elementary School, Secondary School and Daycare) – 5% Modal Split Reduction
- Business Park – 10% Modal Split Reduction
- Speciality Retail – 5% Modal Split Reduction
- Shopping Centre – 5% Modal Split Reduction

6.4.2 Overlap, Pass-By and Multi-Purpose Trip Reduction

Research has shown that neighbourhoods containing a mix of land uses, which have been planned with the focus of creating safe and convenient pedestrian and cycling environments, and are located near transit-supportive developments, generally allow residents and employees to drive significantly less when compared to traditional suburban neighbourhoods.

Standard trip generation estimation procedures are generally based on data collected from single-use, automobile-dependant suburban sites. However, the consideration of trip overlap, pass-by trips and/or multi-purpose trips are

[9] Transportation Tomorrow Survey; (University of Toronto), source: www.jpint.utoronto.ca/drs

all important factors when estimating the extent in which trips made within a mixed-use area are internalized, or satisfied, with both the origin and destination being located within the neighbourhood. The resulting estimates are important in accurately determining the quantity of external trips generated by the development, thereby resulting in impact to the roadway system external to the site.

There is some allowance for trip overlap and multi-purpose trip making when examining commercial land uses, but in general, the ITE trip generation methods do not adequately account for the effects of transit-oriented development, mixed-use neighbourhoods, site design, walkability, transit or regional accessibility – all of which are the key elements of smart growth strategies that result in a sustainable community.

Application of available ITE trip generation rates are appropriate when determining total traffic estimates. However, there are instances when the total number of trips generated by a site is different from the amount of new traffic added to the adjacent road network. For example, retail and commercial-oriented developments are typically located adjacent to busy streets in order to attract the motorists already on the street. These sites attract a portion of their trips from traffic passing the site on the way from an origin (i.e. home) to a primary destination (i.e. work) and may not add new traffic to the adjacent street system.

Pass-by trips are defined as trips made as an intermediate stop on the way from an origin (i.e. home) to a primary destination (i.e. work) without requiring a route diversion. Pass-by trips are attracted from traffic passing the site on an adjacent roadway that offers direct access to the development and are already included in the existing traffic stream and therefore does not result in a new trip. In order to account for trip overlap, pass-by and multi-purpose trip making phenomenon a general reduction of 35% has been applied to the proposed retail commercial uses, and a work-live reduction of 25% has been applied to the residences located adjacent to the Village Centre which consist of ground-floor retail and second storey residential uses.

In summary, new commercial trips generated by the proposed developments are estimated to be approximately 65 - 75% of the typical trip rates for stand-alone suburban commercial developments.

6.4.3 Trip Generation Estimates

Based on the land use allocation summarized in **Table 6.1**, and a review of modal split characteristics as well as overlap, pass-by and multi-trip interactions, an estimation of net "new" auto trips generated as a result of full build-out of the proposed Mayfield West Phase 2 community has been completed. The resulting trip generation estimates are summarized in **Table 6.2**. Detailed trip generation tables which identify land use categories, independent variable selection, quantity, and trip reduction factors are contained in **Appendix B** for further reference. It should be noted that the estimates of trips generated are estimated on the basis of relatively small traffic analyses zones within the secondary plan area. Many of these trips are internal to the secondary plan area and do not create additional trips that are external to the secondary plan.

TABLE 6.2: ESTIMATED TRIP GENERATION

Number of Peak Hour Trips					
AM Peak Hour			PM Peak Hour		
Inbound	Outbound	**Trips**	Inbound	Outbound	**Trips**
2,785	3,630	**6,415**	3,984	3,261	**7,245**

It has been determined that the full build-out of Mayfield West Phase 2 is estimated to generate approximately 6,415 two-way vehicle trips during the AM peak hour and approximately 7,245 two-way vehicle trips during the PM peak hour. For analyses purposes, it has been assumed that the full build-out of the secondary plan area is assumed to occur by year 2031.

6.5 Trip Distribution and Assignment

Distribution of site-generated auto trips has been based on a review of 2006 TTS trip distribution data which summarized origin/destination patterns for internal and external trips made to and from the areas north of Brampton. A review of the trip distribution data indicates that a moderate amount of trips are anticipated to be internal to the Town of Caledon, and a considerable amount of external peak hour trips are primarily oriented to and from the City of Brampton. The resulting trip distribution assumptions are summarized in **Table 6.3** for further reference.

TABLE 6.3: PEAK HOUR TRIP DISTRIBUTION

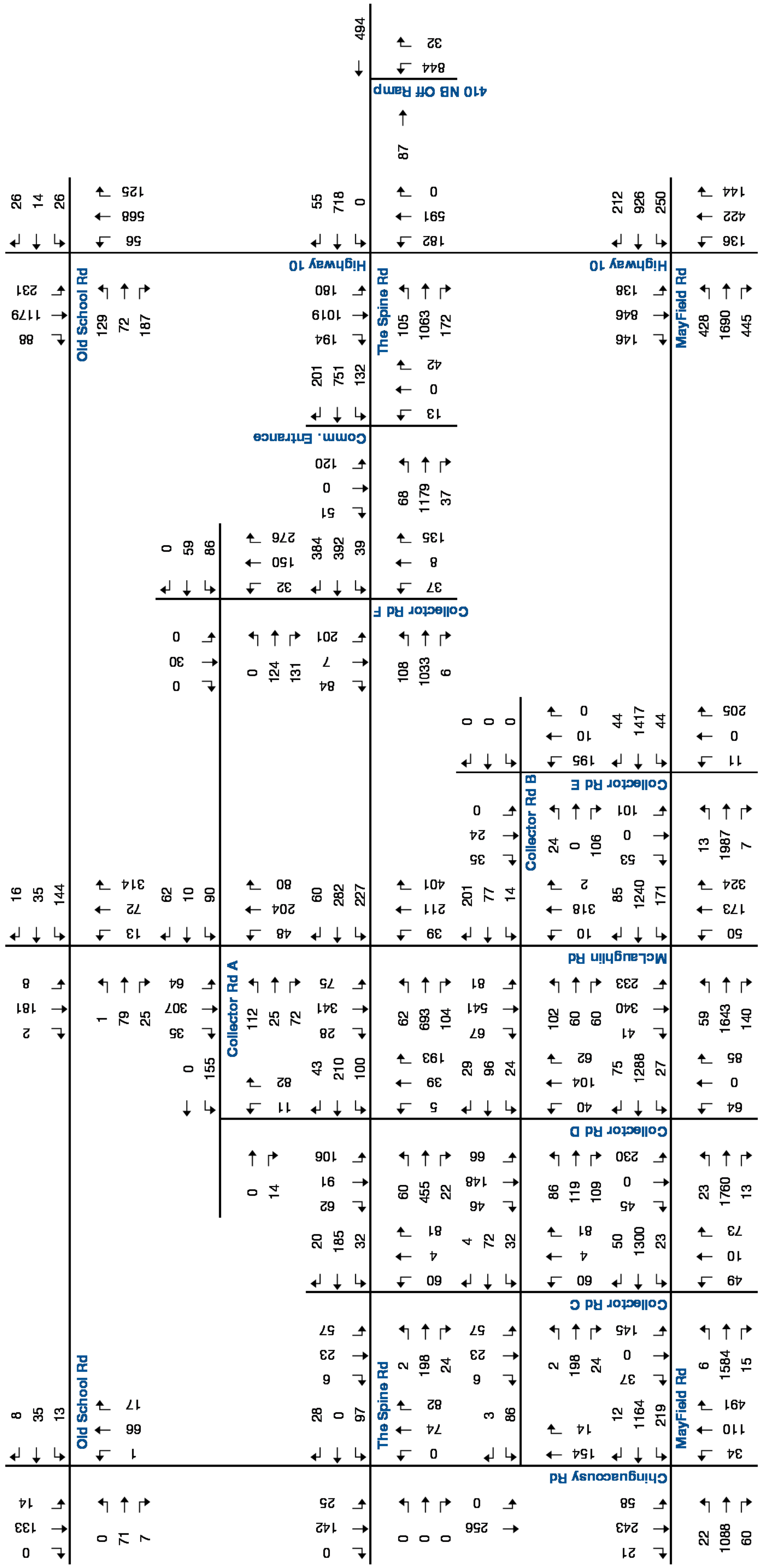
Origin / Destination	Percent of Trips		
	Residential	Employment	Commercial
Caledon	5%	15%	22%
Brampton	35%	30%	35%
Mississauga	30%	20%	10%
Toronto	18%	1%	0%
York	5%	9%	8%
Halton	5%	15%	15%
North (Orangeville, Dufferin, Simcoe, Wellington, etc.)	2%	10%	10%
Total	**100%**	**100%**	**100%**

Site-generated trips were assigned to the area roadway network based on the overall directness of travel, accessibility to adjacent freeway facilities and knowledge of local study area travel patterns. Consideration was also given to planned and programmed roadway improvements adjacent to the Study Area as per the improvements summarized in **Section 6.3**.

6.6 Future Total Traffic

Future total traffic is the combination of future background traffic (background traffic growth plus additional traffic associated with background development, if applicable), and site-generated traffic. The resulting peak hour future total traffic forecasts for the 2031 horizon year are illustrated in **Figure 6.5** and **Figure 6.6**. It is noted that the east – west mainline link volumes for Mayfield Road were extracted from the Mayfield Road Class EA Study Traffic Report[10].

[10] Class Environmental Assessment for Mayfield Road from Chinguacousy Road to Heart Lake Road (Project #10-4350) – Traffic Report, Exhibits 17 and 19; (prepared by GENIVAR), August 2013.



Future Total Traffic – AM Peak Hour

Figure 6.5

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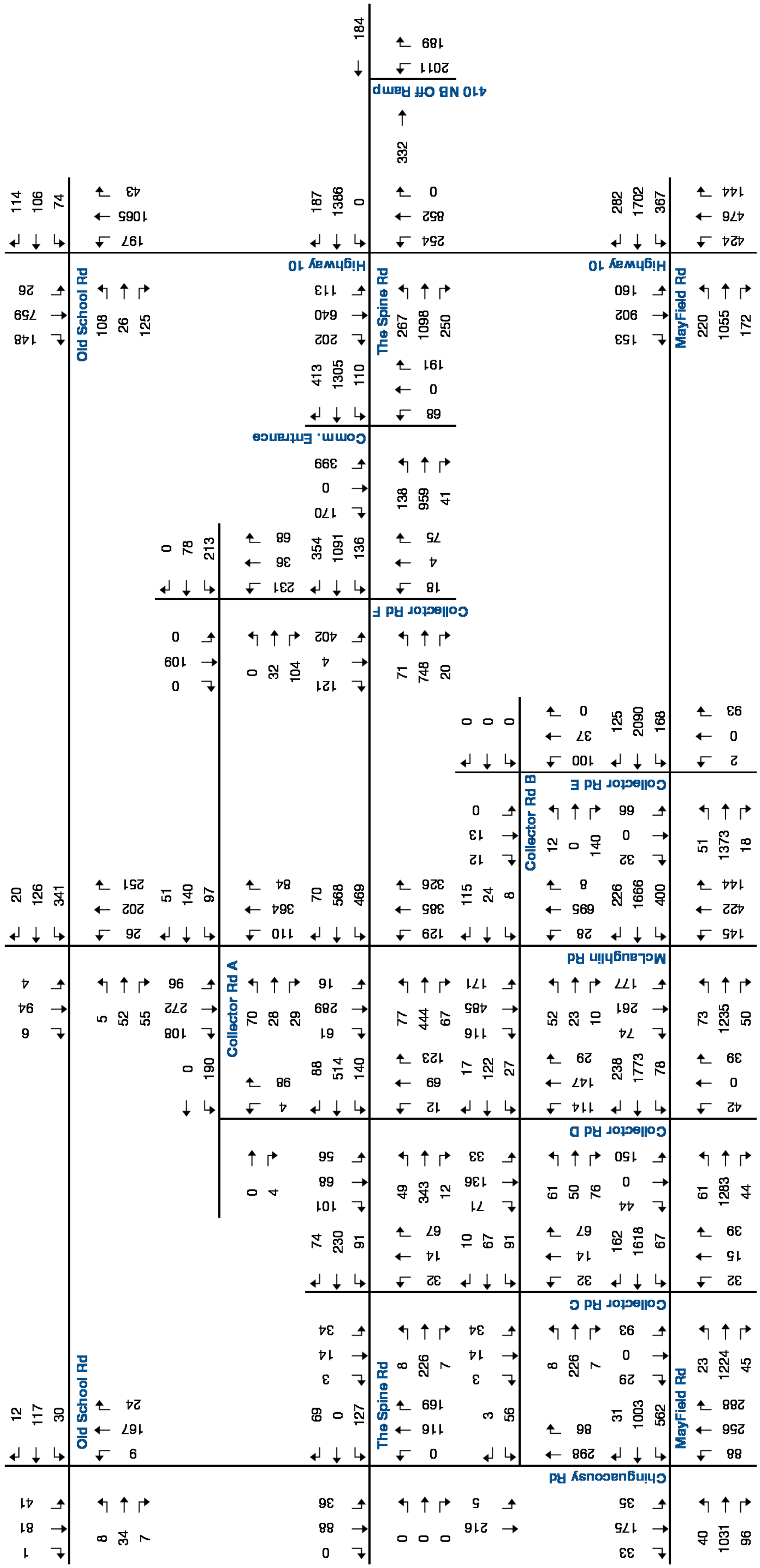

Future Total Traffic – PM Peak Hour

Figure 6.6

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6.7 Traffic Analyses

Intersection capacity analyses were completed for key intersections within the Study Area in order to assess future operating conditions, identify potential traffic impacts to the adjacent transportation system, and to confirm future infrastructure needs required to accommodate planned development. Analysis was undertaken based on Highway Capacity Manual (HCM) methodologies and Synchro 7.0 software.

6.7.1 Analyses Methodology

The operation of Study Area intersections has been analyzed in order to determine intersection level of service (LOS) and intersection capacity utilization (ICU) in an effort to quantify future roadway requirements as well as the extent of impact site traffic will have on the adjacent transportation network.

Signalized Intersections

Capacity analysis for signalized intersections is based on the procedures described in the Highway Capacity Manual (HCM). For signalized intersections, the analysis focuses on performance measures such as intersection level of service (LOS), volume-to-capacity ratios (v/c) and control delay (measured in seconds).

LOS is a qualitative measure of operational performance which is based on control delay. The LOS criteria for signalized intersections are summarized in Table 6.4. LOS A is represented by a control delay of less than 10 seconds per vehicles (referred to as free-flow operating conditions) while LOS F is represented by a control delay greater than 80 seconds per vehicles (referred to as restricted flow operating conditions).

TABLE 6.4: LOS CRITERIA FOR SIGNALIZED INTERSECTIONS

Level-of-Service	Average Control Delay (seconds per vehicle)	General Description
A	0 - 10	Free Flow
B	>10 - 20	Stable Flow (slight delays)
C	>20 - 35	Stable Flow (acceptable delays)
D	>35 - 55	Approaching Unstable Flow (tolerable delays)
E	>55 - 80	Unstable Flow (intolerable delays)
F	>80	Forced Flow (unacceptable delays)

In determining the LOS performance for signalized intersections, the average control delay per vehicle is estimated for each lane group and is aggregated for each approach, and for the intersection as a whole. Acceptable intersection operations are generally defined as v/c ratios of 0.85 or less for shared movements and 1.00 for exclusive movements, as indicated in the Region of Peel guidelines for Traffic Impact Studies. Individual movements experiencing a v/c ratio greater than 1.00 are deemed to be "critical" in terms of operation, indicating that the movement may be considered for geometric improvement.

Unsignalized Intersections

When analyzing unsignalized intersections, LOS is determined by the computed or measured control delay and is defined for each minor ("critical") movement. In the determination of the performance of unsignalized intersections, the average control delay per vehicle is estimated for each lane group and is aggregated for each approach. Control delay includes the initial deceleration delay, queue move-up time, stopped delay and the final acceleration delay. The LOS criteria for unsignalized intersections are somewhat different from the criteria used for signalized intersections, primarily because different transportation facilities create different driver perceptions. The expectation is that a signalized intersection is designed to carry higher volumes of traffic and experience greater delay than that of an unsignalized intersection.

The LOS criteria for unsignalized intersections are summarized in Table 6.5. Acceptable operations are normally defined a LOS E or better for individual movements, conditional on the estimated maximum queue length for individual movements being less than the available storage. LOS F occurs where there are not enough gaps of suitable size to allow the minor street demand to safely cross, turn into, or through, traffic on the major street. This is evident from long control delays experienced by minor street traffic and by queuing on the minor street approaches. LOS E represents effective capacity of a movement.

TABLE 6.5: LOS CRITERIA FOR UNSIGNALIZED INTERSECTIONS

Level-of-Service	Average Control Delay (seconds per vehicle)
A	0 - 10
B	>10 – 15
C	>15 – 25
D	>25 – 35
E	>35 – 50
F	>50

It is important to use caution when using the HCM methodology to assess unsignalized intersections. Even under low-volume traffic conditions, the HCM delay equation will often predict greater than 50 seconds of delay (LOS F) for many unsignalized intersections that permit minor street left-turn movements. LOS F is commonly predicted regardless of the volume of minor street left-turning traffic. HCM notes that “even with a LOS F estimate, most low volume minor-street approaches would not meet any of the Manual on Uniform Traffic Control Devices (MUTCD) volume or delay warrants for signalization. As a result, analysts that use the HCM level of service thresholds to determine the design adequacy of two-way stop controlled intersections should do so with caution.”

Intersection Capacity Utilization

The intersection capacity utilization (ICU) method is more precise and less subject to manipulation when compared to LOS performance, and is intended to be used in planning applications, such as future roadway design. The objective function of ICU is based on volume-to-capacity ratios, rather than delay; therefore representing an estimated measurement of true capacity at an intersection. The ICU performance measures are designed to be used in conjunction with delay-based methods, such as LOS, in order to represent overall intersection performance.

6.7.2 Future Geometric Requirements

The determination of future intersection geometric requirements was based on an iterative approach which examined the forecasted peak hour traffic volumes and various modes of intersection traffic control in order to develop recommended lane requirements which balance the need for high levels of service and safe operations, with the desire to design a transportation network that encourages all modes of travel.

The recommended intersection geometric requirements are to be used in conjunction with the findings of the Mayfield Road Class EA study which has recommended the following roadway and intersection improvements (as summarized in Table 6.6):

TABLE 6.6: MAYFIELD ROAD CLASS EA RECOMMENDED ROADWAY IMPROVEMENTS

Roadway	Limits	2031 Improvement
Mayfield Road	Chinguacousy Road to Hurontario Street	Widen to 6-lanes
Chinguacousy Road	Wanless Drive to Mayfield Road	Widen to 4-lanes
Collector Road C	Wanless Drive to MW2 limits	New 2-lane Roadway Traffic Signal at Mayfield Road
Collector Road D	Wanless Drive to Mayfield Road	New 2-lane Roadway Traffic Signal at Mayfield Road
McLaughlin Road	Wanless Drive to Mayfield Road	Widen to 4-lanes
Collector Road E		Traffic Signal at Mayfield Road

Table 6.7 graphically summarizes the future intersection lane requirements as a result of forecasted 2031 peak hour traffic volumes and has formed the basis for subsequent traffic analyses.

TABLE 6.7: INTERSECTION LANE REQUIREMENTS

Intersection	Traffic Control	Eastbound			Westbound			Northbound			Southbound		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
1: Mayfield Rd & Chinguacousy Rd	TCS	↰	↑(↑↱)		↰↰	↑↑(↑↱)		↰	↑	↱	↰	(↑↱)	
2: Mayfield Rd & Collector Rd C	TCS	↰	↑↑(↑↱)		↰	↑↑(↑↱)		↰	(↑↱)		↰	(↑↱)	
3: Mayfield Rd & Collector Rd D	TCS	↰	↑↑(↑↱)		↰	↑↑(↑↱)		↰	(↑↱)		↰	(↑↱)	
4: Mayfield Rd & McLaughlin Rd	TCS	↰	↑↑↑	↱	↰↰	↑↑(↑↱)		↰	↑(↑↱)		↰	↑(↑↱)	
5: Mayfield Rd & Collector Rd F	TCS	↰	↑↑(↑↱)		↰	↑↑(↑↱)		↰	(↑↱)		↰	(↑↱)	
6: Mayfield Rd & Hurontario St	TCS	↰↰	↑↑↑	↱	↰↰	↑↑↑	↱	↰	↑↑	↱	↰↰	↑↑	↱
7: The Spine Rd & Chinguacousy Rd	TWSC - EW				↰		↱		↑	↱	↰	↑	
8: The Spine Rd & Collector Rd C	TWSC - NS	↰	(↑↱)		↰	(↑↱)		↰	(↑↱)		↰	(↑↱)	
9: The Spine Rd & Collector Rd D	TCS	↰	(↑↱)		↰	(↑↱)		↰	(↑↱)		↰	(↑↱)	
10: The Spine Rd & McLaughlin Rd	TCS	↰	↑	↱	↰	(↑↱)		↰	↑(↑↱)		↰	↑(↑↱)	
11: The Spine Rd & local street	TCS	↰	↑	↱	↰	↑	↱	↰	(↑↱)		↰	(↑↱)	
12: The Spine Rd & Collector Rd F	TCS	↰	↑(↑↱)		↰	↑↑	↱	↰	(↑↱)		↰↰	(↑↱)	
13: The Spine Rd & Commercial Access	TCS	↰	↑(↑↱)		↰	↑↑	↱	↰	↑(↑↱)		↰↰	↑	↱
14: The Spine Rd & Hurontario St	TCS	↰	↑↑(↑↱)		↰	↑↑↑	↱	↰	↑(↑↱)		↰	↑↑	↱
15: Chinguacousy Rd & Collector Rd B	TWSC - EW				(↰↱)				(↑↱)		↰	↑	
16: Chinguacousy Rd & Collector Rd C	TWSC - EW				(↰↱)				(↑↱)		↰	↑	
17: Chinguacousy Rd & Old School Rd	TWSC - EW		(↰↑↱)			(↰↑↱)			(↰↑↱)			(↰↑↱)	
18: McLaughlin Rd & Collector Rd G	TWSC - EW				(↰↱)				↑(↑↱)		↰	↑↑	
19: McLaughlin Rd & Collector Rd B	TCS	↰	(↑↱)		↰	(↑↱)		↰	↑(↑↱)		↰	↑(↑↱)	
20: McLaughlin Rd & Collector Rd A	TCS	↰	(↑↱)		↰	(↑↱)		↰	(↑↱)		↰	(↑↱)	
21: McLaughlin Rd & Old School Rd	TCS	↰	(↑↱)		↰	(↑↱)		↰	(↑↱)		↰	(↑↱)	
22: Hurontario St & Old School Rd	TCS	↰	(↑↱)		↰	(↑↱)		↰	↑(↑↱)		↰	↑(↑↱)	
23: Collector Rd B & Collector Rd C	TWSC - NS		(↰↑↱)			(↰↑↱)			(↰↑↱)			(↰↑↱)	
24: Collector Rd B & Collector Rd D	TWSC - EW		(↰↑↱)			(↰↑↱)		↰	(↑↱)		↰	(↑↱)	
25: Collector Rd G & Collector Rd F	TWSC - EW	(↰↱)							(↰↑)			(↑↱)	
26: Collector Rd D & Collector Rd A	TWSC - EW		(↑↱)			(↰↑)					(↰↱)		
27: Collector Rd A & Collector Rd F	TWSC - ALL	↰	(↑↱)		↰	(↑↱)		↰	(↑↱)			(↰↑↱)	

Legend:
TCS – Traffic Control Signal
TWSC – Two-Way Stop Control
AWS – All-way Stop Control

6.7.3 Future Total Traffic Operations

Operational conditions and performance measures for each of the Study Area intersections under future 2031 peak hour traffic conditions are summarized in Table 6.8. For analyses purposes, cross-section requirements and lane configurations for intersections with Mayfield Road were consistent with the recommendations made as part of the Mayfield Road Class EA study. Detailed Synchro outputs are contained in Appendix C for further reference.

Analysis of future AM peak hour traffic conditions identifies that the signalized intersections have an overall LOS ranging from LOS A to LOS D with the intersection of Mayfield Road and Hurontario Street operating with a maximum ICU of 85%. The unsignalized intersections were found to have an overall LOS ranging from LOS A to LOS E with ICU rates in the 20% to 50% range. Capacity analysis confirmed that under the 2031 total traffic scenario, all Study Area intersections are anticipated to operate satisfactorily with reserve capacity during the peak hour.

Analysis of future PM peak hour traffic conditions identified that the signalized intersection have an overall LOS ranging from LOS A to LOS E with the intersection of Mayfield Road and Hurontario operating at LOS E and a maximum ICU of 101%, representing capacitated conditions. The intersection of the Spine Road at Hurontario Street is anticipated to operate at a LOS D with an ICU of 88%, indicating that the intersection will be approaching capacity during the PM peak hour. The unsignalized intersections were found to have an overall LOS ranging from LOS A to LOS D with ICU rate in the 20% to 50% range. Analysis of the PM peak hour traffic conditions has confirmed that under the 2031 total traffic scenario, the majority of Study Area intersections are anticipated to operate satisfactorily with reserve capacity during the peak hour, with the exception of the following intersections which are anticipated to operate near or at capacity:

- The Spine Road and Hurontario Street (nearing capacity); and
- Mayfield Road at Hurontario Street (at capacity).

TABLE 6.8: INTERSECTION PERFORMANCE – 2031 FUTURE TRAFFIC CONDITIONS

Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
		HCM LOS	ICU %	HCM LOS	ICU %
1: Mayfield Rd & Chinguacousy Rd	TCS	C	76%	D	78%
2: Mayfield Rd & Collector Rd C	TCS	B	53%	A	60%
3: Mayfield Rd & Collector Rd D	TCS	B	61%	A	68%
4: Mayfield Rd & McLaughlin Rd	TCS	C	79%	C	81%
5: Mayfield Rd & Collector Rd F	TCS	B	67%	A	67%
6: Mayfield Rd & Hurontario St	TCS	D	85%	E	101 %
7: The Spine Rd & Chinguacousy Rd	TWSC - EW	B	21%	B	23%
8: The Spine Rd & Collector Rd C	TWSC - NS	C	34%	C	38%
9: The Spine Rd & Collector Rd D	TCS	B	65%	B	64%
10: The Spine Rd & McLaughlin Rd	TCS	D	85%	D	87%
11: The Spine Rd & local street	TCS	C	77%	D	74%
12: The Spine Rd & Collector Rd F	TCS	B	60%	B	62%
13: The Spine Rd & Commercial Access	TCS	B	64%	C	81%
14: The Spine Rd & Hurontario St	TCS	C	82%	D	88%
15: Chinguacousy Rd & Collector Rd B	TWSC - EW	B	26%	B	30%
16: Chinguacousy Rd & Collector Rd C	TWSC - EW	B	18%	B	20%
17: Chinguacousy Rd & Old School Rd	TWSC - EW	B	32%	C	40%
18: McLaughlin Rd & Collector Rd G	TWSC - EW	B	27%	B	37%
19: McLaughlin Rd & Collector Rd B	TCS	B	55%	B	54%
20: McLaughlin Rd & Collector Rd A	TCS	A	46%	B	57%
21: McLaughlin Rd & Old School Rd	TCS	B	48%	B	60%
22: Hurontario St & Old School Rd	TCS	C	74%	C	69%
23: Collector Rd B & Collector Rd C	TWSC - NS	B	36%	C	39%
24: Collector Rd B & Collector Rd D	TWSC - EW	E	50%	D	47%
25: Collector Rd G & Collector Rd F	TWSC - EW	A	23%	B	27%
26: Collector Rd D & Collector Rd A	TWSC - EW	A	27%	A	25%
27: Collector Rd A & Collector Rd F	TWSC - ALL	C	55%	B	50%

Legend:
TCS – Traffic Control Signal
TWSC – Two-Way Stop Control
AWS – All-way Stop Control

6.7.4 Further Assessment of Future Traffic Conditions

Following the circulation of the draft Transportation Master Plan report in July, 2014 a range of comments were received from different agencies, as noted previously and contained in **Appendix A2**. Comments from the Ministry of Transportation of Ontario (MTO) included:

- The traffic counts utilized in the traffic analyses should be updated to more recent counts;
- The geographic area of the analyses should be expanded to include other intersections and interchanges under the jurisdiction of the MTO; and
- The Spine Road connection to Hurontario Street and/or the Highway 410 Valleywood interchange should be further assessed.

To respond to these comments, a further transportation assessment study was carried out by LEA Consulting Ltd (LEA) on behalf the Mayfield West Phase 2 landowners group. The Conclusions and Recommendations of the LEA Transportation Assessment Study report are copied below. The full detailed report is provided in **Appendix D** of this report.

- *Traffic counts in the study area were updated to reflect current conditions. Under existing traffic conditions there is residual traffic capacity in the Mayfield West Phase 2 area. However, some intersections along Sandalwood Parkway and along Mayfield Road are operating close to, or at, capacity.*
- *A Spine Road connection to Hurontario Street and associated Highway 410/Valleywood interchange modifications has been developed for analysis. This proposed road connection has a number of benefits:*
  - *It connects the Mayfield West Phase 2 Secondary Plan to the Highway 410/Hurontario interchange;*
  - *With the uncertainty of the timing of the GTA West corridor and/or future extension of Highway 410 north of Mayfield Road, this option provides a practical and cost-effective solution that could be implemented in the short term and allow the full stage 1 and stage 2 development of Mayfield West Phase 2 to occur, without being delayed by the future decisions involving the GTA West corridor and extension of Highway 410;*
  - *The proposed modifications would not preclude any future reconfiguration or modifications to the Hurontario/Highway 410 interchange.*
- *A very comprehensive transportation analysis has been undertaken to assess the interchange modification in relation to the development of Mayfield West Phase 2 Secondary Plan and regional traffic growth. The methodology utilizes up-to-date traffic volumes, the latest Peel*

Region traffic model, and the mesoscopic "Aimsum" model for the operational assessment of the study area road network.

- *Analysis results show that the Stage 1 and Stage 2 development of the Mayfield West Phase 2 Secondary Plan area can be accommodated by the proposed Spine Road connection and modifications to the Highway 410/Valleywood interchange.*

This additional assessment has been prepared to address the comments provided by the Ministry of Transportation of Ontario.

The broader area traffic analysis in the Transportation Assessment Study helps to reinforce the earlier traffic impact assessment for the Mayfield West Phase 2 development which concluded that the impact of the development traffic would be most noticeable along Mayfield Road and at the connection of the Spine Road to Hurontario Street and/or the Highway 410/Valleywood Boulevard interchange. The configuration option for the connection of the Spine Road to Hurontario Street offers some advantages in comparison to the earlier configuration options that involve other modifications of the existing Highway 410/Valleywood Boulevard interchange. This configuration option should be further investigated along with the other configuration options previously identified in the roadway planning study that will be necessary to finalize the plans for the Spine Road connection to Hurontario Street and/or the Highway 410/Valleywood interchange. It is recognized and recommended through the Transportation Master Plan that a further comprehensive assessment of all options through a process agreed upon by the Town of Caledon and the Ministry of Transportation of Ontario will be necessary to finalize the plans for the Spine Road connection to Hurontario Street and/or the Highway 410/Valleywood interchange.

7 Road Network Plan

The recommended road network for Mayfield West Phase 2 has been based upon and designed to accommodate the population and employment growth targets of approximately 15,655 new residents and 3,800 new jobs within a 303 hectare Study Area[11]. The recommended road network has been designed in order to support the identified levels of development and incorporates the results of previous technical work undertaken, as well as considering comments received from the public and review agencies and has kept with the broad transportation system principles set out in the Official Plan.

The recommended road network achieves the urban design vision for Mayfield West Phase 2 which promotes a diverse transportation system which supports urban development while providing an emphasis on non-auto modes of travel including public transit, cycling and walking. The resulting plan allows for use by all modes of transportation and strives to achieve an acceptable balance between the need to provide acceptable levels of mobility and land access; development of a vibrant and sustainable Village Centre that provides a strong emphasis on active transportation, while developing an integrated road structure that is supportive of public transit and links the Secondary Planning Area to the adjacent regional road structure through the development of a modified grid roadway network.

The recommended road network plan forms the basis upon which the transit, cycling and pedestrian plans have developed. In combination, these networks form the recommended transportation strategy which supports the proposed levels of development endorsed as part of the Framework Plan.

7.1 Key Elements of the Road Network Plan

The recommended road network is illustrated in **Figure 7.1** and the key elements of the plan are summarized as follows:

- A key east-west arterial roadway extending from Hurontario Street to Chinguacousy Road which serves as the internal spine road, providing direct access to the various development areas within the Secondary Plan area. The Spine Road is pivotal in providing east-west capacity required to support the development, as well as accommodating transit service and linking the community with the proposed Transit Hub. The Spine Road serves as a key pedestrian and cycling corridor, linking the Village Centre, public facilities and

[11] Population and Employment estimates based on the Mayfield West Phase 2 Traffic Analysis Zone Calculations – All Stages, (prepared by NAK design strategies), September 23, 3013.

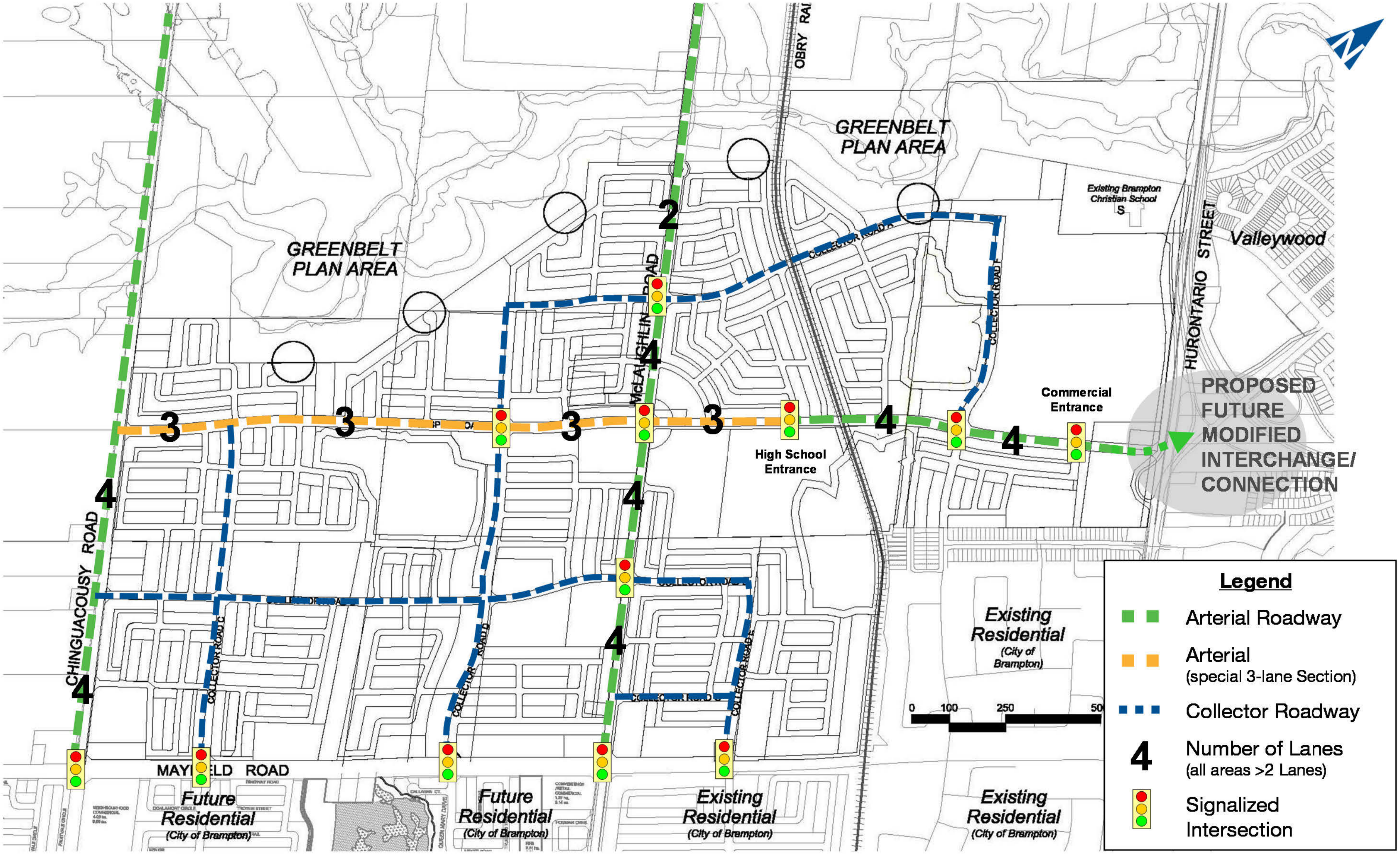
recreational destinations by way of an interconnected system of on and off-street cycling and pedestrian facilities;

- A north-south arterial roadway (extension of McLaughlin Road) will serve as the primary gateway into the Mayfield West Phase 2 lands from the north and will bisect the development, providing access to the residential lands as well as key access through the Village Centre and serving as a key transit route, effectively connecting Mayfield West Phase 2 with Mayfield Road. The roadway will serve as a key pedestrian and cycling corridor; and
- Provision of north-south and east-west collector roadways provide for the establishment of a modified grid road network which links the urban areas south of Mayfield Road to Mayfield West Phase 2. The collector road network provides access and connectivity between the residential, recreational, mixed-use, institutional and commercial areas while accommodating pedestrian and cycling activities and providing key linkages with off-road trail system.

General design elements of the recommended plan are summarized as follows:

- Lane widths for arterial and collector roadways have been based on the following assumptions:
  - Curb lane – 3.5 metres
  - Inside through lane – 3.25 metres
  - Exclusive left-turn lanes – 3.0 metres with provision for a 2.0 metre median island
  - Exclusive right-turn lanes – 3.5 metres
- Road right-of-way widths have been designed to accommodate left-turn lanes, except where noted;
- 2.0 metre bike lanes are recommended for arterial roadways located within high intensification areas (i.e. along the Spine Road through the Village Centre), reducing to 1.8 metres on other arterial roads;
- Collector roads to accommodate cycling facilities (i.e. on-road bike lanes or shared lanes) will have 1.5 metre bike lanes or a 1.5 metre widening;
- On-road bike lanes have not been recommended for the section of the Spine Road east of Collector Road F due to the high volume of traffic and potential for increased conflicts given the intensification of commercial uses throughout this section of the corridor and the potential traffic conflicts within the Highway 410 / Valleywood Boulevard interchange. This recommendation is subject to the provision of a bicycle / pedestrian crossing of Highway 10 along an extension of Collector Road A, that would connect with the Valleywood neighbourhood in the vicinity of Snelcrest Drive;

- A 2.0 metre sidewalk is recommended along the south side of the Spine Road from the west side of the Village Centre to the extension of Collector Road F. However, it is noted that in areas located adjacent to commercial developments, and in particular, areas within the Village Centre; there may be a need to extend the sidewalk to the edge of building. Widening of sidewalk facilities through areas of high intensity shall be undertaken through the development control process;
- 2.5 metre parking bays are recommended adjacent to the live-work uses located within the Village Centre; and
- Roads planned to serve as transit routes shall include accommodations for bus stops and passenger amenities (i.e., benches, shelters, etc.) at key intersections and midblock locations.



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Recommended Road Network Plan

Mayfield West Phase 2 Secondary Plan Transportation Master Plan
101380P

Figure 7.1

7.2 Cross-Section Requirements

Future cross-section requirements have been based on the proposed road network, adjacent land use, estimated future traffic volumes, and typical lane capacities. Based on a review of the functional requirements of transportation facilities as contained in the Town of Caledon Official Plan, the proposed functional road network and corresponding cross-section requirements are summarized in **Table 7.1** and **Table 7.2**.

The development of proposed cross-sections have been designed in accordance with the Town of Caledon Geometric Design Standards and Road Sections as outlined in Town Standard Drawings[12] and modified where appropriated. Typical cross-sections for each roadway classification as well as a conceptual plan view of the Spine Road are contained in **Appendix E** for further reference. These road cross-sections should be reviewed periodically during the implementation of the secondary plan. In particular, the cross-section of the Spine Road between Collector Road F and Hurontario Street should be confirmed in conjunction with the determination of the final plan for the connection of the Spine Road to Hurontario Street and the Highway 410/Valleywood Boulevard interchange.

It is noted that the section of McLaughlin Road north of Collector Road A is proposed to have a basic two lane cross-section with a right of way of 28 and 24 metres. However, in conjunction with final plans for the second phase of the Mayfield West Phase 2 development, the need for McLaughlin Road to be widened to four lanes along with a wider right of way should be considered. Conditions that might give rise to the need for this widening might include future urban development north of the Etobicoke Creek, the final plans for the GTA West corridor or limits on the capacity of the Spine Road connection to Hurontario Street.

[12] Town of Caledon Development Standards, Policies & Guidelines – Version 4, Section 3.3; (prepared by the Town of Caledon Public Works & Engineering Department), January 2009.

TABLE 7.1: CROSS-SECTION REQUIREMENTS (ARTERIAL ROADWAYS)

Roadway	Limits	Classification	General Description	Recommended ROW
Spine Road	Hurontario Street – Commercial Entrance	Arterial	6-lane arterial roadway with continuous centre median and exclusive turn lanes; No bike lanes if crossing of Highway 10 is provided (via extension of Collector Road A); No parking permitted.	37.0 metre ROW
Spine Road	Commercial Entrance – Collector Road F	Arterial	Narrows to a 4-lane arterial roadway with continuous centre median and exclusive turn lanes (inclusive of westbound right-turn lane at Collector Road F); No bike lanes if crossing of Highway 10 is provided; No Parking permitted.	31.0 metre ROW with widening required at Collector Road F
Spine Road	Collector Road F – High School Entrance	Arterial	4-lane arterial roadway with continuous center median and/or two-way left-turn lane (TWLTL) where required at intersections; 1.5 metre sidewalk (north side) with extended 2.0 metre sidewalk (south side) and 2.0 metre bike lanes on both sides of roadway; No parking permitted.	35.0 metre ROW with provision required at the OBRY rail line for future east-west trail connections
Spine Road	West of High School Entrance	Arterial	Narrows to a 2-lane arterial roadway approaching the Village Centre with continuous centre median and/or two-way left-turn lane and eastbound right-turn lanes where required; 1.5 metre sidewalk (north side) with extended 2.0 metre sidewalk (south side) and 2.0 metre bike lanes on both sides of roadway; No parking permitted.	32.0 metre ROW
Spine Road	East of McLaughlin Road	Arterial	2-lane arterial roadway with westbound left-turn lane at McLaughlin Road; Arterial roadway with special provisions to support compatibility with land uses proposed as part of the Village Centre; 1.5 metre sidewalk (north side) with extended 2.0 metre sidewalk (south side) and 2.0 metre bike lanes on both sides of roadway; No parking permitted.	29.0 metre ROW
Spine Road	West of McLaughlin Road	Arterial	2-lane arterial roadway with eastbound left-turn lane at McLaughlin Road and continuous center median and/or two-way left-turn lane where required; 2.50 metre on-street parking bays provided on north side of roadway adjacent to mixed-use commercial development; 1.5 metre sidewalk (north side) with extended 2.0 metre sidewalk (south side) and 2.0 metre bike lanes on both sides of roadway;	35.0 metre ROW
Spine Road	Collector Road D – Chinguacousy Road	Arterial	2-lane arterial roadway with continuous center median and/or exclusive left-turn lanes where required; 1.5 metre sidewalk and 1.8 metre bike lanes provided on both sides of the roadway; No parking permitted.	27.0 metre ROW with widening to 29.0 m immediately west of Collector Road D
McLaughlin Road	Mayfield Road – Collector Road A	Arterial	4-lane arterial roadway with continuous center median and/or exclusive left-turn lanes where required; 1.5 metre sidewalk and 1.8 metre bike lanes provided on both sides of the roadway; No parking permitted.	35.0 metre ROW
McLaughlin Road	North side of Collector Road A	Arterial	Narrows to a 2-lane arterial roadway with continuous centre median and/or exclusive left-turn lanes where required; 1.5 metre sidewalk and 1.8 metre bike lanes provided on both sides of the roadway; No parking permitted.	28.0 metre ROW
McLaughlin Road	North of Collector Road A Old School Road	Arterial	2-lane arterial roadway; 1.5 metre sidewalk and 1.8 metre bike lanes provided on both sides of the roadway; No parking permitted.	24.0 metre ROW with widening required at Collector Road A
Chinguacousy Road	Mayfield Road – Old School Road	Arterial	2-lane arterial roadway with provision for future widening to 4-lanes with continuous centre median and/or turn lanes; 1.5 metre sidewalk and 1.8 metre bike lanes provided on both sides of the roadway; No parking permitted; Possible future connection to GTA West corridor and/or urban expansion west of Chinguacousy Road.	35.0 metre ROW

TABLE 7.2: CROSS-SECTION REQUIREMENTS (COLLECTOR AND LOCAL ROADWAYS)

Roadway	Limits	Classification	General Description	Recommended ROW
Collector Road F	Spine Road – Commercial Entrance	Collector	4-lane collector roadway with provision for exclusive left-turn lanes where required; 1.5 metre sidewalk and 1.5 metre bike lanes provided for on both sides of roadway; Final cross-section and intersection configuration subject to future study (Traffic Impact Assessment) for Commercial Node.	34.0 metre ROW
Collector Road F	Commercial Entrance – Collector Road A	Collector	Narrows to a 2-lane collector roadway with provision for exclusive left-turn lanes where required; 1.5 metre sidewalk and 1.5 metre bike lanes provided for on both sides of roadway; Final cross-section and intersection configuration subject to future study (Traffic Impact Assessment) for Commercial Node.	27.0 metre ROW
Collector Roads (A, B, C, D, E, F, G) No	All	Collector	2-lane collector roadways designed to accommodate transit vehicles if deemed future bus routes; 1.5 metre sidewalk on both sides of roadway; 1.5 metre bike lanes or widening; Parking prohibited; Localized widening required at arterial intersections in order to accommodate exclusive left-turn lanes.	22.0 meter ROW with widening required at arterial intersections to accommodate left-turn lanes
Collector Roads (A, B, C, D,	All	Collector	2-lane collector roadways – not designed to accommodate transit vehicles; 1.5 metre sidewalk on both sides of roadway; Parking permitted on one side of roadway; Localized widening required at arterial intersections in order to accommodate exclusive left-turn lanes.	22.0 meter ROW with widening required at arterial intersections to accommodate left-turn lanes
Local Streets	All	Local	2-lane local roadways; Not designed to accommodate transit vehicles; 1.5 metre sidewalks; No provision for cycling facilities; Based on Caledon Standard 202 or 203 (based on parking needs).	18 – 20 metre ROW

7.3 Road Design Guidelines

Future design activities undertaken as part of detail design should conform to current practices and standards as per the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads, Ministry of Transportation of Ontario (MTO) Geometric Design Standards for Ontario Highways, Region of Peel Public Works Design Standards, Specification & Procedures Manual and the Town of Caledon Development Standards, Policies and Guidelines.

7.3.1 Traffic Control

A number of intersections throughout the Spine Road and McLaughlin Road corridors are anticipated to require traffic signals under future 2031 traffic conditions. It is estimated that up to 9 new intersections will require traffic signal control, in conjunction with other geometric requirements including auxiliary turn lanes.

The future need for traffic control signals was determined based on the results of the traffic operations analysis and reflects the long-term traffic demands anticipated as a result of full build-out of Mayfield West Phase 2. The actual need for traffic control signals and the approximate timing of installation at each location will be subject to future signal warrant assessment in accordance with Town of Caledon and Region of Peel policies. The design details and timing for implementation of intersection traffic control and geometric improvements should be established as part of site-specific traffic assessment studies which will be submitted in support of individual development applications.

7.4 Rail Crossings

7.4.1 Current Rail Operations

There are two planned crossings of the Orangeville Brampton Railway (OBRY); the Spine Road is to cross the rail line at a point 520 metres east of McLaughlin Road, while Collector Road A crosses the line at a point 345 metres east of McLaughlin Road. A single road crossing of the rail line (e.g., the Spine Road crossing only) was determined to not support the overall circulation needs of the Mayfield West Phase 2 land use plan. The second Collector Road A crossing of the rail line is needed to provide sufficient east – west traffic capacity; to accommodate future local bus service; to provide a reasonable level of connectivity within the urban area for not only vehicular traffic and pedestrians but also for cyclists, pedestrians and service vehicles; and to ensure flexibility for emergency vehicles in the event of road closures.

Currently, rail traffic along the line is relatively low and consists of four scheduled freight trips between Orangeville and Mississauga per week (two trips on Tuesday and two trips on Friday) with occasional increases in freight trains in order to meet specific customer needs as well as infrequently scheduled maintenance. Excursion trains (Credit Valley Explorer) consists of a return trip between Orangeville and Mayfield Road and operate during weekends with higher frequency trips during the fall months (September and October). Overall, rail traffic averages approximately two crossings per day.

Recent discussions with OBRY representatives confirms that there are no immediate plans for significant increases in rail traffic within the short term (5-year forecast), and long term traffic estimates are difficult to forecast at this time. It was noted that the current designation of the rail line permits speeds of up to approximately 40 km/h (25 mph). It was also noted that in the future, the rail line may be upgraded to a Class 3 railway and as such, be permitted to operate at speeds of up to 72 km/h (45 mph).

7.4.2 Assessment of Future Rail Operations

As summarized in the Canadian Railway-Roadway Grade Crossing Standards[13] (CRRGCS) document, a cross-product (number of trains daily multiplied by the average annual daily traffic (AADT)) of 200,000 is often used as an indicator that a grade separation may be warranted, and that a detailed engineering study should be undertaken. In circumstances where the forecast cross-product is 50,000 or more or if the maximum railway operating speed is 50 mph or more, the grade crossing warning system should include gates. In low volume areas, guidelines indicate that a grade crossing warning system consisting of warning signals and bells shall be installed if the forecast cross-product is greater than 1,000 and the maximum railway operating speed exceeds 15 mph.

Unrestricted grade crossings for pedestrian or cyclists use only shall have a grade crossing warning system where the maximum railway operating speed exceeds 60 mph; or the maximum railway operating speed exceeds 15 mph and there are two or more tracks at the grade crossing where trains may be passing one another.

The resulting cross-product review, as per the forecasted 2031 AADT volumes and anticipated rail traffic, is summarized in **Table 7.3**. A detailed analysis of the cross-product review is provided in **Appendix F** for further reference.

[13] Canadian Railway-Roadway Grade Crossing Standards (CRRGCS) Draft Report; (Transportation Canada), January 2012.

TABLE 7.3: CROSS-PRODUCT REVIEW

Location	Projected AADT (vehicles/day)	# of Trains (trains/day)	Cross-Product
Spine Road	22,600	2	45,200
Collector Road A	2,000	2	4,000

The analysis confirms that neither a grade-separated crossing nor gates are warranted at the Spine Road or Collector Road “A” rail crossings based on projected future traffic volumes. Should future traffic volumes and/or rail operations increase (i.e. 4 train crossings per day), detailed engineering studies shall be undertaken in order to review the need for gates and/or grade-separated crossings.

Recognizing that the current cross-product estimate is close to the threshold for gates at the Spine Road, it is noted that even a marginal increase in either vehicular traffic or train traffic would satisfy the requirement for gates. In addition, the location of this particular crossing is considered somewhat sensitive in terms of its close proximity to the commercial node, secondary school and high levels of associated pedestrian and cyclist traffic. As such, it is recommended that given the uncertainty in estimating traffic demands for the 2031 horizon, and sensitive characteristics of the adjacent land use, that provision for gates be maintained at the crossing of the OBRY rail line at the Spine Road.

In terms of pedestrian and cycling facilities, the CRRGCS notes that a grade crossing warning system is warranted under the following conditions:

- The maximum railway operating speed exceeds 60 mph; or
- The maximum railway operating speed exceeds 15 mph and there are two or more tracks at the grade crossing where trains may be passing one another.

At this time the maximum railway operating speed is anticipated to be less than 60 mph (96 km/hr) which would indicate that a grade crossing warning system is not likely to be warranted where the multi-use trails cross the rail line. Warning signage and bollards should be satisfactory in terms of providing protection and advance warning when approaching the rail line. If the railway operating speed increases in the future, or should rail operations be expanded and an additional track be provided, the need for pedestrian and cyclist path protection will need to be re-examined.

7.4.3 Rail Crossing Approval Process

Regulation of railway crossings falls within the jurisdiction of the Canadian Transportation Agency (CTA) under the authority of the Canada Transportation Act. In regards to the proposed crossings of the OBRY within the secondary plan, the proponents of the rail crossings must enter into an agreement with the railway owner, to be filed with the CTA for review and approval, pursuant to Sections 100 and 101 of the Act. The work must conform to provisions of the Railway Safety Act and follow the standards set out under the Canadian Railway – Roadway Grade Crossing Standard (2012).

The road crossings of the OBRY rail line will need to be established following the foregoing process and in accordance with CTA standards. The landowners and the Town of Caledon will need to agree on the respective responsibilities for initiating the process, but it is expected that the landowners would initiate these agreements and the Town would review and approve the agreements for each crossing. In the event of a dispute between the proponents of the work and the railway owner, where the parties are unable to reach an agreement, the proponent may apply directly to the CTA for approval.

In order to keep the Town of Orangeville and the OBRY representatives fully informed of the rail crossing plans, meetings to discuss the details of the plan were held on two different occasions as outlined in the Public Consultation section and the related appendices to this report.

7.5 Traffic Calming

7.5.1 Consideration of Traffic Calming Measures

As per current Town of Caledon policy, a traffic management plan is required for all subdivision applications. If determined through the traffic management plan that traffic calming measures are required, a traffic calming plan is to be developed which ensures that the recommended measures are compatible with the community's needs and that any potential negative impacts are minimized. As such, it is recommended that traffic calming techniques be incorporated into the design of all new roadways, where applicable, taking into consideration roadway classification, function, and context of adjacent land uses. Traffic calming is primarily used on residential local and collector streets within an urban area. It may been deemed necessary when street users and/or area residents consider traffic volumes, speed or operational characteristics to be inappropriate for the type of adjacent land use corresponding pedestrian, cyclist and other activities that occur along the street.

It is recognized that traffic calming is not a panacea; as such, a "one size fits all" approach cannot be applied universally throughout a community. The selection, design and implementation of site-specific traffic calming measures are context sensitive and have to be carefully integrated into the transportation system. Traffic calming is generally limited to roadways that are identified as having a high potential for cut-through traffic; in areas adjacent to schools, parks and recreational facilities; and in areas where vulnerable roadway users could be negatively impacted by vehicular movements.

7.5.2 Purpose of Traffic Calming

As defined in the Canadian Guide to Neighbourhood Traffic Calming[14], "traffic calming is the combination of mainly physical measures that reduce the negative effect of motor vehicle use, alter driver behavior and improve conditions for non-motorized street users." Physical measures include vertical and horizontal defections of the roadway as well as obstructions and/or regulations. Ideally, physical measures are self-enforcing, meaning that the calming measure does not require continuous police enforcement in order to be effective. Physical measures, used alone or in conjunction with other measures, are generally effective in reducing vehicle speeds, reducing traffic volumes and presence of cut-through traffic, and reducing conflicts, thereby improving the street environment. However, there are potential negative impacts associated with the implementation of physical traffic calming measures such as negative effect on the mobility of local residents, increases to emergency response times and additional maintenance requirements. The overall objective of a successful traffic calming plan is to determine the best combination of measures that results in a net improvement (both "real" and "perceived") to the quality of life within a neighbourhood at a reasonable cost without severely impacting traffic mobility.

Traffic calming can be either pro-active or reactive. In the case of Mayfield West Phase 2, inclusion of traffic calming techniques will serve to ensure that local collector roadways operate within the parameters of their intended function. The general purpose of implementing traffic calming measures at the onset of development is to achieve one or more of the following objectives:

- **Reduce vehicular speeds**. Many traffic calming measures are implemented in order to increase the motorists' awareness of the function of the street and thereby reduce travel speeds. Excessive speed results in safety concerns as motorists are less likely to stop safely if confronted with situations such as a child running into the street or a cyclist swerving around an obstacle. Excessive vehicle speeds are associated with an increased perceived risk by pedestrians and cyclists, and ultimately detract from the livability of a neighbourhood.

[14] Canadian Guide to Neighbourhood Traffic Calming; (Transportation Association of Canada), December 1998

- **Discourage through traffic**. A number of physical traffic calming measures are used to discourage non-local traffic from travelling on local and collector residential streets, thereby reducing traffic volumes. High traffic volumes are associated with increased conflict risk, congestion, delay, noise and vehicle emissions, all of which detract from the livability of a neighbourhood and discourage pedestrian and cyclist travel.
- **Minimize conflict between street users**. Traffic calming measures are used to reduce conflicts between various street users including motorists, cyclists, pedestrians and others. It is important to note that the separation of street users is not necessarily required in order to minimize conflicts. Reducing vehicle speed and volume, correcting geometric deficiencies and achieving adequate sight lines can all help to reduce conflicts.
- Improve the neighbourhood environment. Traffic calming measures are used to address speeding, through traffic and conflicts, which all impact the livability of a neighbourhood. Inclusion of traffic calming elements at the onset of design provides opportunity to aesthetically enhance the neighbourhood environment through landscape and design features.

As noted in the Canadian Guide to Neighbourhood Traffic Calming, safety considerations should prevail in all aspects of the planning, design and implementation of a neighbourhood traffic calming plan. Designing a safe traffic calming plan requires recognition and knowledge of the limitations and expectations of motorists, cyclists and pedestrians. With this understanding, the keys to street safety – and inherently to a safe traffic calming plan, are good visibility and consistency of design, signing and pavement marking.

In general terms, the result of a traffic calmed community is improved safety through increased motorist awareness of other street users and through reductions in traffic volume, vehicle speeds and conflicts. Safety for all road users can be improved when traffic calming measures are appropriately designed. Sound engineering judgment is required when selecting and designing a traffic calming plan which requires the practitioner to account for the local context and surrounding land use, as well as account for specific factors which may affect safety. Perception of safety is often just as important as actual data regarding safety issues. Providing the implemented traffic calming measure does not result in a false sense of security, the use of traffic calming can make a street "feel" safer, thereby improving the quality of life along the street and within the overall community.

7.5.3 The Traffic Calming "Toolbox"

A wide range of measures are available for use, yet it is imperative to recognize that every situation is unique and there is no "one size fits all" approach which can be universally applied to a community. A combination of local knowledge, technical expertise and careful judgment must be used in order to select a combination of measures that will achieve the desired effects. Table 7.4 summarizes the most commonly utilized traffic calming measures, many of which would be considered suitable for use within the Mayfield West Phase 2 community.

Vertical Deflection

Vertical deflections include speed humps, raised intersections, raised crosswalks (with or without textured surfaces) and sidewalk extensions. Vertical defections generally reduce vehicle speeds with achieving secondary effects of reducing traffic volumes, reducing conflict potential and thereby enhancing the neighbourhood environment.

- Advantages
  - Immediate and direct impact on vehicle speeds;
  - Typically only result in minor impact to local accesses;
  - Physical measures provide support for speed limit reductions with minimal enforcement requirements.
- Disadvantages
  - Costs can be significant;
  - Potential to divert traffic to parallel routes;
  - May increase emergency response times;
  - Generally not appropriate for transit routes;
  - May result in increased road maintenance efforts (i.e. street cleaning, snow plowing, etc.).

It is noted that the Town's current policy prohibits the use of vertical deflection measures on arterial roads and/or primary routes for emergency response agencies.

Horizontal Deflection

Horizontal deflections include curb extensions, curb radii reductions, raised median islands, traffic circles and provision of on-street parking. Horizontal defections generally discourage cut-through traffic and/or through traffic to varying degrees. Measures which prohibit access (i.e. raised median islands) achieve greater reductions in traffic volumes. Some measures may also achieve secondary speed calming benefits and reduce conflict potential.

- Advantages
  - Immediate reduction in cut-through traffic;
  - Reduction in vehicular volumes and speeds;

- Physical measures (i.e. raised Median Island) can serve as pedestrian refuge areas.

- Disadvantages
  - Costs can be significant based on measure selected;
  - Potential to divert traffic to parallel routes;
  - May impact emergency response times;
  - Generally not recommended for transit or truck routes;
  - May result in elimination of on-street parking near intersections.

Obstruction

Use of traffic calming measures to obstruct specific vehicle movements. Typically used at intersection, but may also be applied in mid-block locations to discourage cut-through or through traffic. Measures include full or partial closures of a roadway, access control through the use of right-in / right-out islands, raised median through the intersection and intersection channelization. Obstruction measures are intended to deter motor vehicle traffic only and are not intended to obstruct bicycle or pedestrian access.

- Advantages
  - Immediate reduction in cut-through traffic;
  - Secondary reduction in vehicular volumes and to a lesser extent speed.
- Disadvantages
  - Restricts local access (residential and commercial);
  - Potential to divert significant levels of traffic to parallel routes;
  - Negative impact to emergency response times;

Additional measures used to support traffic calming efforts may include, but are not limited to, the following:

- Reduced right-of-way widths throughout the collector and local road system in order to provide a visual perception of narrowing which helps to reduce travel speeds;
- Implementation of urban design elements including reduced building setbacks and inclusion of street trees within the boulevard area in order to contribute to the development of a visually “contained” street;
- Installation of visual treatments which may include entrance or gateway features including neighbourhood identification islands;
- Use of special pavement markings and/or signage;

- Changes to the roadway surface texture and/or colour; and
- Changes to the travelled portion of the roadway through pavement and/or lane narrowing.

7.5.4 Applicability

The selection of a single or combination of measures, used in conjunction with other roadway design features, results in varying effectiveness in calming traffic speeds, lowering vehicular volumes and reducing cut-through traffic. **Table 7.5** summarizes the range of applicability of traffic calming and traffic management measures including the use of signage as a primary means to calm traffic.

In general, each measure is most effective when it is applied in appropriate context. If measures are applied at locations where use is not recommended, the effectiveness of the measure in relation to the context of the adjacent transportation system is expected to be minimal.

Careful consideration is required prior to the installation of traffic calming measures due to the fact that inappropriate use could result in undermining the continuity and connectivity principles that have formed the basis of the roadway network for Mayfield West Phase 2 and could disrupt the balance that is achieved with the intended function of the roadway network. It is important to note that the implementation of traffic calming measures along arterial and higher volume collector roadways may impair the function of the roadway as a carrier of moderate traffic volumes and may interfere with the delivery of future transit service. Brampton Transit notes that traffic calming measures, particularly horizontal and/or vertical deflections should be avoided on roads planned for future transit routes.

TABLE 7.4: TRAFFIC CALMING MEASURES

Type	Measure	Description
Vertical Deflection	Speed Hump	A raised area of roadway which deflects both the wheels and frame of a traversing vehicle.
	Raised Intersection	An intersection, including crosswalks, constructed at a higher elevation than the adjacent roadway.
	Raised Crosswalk	A marked pedestrian crosswalk at an intersection or mid-block location constructed at a higher elevation than the adjacent roadway.
	Sidewalk Extension	Extension of the sidewalk through a local street intersection.
Horizontal Deflection	Curb Extension	Horizontal intrusion of the curb into the roadway resulting in a narrower section of roadway. Reduces pedestrian crossing distance, improves sight distance and intersections and reduces conflict potential.
	Traffic Circle / Mini Roundabout	Raised island located in the centre of an intersection which requires vehicles to travel through the intersection in a counter-clockwise direction resulting in reduced speeds and reduced right-angle conflict potential.
	Raised Median Island	Elevated median island constructed on the centreline of a two-way road to reduce the overall width of the adjacent travel lanes. Use of landscaping elements helps to visually narrow the lane and reduce vehicle speeds.
	Curb Radius Reduction	Reduced intersection corner radii (3.0 – 5.0 metres) to reduce speed of turning vehicles.
	On-Street Parking	Reduction of roadway width by permitting vehicles to park adjacent to the curb.
Obstruction	Directional Closure	Curb extension or vertical barrier extending to the centre of the roadway, effectively prohibiting one direction of traffic.
	Right-in / Right-out Island	Raised triangular island at intersection approach which obstructs left-turns and through movements to and from the intersecting street or driveway.
	Raised Median through Intersection	An elevated median island located on the centreline of a two-way roadway through an intersection which prevents left-turns and through movements to and from an intersecting roadway.
	Intersection Channelization	Raised islands used to obstruct specific movements and physically direct traffic through an intersection.

TABLE 7.5: APPLICABILITY OF TRAFFIC CALMING AND MANAGEMENT MEASURES

Traffic Calming Measure		Local Road	Low-Volume Collector	Other Collector	Arterial
Vertical Deflection	Speed Hump	✓	ⓘ	✕	✕
	Raised Intersection	✕	✕	ⓘ	ⓘ
	Raised Crosswalk	✕	✓	✓	ⓘ
	Sidewalk Extension	✓	✕	✕	✕
Horizontal Deflection	Curb Extension	✓	✓	✓	✓
	Traffic Circle / Mini Roundabout	✓	✓	✕	✕
	Raised Median Island	✕	✓	✓	✓
	Curb Radius Reduction	✓	✓	✓	ⓘ
	On-Street Parking	✓	✓	✓	ⓘ
Obstruction	Directional Closure	✓	ⓘ	✕	✕
	Right-In / Right-Out Island	✓	✓	✓	✓
	Raised Median through Intersection	✕	✓	✓	ⓘ
	Intersection Channelization	✓	✓	ⓘ	ⓘ
Signage	Traffic Calmed Neighbourhood	✓	✓	ⓘ	ⓘ
(When used primarily for Traffic Calming purposes)	Turn Prohibited	ⓘ	ⓘ	ⓘ	ⓘ
	Through Traffic Prohibited	ⓘ	ⓘ	ⓘ	ⓘ
	One-Way	ⓘ	ⓘ	✕	✕
	Maximum Speed	✕	✕	✕	✕
	Stop	✕	✕	✕	✕
	Warning Signs (children playing, school area, etc.)	ⓘ	ⓘ	ⓘ	ⓘ

✓ **= Appropriate Measure** ⓘ = Use with Caution ✕ = Not Recommended

7.5.5 Candidate Locations

Reduced potential for increased traffic and excessive speeds have been inherently incorporated into the overall design of the Mayfield West Phase 2 road network, inclusion of transit supportive development and accommodation and encouragement of active modes of transportation. However, a number of locations have been identified as potential candidate traffic calming areas given the anticipated land use and forecast traffic volumes. **Table 7.6** summarizes a preliminary selection of candidate traffic calming areas.

TABLE 7.6: CANDIDATE TRAFFIC CALMING LOCATIONS

Location	Measure	Rationale
McLaughlin Road - Northerly Limits	Traffic Circle Mini Roundabout	Serve as a gateway feature to highlight change in environment (i.e. rural to urban transition) and reduce traffic speeds
McLaughlin Road - North of Spine Road	Curb Extensions Textured Crosswalk	Enhanced pedestrian crossing in High Density residential area
McLaughlin Road – Spine Road	Textured Crosswalk Streetscape Design	Enhanced crosswalks and streetscape within the Village Centre
Spine Road – High School Entrance	Textured Crosswalk Enhanced Pedestrian Signals	Enhanced pedestrian crossing at entrance to High School
Collector Road F extension – South of Spine Road	Speed Humps	Discourage through traffic and excess vehicle speeds on Robertson Davies Drive
Collector Road A – Collector Road D	Curb Extensions Textured Crosswalks	Enhanced pedestrian crossing adjacent to Elementary School 2
Collector Road B – Collector Road C	Curb Extensions Textured Crosswalks	Enhanced pedestrian crossing adjacent to Elementary School 1
Collector Road B – Collector Road D	Curb Extensions Textured Crosswalks	Enhanced pedestrian crossing adjacent to Elementary School 3

The design and implementation of traffic calming measures shall be subject to the design specifications and installation guidelines contained in the Canadian Guide to Neighbourhood Traffic Calming and the Town of Caledon Urban Traffic Calming Procedure Manual[15] and should be examined further as part of future detail design activities.

Roundabout

The installation of a mini-roundabout at the northerly limits of McLaughlin Road has been recommended as a tool to help emphasize the change in environment, alerting motorists (particularly those traveling southbound) to the rural-urban transition, thereby affecting driver expectancy and achieving speed reduction benefits.

[15] Town of Caledon Urban Traffic Calming Procedure Manual; (prepared by the Town of Caledon Public Works & Engineering Department), May 2004.

Enhanced Pedestrian Intersections

As noted in **Table 7.6**, a number of intersections have been identified as “enhanced pedestrian crossings” where additional emphasis and traffic calming features are supported. The enhanced pedestrian intersections have been identified based on close proximity to significant pedestrian generators and need for strong interconnection between the road network and supportive facilities such as bike lanes, transit routes and off-road trails.

Enhanced pedestrian intersections are intended to be physically and visually defined to identify pedestrian routes across vehicular routes. The following elements, either standalone or in combination, should be considered as part of the design of enhanced pedestrian intersections:

- Enhanced pedestrian signals including but not limited to:
  - Intersection Pedestrian Signals (IPS) at crossing locations that experience a high volume of pedestrian movements, particularly vulnerable users (i.e. school aged students, senior citizens’, etc.);
  - Illuminated “animated eyes” signals to remind pedestrians to check the approach before crossing;
  - Countdown walk signals in order to alert pedestrians to the release of opposing traffic; and
  - Pedestrian actuated flashing overhead beacons which could be used in conjunction with school crossing locations in order to heighten awareness to the possible presence of pedestrian movements.
- Use of curb extensions (“bump outs”) as horizontal intrusions of the curb into the roadway, resulting in a narrower section of roadway which improves pedestrian visibility and reduces crossing distances;
- Use of textured and/or coloured crosswalks that contrast with the adjacent roadway (i.e., stamped concrete or textured/coloured asphalt) in order to better define the crossing location for pedestrians, emphasize pedestrian priority and reduce potential for pedestrian-vehicle conflicts;
- Use of raised crosswalks which not only improve pedestrian priority and visibility, but also have the added benefit of reducing vehicle speeds; and
- Clear signage for pedestrians and cyclists at pedestrian crossings in regards to the need to stop for vehicular traffic on the roadway.

8 Transit Plan

Recognizing that public transit is an important component of the overall transportation strategy for Mayfield West Phase 2, a conceptual transit plan has been developed which provides the basis for an efficient internal transit network which utilizes the proposed grid pattern of arterial and collector roadways to support the extension of existing and planned transit service within Mayfield West Phase 2. The proposed transit plan is illustrated in **Figure 8.1** and has been designed based on the goal of providing sustainable and efficient transit access to key nodes within the study area, particularly the Village Centre, Regional Commercial Centre and related employment nodes, protecting for future transit expansion when needed.

The development and implementation of an efficient and accessible transit system is critical in achieving the transit mode share targets that have been proposed for development areas within Mayfield West Phase 2 and is an important component in the overall promotion of alternate travel modes and reduced reliance on the personal automobile. As such, a transit hub is proposed as part of the development and is to be located west of Hurontario Street, conveniently situated within the Regional Commercial Centre, which is expected to accommodate both local and inter-regional transit services. While most transit service within the area is likely to be extensions of existing Brampton Transit routes, a separate local / community service may be a viable option, subject to necessary service agreements.

8.1 Transit Hub

Transit service within the Mayfield West Phase 2 lands will be facilitated and intensified through the development of a transit hub. The development of the proposed transit hub provides for possible future connection with local, inter-regional and GO Transit bus services, while providing efficient and direct service to the adjacent Regional Commercial Centre and Employment lands.

The hub will serve as a connection between Brampton Transit, Züm BRT, and GO Transit and is an obvious terminus for future expansion of the Züm Main Street BRT service. While the detailed design of the proposed transit hub is beyond the scope of this study, a preliminary design concept is illustrated in **Figure 8.2**. Key components of the proposed design include:

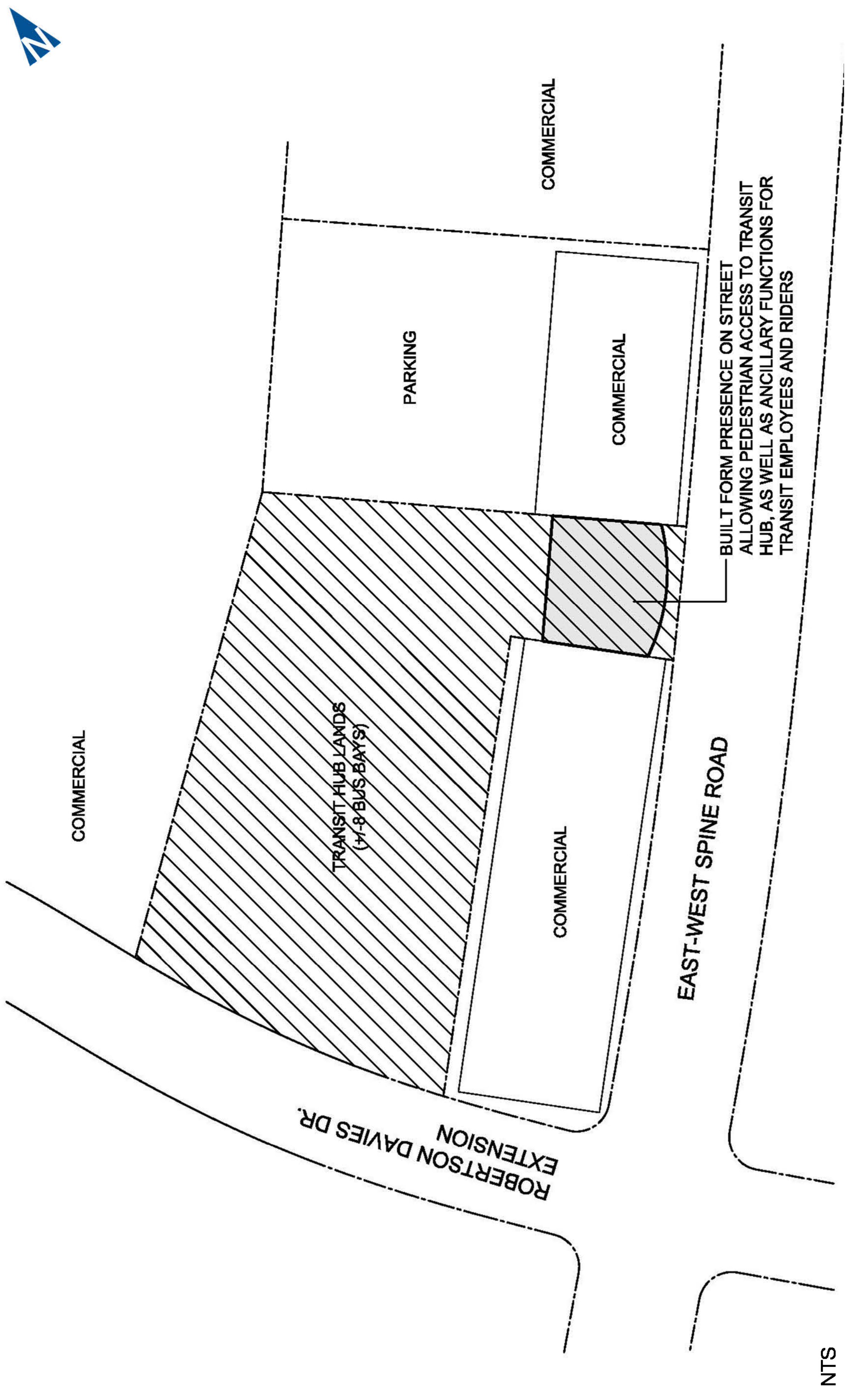
- Boarding and platform areas designed in a way that will accommodate separate bus routes;
- Passenger waiting areas which are protected from the elements and possibly other related amenities;
- Safe and convenient pedestrian access to and from the commercial and employment centres;
- Accommodation for real-time passenger information systems;

- Accommodation for operator comfort facilities;
- Secure storage facilities for bicycles; and
- Vehicular access to/from the Spine Road via restricted-moves access (right-in / right-out) and vehicular access to/from Collector Road F via all-turns access.

Transit Plan

Figure 8.1

Mayfield West Phase 2 Secondary Plan Transportation Master Plan
101380P



Transit Hub Preliminary Concept

Figure 8.2

paradigm TRANSPORTATION SOLUTIONS LIMITED

Mayfield West Phase 2 Secondary Plan Transportation Master Plan
101380P

8.2 Future Service

8.2.1 Local Transit

Currently, the Town of Caledon does not provide local transit service. However, local transit is provided in select areas of the Town via Brampton Transit, as per a service arrangement with the Town of Caledon (i.e. extension of Brampton Transit Route 30 Airport Road has been extended north of Mayfield Road to service existing industrial lands).

Brampton Transit has confirmed that as part of the long-term planning horizon (beyond 2016), it is expected that the primary corridor routes along McLaughlin Road and Chinguacousy Road will be extended to Mayfield Road, along with the implementation of a number of new and/or realigned routes within the collector road network south of Mayfield Road.

The proposed widening of McLaughlin Road, in conjunction with the proposed network of arterial and collector roadways, supports the incremental expansion of transit service within Mayfield West Phase 2. While the final determination of preferred routes for transit service is a separate initiative to be undertaken by Brampton Transit, in consultation with the Town of Caledon, the Mayfield West Phase 2 roadway network has been planned in a way that supports an internal transit network through the extension of existing and future Brampton Transit routes.

Routes 4-Chinguacousy, 3-McLaughlin, and 25-Edenbrook can reasonably be extended northerly to serve Mayfield West Phase 2 while providing key linkages with the Mount Pleasant and Brampton GO Stations, as well as both the Brampton Gateway and Downtown Brampton Transit Terminals. Furthermore, there is potential for an additional route to extend west from Mayfield West Phase 1 via the Spine Road. It is therefore recommended that all new collector roadways be designed to accommodate future transit service, and planned accordingly.

8.2.2 Züm Main Street BRT

Although identified as a long-term service strategy, the proposed transit hub is anticipated to serve as a terminus for the planned future extension of the Züm Main Street BRT which is currently being investigated by the City of Brampton. The extension of Züm service into Mayfield West provides for linkages with key transit nodes including the Mississauga City Centre Terminal, Brampton Gateway Terminal, Downtown Brampton Terminal, Main Street Züm Station and the Brampton GO Station. The potential extension of Main Street Züm Service would also serve as a valuable connection for residents of Mayfield West to the planned future LRT which is proposed to service the Hurontario Street corridor, terminating at the Brampton GO Station, thereby providing key linkages to Brampton and Mississauga.

8.2.3 GO Transit

In terms of inter-regional transit, Metrolinx has indicated that the planned transit hub could accommodate stops by the 37 – Orangeville bus route and the 32B – Brampton Trinity Commons bus route. No additional GO Transit routes have been identified within the Study Area at this time.

8.3 Design Guidelines

Recognizing that a comprehensive transit service design will be required to be undertaken by the Town to facilitate new services, the following guidelines are provided for consideration at the subdivision and/or site plan approval stage in order to encourage future use of transit within the community:

- Bus routes should be located on arterial and collector roadways only. Bus routes should therefore be avoided on local residential streets and cul-de-sacs. All arterial and collector roadways within Mayfield West Phase 2 shall be designed to accommodate local bus operations;
- A minimum 3.5 metre curb lane is recommended on all roads where future transit service is anticipated;
- A minimum 15 metre curb radii is recommended at all collector and arterial intersections in order to meet industry standards required to accommodate 12 metre urban buses;
- Where appropriate, consideration should be given to locating bus stops on the near side of the intersection, allowing passengers to board and alight while the bus is stopped at the intersection, thereby minimizing interference to roadway operations and resulting in safer pedestrian movements;
- Where a heavy right-turn movement occurs, or the route requires a left turn, a near side bus stop may not be feasible. In these circumstances, a far side stop location is preferred as the bus can by-pass the right-turn queue and minimize impact to intersection operations;
- Mid-block bus stops are generally limited to site-specific locations where neither near nor far-side bus stops are deemed feasible. The use of mid-block bus stops requires additional distance for manoeuvring and results in the requirement for parking restrictions adjacent to the bus stop. Mid-block bus stops may also encourage jaywalking as the walking distance to nearby intersections is increased.
- Spacing of bus stops will ultimately depend on the pattern of intersections and proposed routes. Typically, stops within the community should be spaced at a distance of approximately 400 metres;

- In general terms, the use of bus bays should be avoided for regular bus drop-off and pick-up stops. The use of bus bays may be considered at layover / transfer points, and at locations where specific traffic hazards exist; and
- Parking should be prohibited approximately 35 metres from the crosswalk in order to accommodate near and far side bus stops (inclusive of manoeuvring room and bus parking).

9 Pedestrian and Cycling Plan

9.1 Background and Objectives

Walking and cycling are considered a key indicator of a community's liveability. A community that promotes and encourages waking and cycling through relevant and progressive land use and application of supportive transportation and environmental policies can expect an enhanced quality of life for residents. A community's liveability also has a profound impact on attracting business and tourism. The Peel Region's Director of Chronic Disease and Injury Prevention reportedly stated that "people are aware of the benefits of physical activity but it's the environment in which we live that presents the barriers".

Mayfield West Phase 2 presents an opportunity to design and implement a walking and cycling-friendly community through the careful planning and integration of existing external facilities, similar to that of the integration of roadway and transit facilities. The Mayfield West Phase 2 Secondary Plan area currently consists of open agricultural lands with no existing walking or cycling infrastructure. The nearest signed cycling route is located on Old School Road, although there has been an effort in previous years to initiate the development of a pedestrian and cycling network within the larger geographical area.

The City of Brampton currently has a number of north-south trail systems linking various parks and destinations. In 2006, the City of Brampton revised the Pathway Master Plan and placed a greater emphasis on the construction of multi-use boulevard trails and off-street trails compared to on-road bike lanes. Existing trails relevant to Mayfield West Phase 2 include the Etobicoke Creek Trail which runs from Downtown Brampton to a point north of Mayfield Road (east of Highway 10); and the planned Fletcher Creek Trail in the adjacent Mount Pleasant subdivision which also includes a proposed north-south bike lane and trail system between Chinguacousy Road and McLaughlin Road.

Peel Region has constructed a number of multi-use boulevard trails within regional roads right of way and intends to construct multi-use boulevard trails as part of the reconstruction of Mayfield Road. In the interim, Mayfield Road is planned to be widened to 4 travel lanes with provision of a 3.0 metre multi-use boulevard trail located on the south side of the roadway and a paved shoulder on the north side. However, it is noted that the recently completed Peel Region's Active Transportation Plan[16] recommends consideration of on-road bike lanes versus off-road multi-use boulevard trails.

[16] The Region of Peel's Active Transportation Study: Active Transportation Plan; (prepared by IBI Group), November 2011.

The key objectives of the pedestrian and cycling strategy as related to Mayfield West Phase 2 are summarized as follows:

- Promoting integrated pedestrian and cycling facilities as a sustainable alternative to vehicular transportation;
- Accommodating cyclists with differing cycling skills and attitudes towards motorized traffic and different trip purposes;
- Establishment of an inter-connected trail network that extends to the Brampton pathway system and the Caledon Trailway, serving key destination within Mayfield West Phase 2 and adjacent areas; and
- Promoting safe walking and cycling by adhering to current and proposed Ontario traffic legislation.

Through consideration and an iterative refinement process of developing an interconnected pedestrian and cycling strategy, a number of issues, constraints and opportunities have been identified:

- Requirement to accommodate safe and convenient pedestrian and cyclist movements across Highway 410 in order to access the Valleywood subdivision;
- Requirement for seamless integration of on and off-road facilities;
- Safety concerns with respect to treatment of multi-use trails at intersections; and
- Provision of safe routes to school.

As stated in the Town of Caledon Trails Master Plan[17], the Town's vision is to "achieve a high quality and variety of trails which access and connect points of interest while protecting, preserving and enhancing community health and the environment".

9.2 Guiding Principles

Keeping with the goals of achieving a community that has an emphasis on sustainable transportation and encourages an active lifestyle, and in recognition of the existing constraints and public desire to achieve a pedestrian and cyclist-friendly community, the following principles have been developed in order to guide the planning, implementation and management of n integrated pedestrian and cycling network within Mayfield West Phase 2, consisting of both on and off-road facilities which are suited to meet the needs of all users:

- Consider the differing cycling skill and comfort levels of all users in relation to vehicular traffic;

[17] Town of Caledon Trail Master Plan; March 2011.

- Develop bicycle routes that lead to key destinations such as recreation centres, parks, libraries, schools, shops, employment centres, etc.;
- Ensure safe access to, and provide end-of-trip bicycle facilities at the proposed Transit Hub;
- Consider the use of “special measures” in order to overcome physical constraints and reduce the potential for safety conflicts;
- Provide strong connections to adjacent communities and existing facilities in Caledon and Brampton; and
- Aim to provide trails which follow attractive and scenic routes, where feasible, and provide for trail facilities along woodlot edges.

9.3 User and Facility Characteristics

9.3.1 User Characteristics

Pedestrians and cyclists can be classified according to trip types (as summarized in **Table 9.1**):

TABLE 9.1: USER CHARACTERISTICS

User	Characteristics	Facility Needs
Pedestrians	Leisure walkers Joggers Runners Hikers	Ample sidewalks Walkways Trails
Cyclists	Commuters Utilitarian Recreational	On-road bike lanes Shared roadways Trails

Cyclists can also be classified into different groups according to skill level and attitudes towards vehicular traffic:

- Young and novice adult cyclists – somewhat fearful of motorized traffic, typically cycle on local neighbourhood street and trails;
- Casual recreational cyclists – concerned when riding adjacent to motorized traffic and generally prefer dedicated on-road bicycle lanes and off-road trails; and
- Confident utilitarian and recreational cyclists – competent in “sharing the road” with motorized traffic, however appreciate on-road bicycle lanes and/or wide “shared use” curb lanes.

9.3.2 Facility Characteristics

Similar to how roads are classified according to land use, access and volume; pedestrian and cycling facilities can be classified by type of facility, user that is served by the facility, and general uses permitted. Cyclists are generally permitted on all roadways, except freeways, with specific prohibitions. Adjacent traffic volume, operating speeds, percentage of truck traffic and the presence of on-street parking are all factors that determine the selection of pedestrian and cycling facility types for a specific roadway.

All travel has risks associated with using on-road and off-road facilities. Under the Ontario Highway Traffic Act (HTA) bicycles are considered vehicles and cyclists have the same duties and responsibilities as motorists when operating a vehicle on a public roadway. Cyclists are allowed to ride on any street in a community unless legally prohibited; however, some streets are much more conducive to bicycling than others due to the presence of cycling facilities and / or low traffic volumes.

In Ontario, users of the two versions of electric-assist bikes (E-bikes) are permitted to travel anywhere bicycles are permitted, given that the maximum allowable speed is 32 km/h. E-bikes require pedals but are not required to be propelled by muscular power. Municipalities have the ability to pass specific by-laws in order to restrict the scooter type of E-bike due to safety concerns surrounding the potential speed difference between cyclists and pedestrians.

Current legislative and supporting regulatory amendments to the Highway Traffic Act includes requiring all drivers to maintain a distance of one metre when passing cyclists, allowing bicycle traffic control signals and contra-flow bike lanes (Bill 173 - Keep Ontario Roads Safe Act, 2014).

Education programs and enforcement of the rules of the roads are key components in improving cycling skill development and safety awareness, leading to a reduction in collisions and an overall shift to cycling as a viable means of transportation. Good design results in creating safe and attractive facilities, thereby encouraging people to ride their bicycles more often.

Sidewalks, bike lanes, paved shoulders and various types of off-road trails can generally be found throughout the Province of Ontario. Some different types of cycling facilities have been introduced to North America over the past few decades which have been adapted from Western European countries, notably The Netherlands and Denmark. However, these facilities may not be necessarily appropriate in Ontario due to the much higher level of cycling participation, cycling skill education (which is taught as part of the elementary school curriculum), and cycling traffic enforcement in European countries.

Sidewalks & Crosswalks

Sidewalks should provide a corridor for pedestrians to navigate through the urban environment. The sidewalk width, surface material, banding, colour and texture are all important elements used to support accessible pedestrian movement along the street. It is desirable to provide 1.5 to 2.0 metre sidewalks on both sides of the street. Where adjacent boulevard width is less than 1.75 metres, boulevards should be hard surfaced using similar paving materials as the sidewalk in order to maintain a continuous space that is conducive to pedestrian movement and meets accessibility standards for the design of public spaces.

Sidewalks should be constructed using concrete given its durability for long-term maintenance. A combination of banding, textures and/or colour should be used on walkway surfaces in order to emphasize intersections, driveways and directional changes. Sidewalks should extend across all driveways crossings in order to convey pedestrian priority and be visually extended through intersections through the use of paving differentiation and/or surface markings. Sidewalks should be unencumbered from boulevard site furnishings in order to maintain clear pedestrian paths at all times.

Crosswalks across streets should be a minimum of 3.0 metres in width, extending between curbs directly across the roadway, preferably with provisions of an interior field which highlights the pedestrian route, accented on either side by line markings. Curbs should be dropped or rolled in order to accommodate assisted mobility devices and should contrast the adjacent road surface for visibility and accessibility purposes. Materials in which crosswalks are to be constructed can include textured asphalt or stamped concrete in order to create a distinct crosswalk surface. Surface treatments should differentiate in colour and/or texture in order to contrast with the roadway.

Shared Roadway

Wide curb lanes allow motorists to pass cyclists without interference. However, provision of a widened curb lane also tends to lead to greater vehicle speeds. In recent years, “sharrows” (shared use arrow) have been painted on roads to encourage cyclists and motorists to "share the road” while attempting to visually narrow the traveled portion of the roadway. They are generally intended for use on roadways with lanes just wide enough for side-by-side motor vehicle and bicycle operation. Where curb lanes are too narrow for side-by-side operation, “sharrows” are generally painted in the middle of the lane.

Shared lanes improve the awareness of road sharing and are intended for retrofitting existing road configurations. Less confident cyclists tend to avoid these roads. Shared lanes designated by use of the “sharrow” have no place in new urban design areas such as that envisaged for Mayfield West Phase 2 and are not considered an appropriate substitute for proper bicycle lanes.

Some streets with parking prohibitions during peak hours tend to function as wide curb lanes, permitting cyclists to share the lane with motor vehicle traffic. During the remainder of the day (off-peak periods), cyclists share the space with parked cars which results in an increase in potential conflicts (i.e., “dooring”, inattentive car door opening). The proposed HTA amendment legislation includes significant increased fines for “dooring” convictions.

Bike Lanes

Bicycle lanes are typically 1.5m to 2.0 m wide and designated by pavement markings and signage for exclusive use by cyclists. Motor vehicles are not allowed in the bicycle lane except near intersections to complete a right turn. A painted buffer is appropriate on the Spine Road due to the high traffic volumes

To increase awareness and visibility at intersections, the stop line in the bicycle lane should be ahead of the stop line in the adjacent traffic lanes. A variation of the advance stop line is the advanced stop box or bike box installed in some Ontario municipalities is. The bike box is a marked and signed queue box in advance of the stop line of all lanes at an intersection. It allows left turning cyclists to be in front of motor vehicles when the traffic light is red. In essence it is an operational measure that could be installed later since its markings would not alter the intersection design.

Collision data in various Ontario municipalities indicates that a high number of motor vehicle / cyclist collisions tend to occur at driveways and intersections with or without crosswalks and traffic signals. Multi-use boulevard trails and two-way bicycle lanes are conducive to this type of collision due to poor visibility, lack of attention and awareness by motorists and cyclists. This type of design is not recommended by either the MTO or TAC except in exceptional cases (i.e., on bridges and separated from motorized traffic by delineators, concrete barriers and/or wide vegetated boulevards, and require special design considerations for their terminus.

Trails

The trail network proposed throughout Mayfield West Phase 2 includes a combination of multi-use, open space and greenway trails with a desired width ranging from 3.0 to 4.0 metres. The greenway and open space trails are intended to serve as a recreational multi-use trails which provide key connections to the existing Brampton Trail System as well as the Town of Caledon Trailway, as well as provide opportunity for natural surveillance.

Trail design should include provision of a landscaped edge and should be constructed using concrete or asphalt surfaces and be visually different from sidewalk surface materials in terms of texture and/or colour. Wayfinding signage should be considered as part of trail design (either trail side freestanding signs or wayfinding incorporated as part of the trail surfaces) and should be strategically located throughout the length of the trail as well as located at key locations for decision-making along the route.

A comparative review of cycling facilities is summarized in **Table 9.2** which has been utilized in the decision making process of selecting appropriate cycling facilities for Mayfield West Phase 2. **Table 9.3** summarizes the design standards of key facilities that are proposed as part of the Mayfield West Phase 2 development.

TABLE 9.2: COMPARATIVE REVIEW OF CYCLING FACILITIES

Facility	Advantages	Disadvantages	Potential Hazards	Mitigation
Bike Lanes	Visual separation Increased awareness Easy to pass Low cost	Additional maintenance cost	Potential conflict with right-turning vehicles Vehicles may park in bike lanes “Dooring” Straying motorists	Ensure adequate maintenance Use of coloured pavement Delineation of a forward stop bar Prohibit parking Design as per OTM Book 18 – Bicycle Facilities
Buffered Bike Lane	Greater shy distance Perceived as “safer”	Slightly higher cost compared to bike lanes	Potential conflict with right-turning vehicles On-street parking may obstruct flow	Ensure adequate maintenance Use of coloured pavement Delineation of a forward stop bar Prohibit parking
Raised Bike Lane	Increased comfort for cyclist Perceived as “safer” due to separation from motorized traffic	High construction and maintenance costs	Potential for cyclist to fall off of curb Potential conflict with right-turning vehicles May be used by e-bikes or scooters	Truncate bike lane in advance of intersections Use of coloured pavement for street level sections
One-Way Cycle Track *(Street Level with Physical Barrier)*	Increased comfort for cyclist Perceived as “safer” due to separation from motorized traffic	High construction and maintenance costs Additional right-of-way required Increased motor vehicle speeds	Poor visibility at intersections Wrong-way cycling Use by pedestrians May be used by e-bikes or scooters	Truncate cycle track in advance of intersections Use of coloured pavement for street level sections Restrict right-turn on red movements Provide widened sidewalks
Two-Way Cycle Track *(Street Level with Physical Barrier)*	Increased comfort for cyclist Perceived as “safer” due to separation from motorized traffic	High construction and maintenance costs Additional right-of-way required Increased motor vehicle speeds Increased conflict potential between turning vehicles	Poor visibility at intersections Use by pedestrians May be used by e-bikes or scooters Potential to increase conflict points for two-way streets	Provide separate bicycle traffic signals Provide widened sidewalks Access management to limit number of intersections and driveways Provide “cross-ride” cyclist crossings

TABLE 9.3: PEDESTRIAN AND CYCLING FACILITY TYPES AND DESIGN STANDARDS

Facility Type	Characteristics	Design Standards	
		Minimum Standard	Desired Standard
Sidewalks	Continuous hard-surfaced facilities used to accommodate pedestrian travel adjacent to the roadway; Designed to allow for two people to walk side-by-side in one direction; Used to establish direct connections between neighbourhoods, commercial centres and places of employment.	Minimum standard width of 1.5 metres; A minimum 2.0 metre boulevard is advisable between the roadway and sidewalk.	Increased width of 2.0 metres is desired on roadways that have connections to schools, parks, open spaces and greenway systems as well as adjacent to commercial developments.
Walkways Pathways	Provided as pedestrian linkages between neighbourhoods or alleys in commercial areas.	Minimum standard width of 1.5 metres.	Desired width of 3.0 metres in order to accommodate a variety of users.
Trails	All trails other than hiking trails shall be hard-surfaced in order to accommodate a variety of users; Intended users include pedestrians, cyclists, in-line skaters, etc.	Minimum standard width of 3.0 metres; Mid-block trail crossings of roadways should be located 60 to 120 metres from the nearest traffic signal.	Increased width of 3.5 to 4.0 metres is desirable where usage is high.
Multi-Use Boulevard Trails	2-way multi-use paved trails located within the boulevard on one side of an arterial roadway (Peel Region / City of Brampton).	Minimum standard width of 2.5 metres on both sides of the roadway.	Desired width of 3.0 metres; To be designed consistent with OTM Book 18 – Bicycle Facility standards.
Shared Lanes	Shared lanes are commonly signed as “Bicycle Routes” where both vehicles and cyclists share the same travel lane. Typically located on residential and rural roads where ROW is limited; Suitable on two-lane local roadways with 3.5 metre lanes and AADT volumes < 800 – 1,000 vehicles per day.	Minimum standard curb lane width of 4.25 metres for wide curb lane with AADT volumes < 2,000 – 3,000 vehicles per day.	Widened lanes are preferred (5.0 metres) which allows for a 1.5 metre bike lane.
Bicycle Lanes	Delineated on-road facilities that separate motor vehicles from cyclists; Buffered bike lanes may be considered on roads with high volumes of vehicular traffic;	Minimum standard bike lane width of 1.5 metres (measured from the edge of gutter pan); Adjacent on-street parking stalls should be a minimum of 2.2 metres wide; Buffered strips should be between 0.5 to 1.0 metres (painted) in order to provide a separation between a traffic lane and a bike lane.	Desirable width of 1.8 metres; To be designed consistent with OTM Book 18 – Bicycle Facility standards.
Paved Shoulders	Provided on rural roads to enhance the cycling experience and reduce potential for passing conflicts between motor vehicles and cyclist, and lower maintenance costs.	Minimum standard width of 1.5 metres (measured from edge of traffic lane).	1.8 metre pave shoulder is considered desirable.

9.4 Cycling and Trails Plan

The Mayfield West Phase 2 Cycling and Trails Plan was developed through an iterative approach which considered the needs and opinions of Town staff, landowners and other interested parties. The resulting Cycling and Trails Plan is illustrated in **Figure 9.1** and has been developed in conjunction with the adopted framework plan (2013).

9.4.1 Cycling Plan

Key components of the Cycling Plan are summarized as follows:

- The preferred location for bike lanes are along collectors roadways since these roads generally carry lower traffic volumes than arterial roadways and provide direct property access;
- The resultant road network achieves pedestrian and cyclist mobility by way of a grid pattern of collector and local roadways. There are however two areas where cyclists and pedestrians may be required to utilize the arterial road network:
    - Given that there are no continuous north-south collector roadways located between McLaughlin Road and the Orangeville-Brampton Railway (OBRY) rail line located east of the proposed Secondary School, cyclists destined to the Transit Hub/Commercial area would therefore be required to utilize McLaughlin Road and the Spine Road in order to access the Transit Hub;
    - In the east section of the Spine Road (east of the proposed Secondary School), a natural barrier is created by the presence of the OBRY rail line which results in cyclists and pedestrians being required to travel alongside high volumes of vehicular traffic.

The development of an accessible, interconnected trail network is therefore required in order to accommodate pedestrians and cyclists, in particular, casual cyclists;

- Given the increased volume of vehicular traffic anticipated throughout the network of collector streets, 1.5 metre on-road bike lanes are to be standard, increasing to 1.8 metre on-road bike lanes for arterial roadways with a section of the Spine Road (from Collector Road D to Collector Road F) requiring 2.0 meter on-road bike lanes due to the higher volume and speed of adjacent vehicular traffic;
- On-road bike lanes are not proposed along the Spine Road east of Collector Road F due to the high volume of turning movements at the commercial node and the Highway 410 / Valleywood Interchange. The omission of on-road bike lanes through this section is subject to the timely construction of a pedestrian / bicycle

bridge which will link Collector Road A and the Valleywood Subdivision;

- The network achieves mobility for pedestrians and cyclists by way of a grid pattern of wide curb lanes and/or bike lanes located along collectors, local roadways and trails. The majority of local streets have sufficient road right-of-way widths and low traffic volumes which is considered conducive for shared lanes;
- The Region of Peel's current design plans for Mayfield Road consist of an interim 4-lane cross section with provision for a 3.0 metre multi-use boulevard trail on the south side and a paved shoulder on the north side. Review of this design has noted that the cycling facilities, as proposed, may result in cyclists traveling the wrong way along the paved shoulder;
- Multi-use boulevard trails are generally not recommended but seem appropriate for Mayfield Road subject to some conflict reducing measures including:
  - The construction of a 3.0 multi-use boulevard trail on the north side from Chinguacousy Road to Robertson Davies Drive as recommended in the Peel AT report. This would aim to reduce mid-block crossings and wrong-way riding on the paved shoulder (interim) or road (ultimate); and
  - Utilization of special pavement markings and/or traffic control measures such as right-on-red prohibitions and bicycle signals at the intersections.

9.4.2 Trails Plan

Off-road trails are an essential part of the pedestrian / cyclist active transportation network. Combined with cycling route, the interconnected network serves the needs of both recreational and utilitarian users alike. Key components of the Trail Plan are summarized as follows:

- **Trail 1**: An east-west multi-use trail located adjacent to the Brampton Christian School in the northeast quadrant of the study area, commencing at the intersection of Collector Road A and Collector Road F, extending easterly into the Valleywood subdivision by way of a new pedestrian/cyclist bridge across Highway 10 to Snelcrest Drive.
- **Trail 2**: A north-south greenway multi-use trail that runs adjacent to, and west of, the OBRY rail line commencing at Mayfield Road northerly, intersecting with the Spine Road and Collector Road A and then extending further north to form a future connection with the Greenbelt Trail (T6). A similar trail is located adjacent to the east side of the rail line commencing east of the rail line, running parallel to the Spine Road then traveling northbound to connect with the Greenbelt

Trail. Both trails could function as the east and west sidewalks through the neighbourhoods they traverse.

It is noted that trails located adjacent to an active rail line require a minimum separation of 7.6 metres between the edge of trail and the centre line of the track as per standards set out in the Rails-with-Trails Conservancy for low density / low speed branch lines. If the minimum separation cannot be achieved, security fencing should be installed at the edge of trail.

- **Trail 3:** A north-south greenway multi-use trail extending from Collector Road E, traversing the property line between the proposed Secondary School and recreational lands located in the southeast quadrant of the intersection of the Spine Road and McLaughlin Road. This linkage serves as a "safe route to school" and provides key linkages to recreational lands;
- **Trail 4:** Future northerly extension of the greenway multi-use Fletcher Creek Trail (City of Brampton) traversing the edge of the Mayfield West Phase 2 greenlands, intersecting with the Spine Road and continuing northerly to form a connection with the future Etobicoke Creek Extension;
- **Trail 5**: Commencing at Collector Road C, a short east-west greenway multi-use trail is proposed adjacent to the Elementary School, parklands and greenlands, ending at Collector Road D (opposite a local street). Implementation of an actuated pedestrian signal at Collector Road D would permit this trail to serve as a "safe route to school" for the catchment area west of McLaughlin Road; and
- **Trail 6**: A north-south greenway multi-use trail extending from the north side of the Spine Road, providing a secondary connection to Collector Road F, traversing the easterly woodlot and connecting with the Greenbelt Trail;
- **Trail 7**: Future open space trail (Greenbelt Trail) which traverses the southerly edge of the greenbelt plan area; and
- **Mayfield Road**: Provision of future 3.0 metre boulevard multi-use trail along both the north and south sides of the roadway which provide connections with City of Brampton trail facilities located south of the study area.

It is noted that staff from Peel Region, the Waterfront Regeneration Trust as well as the Town of Caledon are collectively examining a north-south trail connection which would extend from the Waterfront Trail to the Caledon Trailway (Greenbelt Cycling Route). The proposed trail connection is planned to utilize the existing Etobicoke Creek trail and gives priority to the development of this key north-south connection.

The overall cycling and trails network addresses cycling along safe routes to school utilizing local streets, trails and linkages. Appropriate cycling and trail wayfinding signage will be installed throughout the proposed cycling and trails network and will be designed in a manner that identifies connecting routes. The resulting pedestrian and cycling infrastructure requirements are summarized in **Table 9.4** for further reference.

Cycling and Trails Plans

Figure 9.1

paradigm TRANSPORTATION SOLUTIONS LIMITED

Mayfield West Phase 2 Secondary Plan Transportation Master Plan
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TABLE 9.4: PEDESTRIAN AND CYCLING INFRASTRUCTURE REQUIREMENTS

Roadway	Section	Forecasted 2031 AADT	Sidewalk	Bike Lanes
Spine Road	Hurontario Street to a point 200 metres west of McLaughlin Road	24,000 – 39,000	1.5 metre north side, 2.0 metre south side	2.0 metre west of Collector Road F
	200 metres west of McLaughlin Road to Chinguacousy Road	5,000 – 16,000	1.5 metre	1.8 metre
McLaughlin Road	Mayfield Road to a point 200 metres south of the Spine Road	19,000	1.5 metre	1.8 metre
	200 metres south of the Spine Road to a point 200 metres north of the Spine Road (Village Centre)	22,000	1.5 metres with additional surface to building face	1.8 metre
	200 metres north of the Spine Road to MW2 study limits	10,000	1.5 metre	1.8 metre
Chinguacousy Road	Mayfield Road to MW2 study limits	6,000	1.5 metre	1.8 metre paved shoulders
Collectors	As shown in **Figure 9.1**	3,000 – 5,000	1.5 metre	1.5 metre shared lanes or bike lanes

9.5 Linkages to Adjacent Communities

As proposed, the integrated Mayfield West Phase 2 Cycling and Trails Plan achieves several key linkages to neighbouring communities including:

9.5.1 Connections to Valleywood Community

Bike lanes on the Spine Road are to be discontinued east of Collector Road F, subject to the construction of Trail 1 and associated pedestrian/cyclist bridge across Highway 10. As proposed, this connection to the Valleywood community results in safer movement of pedestrians and cyclists compared to extending bike lanes along the Spine Road and through the interchange area.

9.5.2 Connections to the City of Brampton

The following summarizes key connections to the City of Brampton:

- The southerly extension of Collector Road F is proposed to align with Robertson Davies Drive, providing a connection south of Mayfield Road via Cresthaven Road which provides access to Wanless Drive, a designated east-west bicycle route in the City of Brampton;
- The proposed location of Collector Road E (across from Van Kirk Drive) offers an opportunity to provide a commuter cycling route as an alternative to McLaughlin Road. Van Kirk Drive currently provides direct access to Downtown Brampton, has no bike lanes nor is designated a bike route. The existing road right-of-way has sufficient width to accommodate shared lanes and/or designated on-street bike lanes and offers few stops, making it an excellent alternative to McLaughlin Road for commuter cyclists;
- The proposed location of Collector Roads C and D offer opportunities for future north-south cycling routes into the City of Brampton west of McLaughlin Road.

9.5.3 Connections to the City of Brampton Trail System

A proposed Cycling and Trails plan provides for a number of potential connections with the existing City of Brampton Trail system:

- The Etobicoke Creek trail is located east of the Etobicoke Creek and ends at Newhouse Park within the Valleywood subdivision, north of Mayfield Road. This trail could be extended north-easterly with one or more Mayfield West Phase 2 linkages before intersecting with McLaughlin Road;
- The proposed Fletcher Creek Trail in Mount Pleasant could be extended northerly into Mayfield West Phase 1 across Mayfield Road. This extension would require a two-stage crossing of Mayfield

Road (i.e. raised median island with staging area for pedestrians and/or cyclists). Alternatively, the extension could utilize the multi-use boulevard trails along the north side and intersect with Collector Roads C and D.

9.5.4 Connections to the Town of Caledon Trailway

Several opportunities exist to interconnect with the existing Caledon Trailway approximately 10 kilometres north of Mayfield West Phase 2. One alternative is to provide paved shoulders along McLaughlin Road northerly to Inglewood with potential for a future connection to the Elora-Cataract Trail via Forks of the Credit. Another alternative would be to construct a multi-use trail with provision for a wide planted separation from the roadway. Such a design would be more expensive than providing a paved shoulder but would be more comfortable and enjoyable for all users.

9.6 Signs and Markings

Proposed legislative and supporting regulatory amendments to the Highway Traffic Act includes requiring all drivers to maintain a distance of one metre when passing cyclists, allowing bicycle traffic control signals and contra-flow bike lanes (Bill 173 - Keep Ontario Roads Safe Act, 2014).

Recently, Bill 173 – Highway Traffic Amendment (Keeping Roads Safe) has been passed by the Ontario Legislature. Several amendments have been made which are related to pedestrian crossovers, bicycle signs and signals, as well as separation between cyclists and motorists. The following provides guidance with respect to signs and pavement markings.

9.6.1 Signs

Signage is generally intended for vehicular traffic in terms of positioning and information conveyed through the sign. The location and positioning of signage is generally intended to serve the motorist and is often not sufficient for pedestrians and/or cyclists as they travel shorter distances at much lower speeds. Like motorists, pedestrians and cyclists need signs which provide information such as direction and distance to nearby destinations. Key destinations that should be signed for pedestrian and cyclist use within Mayfield West Phase 2 include:

- Village Centre
- Transit Hub
- Commercial District
- Recreation Centres / Passive Parks; and
- Access to the Valleywood subdivision via the proposed bridge across Highway 410.

Signing should be coherent, consistent and utilize standard sign design and placement guidance as per OTM Book 18[18]. Considering that every street within Mayfield West Phase 2 is considered to be a street conducive to cycling (except where prohibited), the standard “Bicycle Route” sign is not effective or necessary. Alternatively, a bicycle route sign should depict the standard bicycle symbol, designation, direction and distance (if appropriate), all in a single panel. Maps illustrating available routes / trail surfaces could be installed at all trail gateways. Crossing street name signs should be erected where trails intersect with roadways.

9.6.2 Pavement Markings

Bicycle lanes are to be delineated by signage and pavement markings consisting of a diamond and bicycle symbol. Ensuring both the signs and pavement markings are visible during all seasons is essential for the safety of cyclists and motorists. OTM Book 18 recommends that a “cross-ride” should be provided at signalized intersections with multi-use boulevard trails in order to allow cyclists to cross the roadway without being required to dismount. This standard could also be applied to locations where a trail crosses a major roadway.

[18] Ontario Traffic Manual: Book 18 – Cycling Facilities; (prepared by the Ministry of Transportation of Ontario), December 2013.

10 Supporting Transportation Policies

10.1 Parking Policy

Parking is a key element in achieving good urban design and supporting the economic development of a particular area. Implementation of effective parking management strategies can support compact urban form, provide for efficient use of both public and private parking resources, as well as encourage the use of alternate travel options including active transportation and public transit, all the while preventing parking from becoming a dominant physical element and contributing to the creation of healthy, complete communities. The purpose of the parking strategy is to develop guiding principles regarding the provision of both public and private parking for the overall Secondary Plan area, as well as outlining a strategy for accommodating on-street parking within residential areas.

10.1.1 Overall Parking Strategy

Current parking management philosophies strive to provide optimal parking while avoiding excessive supply. Parking philosophies used to guide the Mayfield West Phase 2 Parking Strategy are summarized as follows:

- The Mayfield West Phase 2 Secondary Plan is being planned in a manner which reduces dependence on the private automobile while emphasizing the use of public transit and active transportation to meet the travel needs of both residents and employees. Parking provisions are regulated in order to favour higher priority uses while encouraging efficiency;
- The overall parking strategy aims to ensure that sufficient parking is provided in order to meet expected parking demands, but recognizes that excess parking can be as harmful as too little; and
- The overall parking strategy has been developed in a manner in which each specific land use is required to provide an adequate supply of parking while promoting active transportation through provision of bicycle parking and pedestrian facilities. The strategy aims to promote the efficient use of parking through the implementation of parking management strategies, such as shared parking or preferential parking for carpool vehicles, which are used to reduce overall parking supply while ensuring peak demands are satisfied;

10.1.2 Surface Parking Design Elements

The design of surface parking lots should aim to minimize negative aesthetic and environmental impacts through the use of the following design elements[19]:

- Tree planting;
- Landscaping;
- Storm water management;
- Use of porous / permeable surfaces;
- Light coloured materials as opposed to black asphalt in order to minimize urban "heat island" effect; and
- Provide for enhanced pedestrian access and circulation.

Surface parking areas should be physically and visually divided in order to reduce the appearance of large parking areas and facilitate safe and efficient pedestrian movement. Landscaped parking islands should be incorporated internal to the parking area in attempts to divide a larger parking area into smaller parking pods. The perimeter of surface parking areas should be designed with a combination of landscaping and low fencing from abutting streets and pedestrian routes while maintaining visibility. Pedestrian access should be safe, well-lit, convenient and well-defined. Pedestrian routes through surface parking lots should be a minimum of 3.0 metres wide and should be defined with distinct surface materials and colours. Parking rows should be aligned perpendicular to the building in order to minimize the number of driving aisle crossings for pedestrians.

10.1.3 Proposed Parking Requirements

Parking requirements for a variety of land uses have been examined including recommended requirements in other jurisdictions and a review of the 85th percentile peak parking generation rates as contained in the ITE Parking Generation[20]. The City of Vaughan has recently conducted a detailed review of parking standards as part of the City's comprehensive Zoning By-law[21]. The parking standards recommended as part of the Vaughan study have been utilized in some areas and are currently being reviewed for consideration for the overall City.

The 85th percentile peak parking demand contained in the ITE Parking Generation is representative of overall parking demand, inclusive of visitor

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[19] Region of Peel Health Background Study: Development of a Health Background Study Framework; (prepared by The Planning Partnership), May 2011.
[20] Parking Generation, 4th Edition: An Informal Report of the Institute of Transportation Engineers; (ITE), July 2010
[21] Review of Parking Standards Contained within the City of Vaughan's Comprehensive Zoning By-Law; (prepared for the City of Vaughan by IBI Group), March 2010.

parking for residential uses and employee parking for commercial uses. Application of an additional 15% parking demand provides a small amount of reserve capacity which is beneficial for users searching for parking, inefficient use of spaces, and snow storage.

The following summarizes the proposed minimum parking requirements (as per our review of best practices) and considers current parking management philosophies and trends. For each potential land use, minimum parking standards have been developed following the same structure and approach contained in the City of Vaughan report. For the purposes of this exercise, parking requirements for the "Base" urban context condition have been used which considers surrounding lands and adjacent transportation system consistent with that found in a suburban area. The "Base" urban context assumes the following:

- Basic parking minimums – all new development within Mayfield West Phase 2 requires a minimum responsible level of parking (as per the recommended minimum parking standards) but need to allow for some flexibility in order to account for availability of travel choices and surrounding land use context. In cases where developers wish to provide less than the minimum parking requirement, an engineering study shall be prepared demonstrating the justification for reduced parking; and
- No maximum parking limits – recognizes that the Mayfield West Phase 2 development will have access to transit service but considers that the private auto will still play a vital role in meeting the overall transportation needs of residents and employees.

Table 10.1 presents a summary of the proposed minimum parking standards for residential uses while **Table 10.2** summarizes the proposed parking standards for all other non-residential uses.

TABLE 10.1: PROPOSED MINIMUM PARKING STANDARDS – RESIDENTIAL USES

Land Use Description		Variable	City of Vaughan	ITE Generation		Notes	Proposed Minimum Parking Standard
			Minimum Parking Requirement (Base Condition)	85th %ile Parking Demand (+ additional 15%)	ITE LUC		
Single Family	Detached and Semi-Detached	Dwelling Units	*2.00*	2.50	210	Existing standard is 2.00 spaces per unit. Plus an additional 0.25 visitor spaces per unit for townhomes	2.00 spaces per D.U. + On-Street Requirement
	Street Townhomes		*2.00*	2.50	230		2.00 spaces per D.U. + On-Street Requirement
	On-street Parking		n/a	n/a	n/a		2.00 spaces per D.U.
Multiple Family	Bachelor / 1 Bedroom	Dwelling Units	0.90	1.30	220	Existing standard is 1.50 spaces per unit plus 0.25 visitor spaces per unit to be provided in a designated visitor area	1.00 space per D.U.
	2 Bedrooms		1.10	1.60	220		1.50 spaces per D.U.
	3+ Bedrooms		1.20	1.75	222		1.50 spaces per D.U.
	Visitor Parking	Dwelling Units	0.20	N/A	N/A	Visitor parking is to be provided on-site in designated parking areas.	0.25 spaces per D.U. to be provided in a designated on-site visitor parking area
Senior Citizen Facilities	Independent Living	Dwelling Units	0.80	0.76	252	Assumed average of 2 Bedrooms per unit	1.00 space per D.U.
	Assisted Living		0.50	0.62	254	Assumes central amenities (i.e. dining room)	0.50 space per D.U.
	Nursing Home	Beds	0.25	0.55	620	Existing standard is 0.50 spaces per bed	0.50 space per bed

Notes: [1] City of Vaughan parking rates obtained from the *City of Vaughan Review of Parking Standards Contained Within the City of Vaughan's Comprehensive Zoning By-Law: Final Report*, March 2010 (IBI Group)

TABLE 10.2: PROPOSED MINIMUM PARKING STANDARDS – NON-RESIDENTIAL USES

Land Use Description		Variable	City of Vaughan	ITE Generation		Notes	Proposed Minimum Parking Standard
			Minimum Parking Requirement (Base Condition)	85th %ile Parking Demand (+ additional 15%)	ITE LUC		
Institutional	Elementary School	Classroom + Pick-up / Drop-off	1.50	6.04	520	ITE rates adjusted to reflect parking spaces per classroom (max 25 students/class) No requirement provided for pick-up / drop-off.	1.50 spaces per classroom
	Secondary School		4.00	7.19	530		4.00 spaces per classroom
	Pick-up / Drop-off Req.		3 spaces + 0.02 spaces/student	N/A	N/A		3 spaces + 0.02 spaces per student
	Day Nursery	Employee	1.50	2.05	565		1.50 spaces per employee
	Church	100 m^2 GFA	23.00	17.79	560	ITE rate converted to 100 m2 GFA	18.00 spaces per 100m^2 GFA
Retail	Shopping Centre (<=5000 m^2 GFA)	100 m^2 GFA	3.50	3.91	820	ITE rate converted to 100 m2 GFA. ITE rate based on a Non-Friday Weekday (Non-December)	3.50 spaces per 100m^2 GFA
	Shopping Centre (>5000 m^2 GFA)		4.50				4.50 spaces per 100m^2 GFA
	Supermarket		4.50	6.25	850	ITE rate converted to 100m^2 GFA	5.00 spaces per 100m^2 GFA
	Bank or Financial Institution		4.50	7.02	912	ITE rate converted to 100m^2 GFA	5.00 spaces per 100m^2 GFA
Restaurant	Quality Restaurant	Parking Spaces Required per 100m^2 GFA	10.00	17.57	931	ITE Rates converted to 100m2 GFA. Reflect Non-Friday Weekday Vaughan rates recognize opportunity for Shared Parking and have therefore reduced requirements	15.00 spaces per 100m^2 GFA
	High-Turnover (Sit-Down) Restaurant		10.00	21.53	932		15.00 spaces per 100m^2 GFA
	Take-Out / Fast-Food (with Drive Thru)		6.00	18.71	934		15.00 spaces per 100m^2 GFA
Office & Industry	Office Building	Parking Spaces Required per 100m^2 GFA	3.00	4.27	701	ITE rates converted to 100m^2 GFA	3.00 spaces per 100m^2 GFA
	Industrial / Warehousing		1.00	1.39	110		1.00 space per 100m^2 GFA
	Mixed Industrial Building		1.50	2.29	130		2.00 spaces per 100m^2 GFA

Notes: [1] City of Vaughan parking rates obtained from the *City of Vaughan Review of Parking Standards Contained Within the City of Vaughan's Comprehensive Zoning By-Law: Final Report*, March 2010 (IBI Group)

The Town may wish to consider reducing parking requirements for non-residential uses located within 400 metres of a transit stop in order to further encourage the use of public transit.

10.1.4 On-Street Parking Requirements

Residential Areas

The opportunity to provide convenient on-street parking is a key element of the overall parking strategy. As such, on-street parking should be permitted, wherever possible, in attempts to meet parking demands, reduce vehicular speeds, and serve as a protective buffer between pedestrians and moving vehicles. This is particularly important along the Spine Road through the Village Centre in order to promote the vitality of the adjacent commercial lands and contribute to the intended urban character of the streetscape. In general, on-street parking is only to be permitted on local roadways which are not designated as bike or transit routes, with the exception of the Village Centre.

As such, the resulting parking strategy recognizes the need for on-street parking in residential areas in order to accommodate visitor, delivery and convenience parking. In terms of current policy, the Development Standards, Policies & Guidelines document[22] states "where development density exceeds 12 residential units per 100 metres of street (and proposes single-car garages), the Town requires that the developer provide 3.5 regular parking spaces per residential unit through a combination of driveways, garages, on-street parking spaces, parking strips, parking zones and/or parking lots". The required parking is to be located within 100 metres of the residential lot served and the requirement of 3.5 parking spaces per unit generally results in an approximate equivalent of 1.5 spaces to be provided on-street (assuming two spaces are to be provided on-site).

On-street parking in low-density residential areas shall be permitted only on streets where there is adequate right-of-way to accommodate traffic flow and maintain emergency vehicle access, generally to be located only on local roadways that are not designated transit routes. On-street parking should be provided in attempts to satisfy visitor parking needs, not long-term resident parking. As such, the current Town of Caledon overnight parking ban is to be maintained, with the possibility of requesting an exemption as per the Town's overnight parking exemption policy.

A review of current on-street parking requirements within other municipalities was undertaken. Through discussion with City of Hamilton staff it was identified that Hamilton currently employs an on-street parking requirement of 0.40 spaces per dwelling unit (in addition to the 2.0 spaces required to be accommodated on-site), resulting in a total parking

[22] Development Standards, Policies & Guidelines; (prepared by the Town of Caledon Public Works & Engineering Department), January 2009.

requirement of 2.4 spaces per residential unit. The resulting on-street parking is intended to accommodate general parking needs and is subject to area parking restrictions (i.e. overnight parking ban).

The location of on-street parking is to be provided in close proximity of where users would expect it to be located and can often be accommodate through site design (i.e. pairing driveways). In situations where the on-street parking requirement cannot be achieved, the developer is required to demonstrate that the proposed development has access to active transportation facilities as well as transit. On occasion, the City has developed site-specific zoning by-laws requiring double-width driveways in order to meet the overall residential parking demands.

After review of the current on-street parking requirement and that of other area municipalities, it was determined that the current Town of Caledon parking requirement of 3.5 spaces per residential unit is considered high and as such, encourages higher levels of auto ownership. In contrast, the current City of Hamilton requirement of 2.4 spaces per unit is considered low for a suburban municipality in the GTA.

It is therefore recommended that 2.0 parking spaces be accommodated on-site (i.e. driveway and garage) and that each single-family detached and semi-detached residential unit, irrespective of density, be required to provide 1.0 additional on-street parking space within a close proximity to the residential lot being served. A reduced on-street parking rate of 0.5 spaces per townhouse unit is recommended which takes into consideration higher density uses and transit-supportive design. The recommended residential parking requirements are summarized in **Table 10.3** for further reference.

TABLE 10.3: RESIDENTIAL PARKING REQUIREMENTS

Dwelling Type	Minimum Parking Requirement
Single Family Detached	3.0 spaces per unit
Semi Detached	3.0 spaces per unit
Street Townhouse	2.5 spaces per unit

Parking requirements required for medium and high density multi-family residential uses shall be obtained from **Table 10.1** and do not require additional on-street parking as visitor parking is to be accommodated entirely on-site.

Village Centre

Traditionally, inclusion of on-street parking has been a key component in achieving successful and vibrant urban environments. On-street parking adds to the urban character of the development, can be designed in a way that increases the attractiveness of the streetscape, and is beneficial in accommodating unusual peaks in parking demand, short-term parking, etc.

However, on-street parking can also result in increased road maintenance costs, restrict emergency vehicle access and pose a conflict on roadways that accommodate bicycle facilities. When properly designed and implemented, there are a number of benefits to providing on-street parking in urban village centres:

- Convenience – on-street parking is perceived as highly convenient by the user and as such, generally experience greater utilization and turnover when compared to surface lots;
- Supports Higher-Density Land Use – provision of curbside parking reduces off-street parking needs (i.e. surface lots or structures), thereby supporting the use of higher-density development within compact urban centres; and
- Potential for Improved Safety – not only does on-street parking achieve a separation between the travelled portion of the street and pedestrians, it has also been found to contribute to reduced travel speeds when combined with other features such as pavement treatments, boulevard plantings and street furniture.

The Village Centre has been designed as a small scale pedestrian-oriented area located in the heart of Mayfield West. In addition to accommodating medium and high-density housing forms, the Village Centre is characterized as a focal point within the community which includes opportunities for local meeting places and amenities. The Village Centre is pedestrian-oriented and has been design to promote active modes of transportation through the inclusion of on-street bicycle facilities and a comprehensive trails and path system.

The parking strategy recognizes the need to accommodate parking for automobiles as well as loading areas for delivery and service vehicles within the Village Centre. It is therefore recommended that the ultimate parking supply be accommodated through a combination of on-street and on-site surface parking. On-street parking within the Village Centre should be permitted on the adjacent arterial and collector road network in combination with landscaped bump-outs to improve attractiveness, recognizing that the primary role of on-street parking is to serve customers. On-street parking within the Village Centre should not be utilized for employee or long-term parking needs and as such, time-limited restrictions and overnight parking bans will be required. Where required, loading areas should be located at the rear of buildings in order to achieve an attractive streetscape and pedestrian-friendly environment.

All Other Areas

On-street parking on arterial roads should be prohibited in all areas other than that specified above. Implementation of one-side on-street parking along arterial roadways, or collector roadways which are designated as either bus or transit routes is discouraged.

10.1.5 On-Street Parking Management

Overnight parking is currently prohibited (2:00 a.m. – 6:00 a.m.) on all Town roads. The overnight parking prohibition is enforced daily and approximately 20 – 30 citations are issued per night. However, the Town has a permit system in place where residents can request an exemption from the overnight parking ban in order to accommodate additional vehicles (i.e. visitors, caregiver parking, etc.) up to a maximum of 10 exemptions per calendar year. Approximately 8,000 overnight parking permits were issued in 2013.

The proposed parking strategy for Mayfield West Phase 2 Secondary Plan will continue to recommend the current by-law which prohibits overnight parking, providing that provision for exemption permits are available.

Consultation with Town enforcement staff has identified a number of potential parking implementation / management improvements that would serve to create a more efficient on-street parking system. The comments submitted from Town staff are summarized as follows:

- Restrict on-street parking on the same side fire hydrants are located in attempts to maximize parking yield and minimize potential for hydrant blockage; and
- Erect parking signage on light standards in order to improve aesthetics and ensure that vehicles parked on-street are adequately visible.

10.1.6 Bicycle Parking

The provision of adequate bicycle parking and associated shower and change facilities is cited as a significant factor in promoting bicycle use as an alternative mode of transportation. In order to support the use of alternate modes and encourage an active lifestyle, the Mayfield West Phase 2 Secondary Plan should promote cycling and ensure that adequate facilities are available.

The document entitled Bicycle End-of-Trip Facilities[23] indicates that the primary reason for developing bicycle end-of-trip facilities, inclusive of bicycle parking, is to encourage the use of bicycles as a viable mode of

[23] Bicycle End-of-Trip Facilities: A Guide for Canadian Municipalities and Employers; (prepared by Transport Canada), April 2010.

transportation. When end-of-trip facilities are provided at transit hubs, they can help foster bicycle-transit trip changing, simultaneously encouraging both bicycle and transit use.

Bicycle parking requirements are generally categorized by length of stay, either "long term" or "short term" parking. The two standards are defined as follows:

- **Long Term** – long term, secure parking should be provided in a locked separate bicycle room located within a building or automobile parking facility. Lockers, bicycle rooms and bicycle cages are examples of long-term parking facilities;
- **Short Term** – short term parking can be accommodated by way of racks, rings or posts which are located at-grade. Short term bicycle parking should be located in a well lit, convenient location and be within view of the building and, if possible, be located in a sheltered location.

On-street, short-term bicycle parking is of particular importance in commercial areas for the following reasons:

- Encourages bicycle use for utilitarian purposes, especially shopping; and
- Makes bicycle parking more orderly by preventing bicycles from being locked to and damaging traffic signs, fences, tress, etc. And prevents bicycles from obstructing pedestrian and vehicular traffic.

To promote cycling as a sustainable mode of transportation, minimum bicycle parking requirements are specified for office, commercial, restaurant, multi-unit residential and school uses, including requirements for both short and long-term bicycle parking spaces. **Table 10.4** provides a brief summary of anticipated bicycle parking demands relative to floor area at each specified land use:

TABLE 10.4: BICYCLE PARKING DEMANDS

Land Use Description	Anticipated Parking Demand	
	Long Term	Short Term
Schools	Low demand for employees	High demand for students
Retail / Commercial	Low demand for employees	High demand for clients
Restaurant	Low demand for employees	Medium to High demand for patrons
General Office	Low demand for employees	Little to no demand for clients
Multi-Family Residential	High demand for residents	Low demand for visitors / residents
High-Order Transit Stations	Medium demand for commuters	Low demand for commuters

The resulting bicycle parking requirements (as summarized in **Table 10.5**) are consistent with the bicycle parking requirements set out in the Region of Peel Health Background Study[24] which recommends that all new developments should meet or exceed the minimum bicycle parking standards outlined below:

TABLE 10.5: MINIMUM BICYCLE PARKING STANDARDS

Land Use Description	Proposed Minimum Bicycle Parking Standards	
	Long Term	Short Term
Schools	0.06 spaces / 100 m^2 GFA	3 + 0.06 spaces / 100 m^2 GFA
Retail / Commercial	0.10 spaces / 100 m^2 GFA	3 + 0.25 spaces / 100 m^2 GFA
Restaurant	0.10 spaces / 100 m^2 GFA	3 + 0.25 spaces / 100 m^2 GFA
General Office	0.15 spaces / 100 m^2 GFA	3 + 0.25 spaces / 100 m^2 GFA
Multi-Family Residential	0.70 spaces 100 m^2 GFA	0.80 visitor spaces / unit
High-Order Transit Stations	Complete a bicycle parking demand estimate for the transit station utilizing boardings, alightings and local bicycle mode share data.	

Bicycle parking should be situated close to building entrances in public view with high visibility, natural surveillance from buildings and have appropriate

[24] Region of Peel Health Background Study: Development of a Health Background Study Framework – Minimum Bicycle Parking Standards by Use and Type; (prepared by The Planning Partnership), May 2011.

lighting. Outside parking areas should not block pedestrian routes and should be designed to allow the parked bicycle to be oriented parallel to the pedestrian route in order to minimize obstruction.

10.2 Transportation Demand Management

Transportation Demand Management (TDM) is a tool that comprises a broad range of policies, programs and initiatives that are designed to encourage the use of sustainable modes of transportation and minimize single occupant vehicle trips as part of an overall transportation management strategy that is implemented community wide. TDM looks to affect travel decision by influencing several factors including travel cost, time, safety, comfort and stress of traveling. Designing Mayfield West Phase 2 in a comprehensive manner which takes into account sustainable mobility and transportation demand management principles, policies and strategies can significantly influence a commuter's ability to choose sustainable transportation options while not affecting the efficiencies of other travel modes.

The following TDM policies and guidelines should be considered as part of all future development projects and are considered appropriate for residential developments (multiple residential uses), commercial developments (retail and service commercial uses) and employment developments (employment and institutional uses). Applicable TDM measures can be categorized by four types of strategies that can be used to promote walking, cycling, transit and car sharing / carpooling:

- **Site Organization** – involves designing the site in a way that gives higher priority to sustainable modes of transportation over single occupant vehicles. Design options include building placement, building entrance locations, location of parking facilities and parking supply. These strategies are typically decided at the beginning of the site design process.
- **Site Layout** – includes the internal transportation network of the site, parking facility layout for vehicles and bicycles, location of transit facilities and location of pick-up / drop-off areas. All efforts should be made to minimize conflict potential in attempts to ensure safe operations for all modes of transportation. Factors to consider include size, type, capacity and orientation of parking facilities.
- **Site Infrastructure** – should be designed in a manner that places higher priority on sustainable modes of transportation versus the single occupant vehicle. These aspects may be altered after the site is constructed; however emphasis should be placed on site infrastructure during the design phase.
- **Site Amenities** – can impact a commuter's decision regarding sustainable transportation. Provision of end-of-trip facilities such as bicycle racks, showers, change rooms, transit shelters and street furniture can contribute to the commuter feeling safe and comfortable

in their mode choice and may have a significant impact on their future choice of transportation. The majority of amenities can be added after site completion but should be considered as part of the design phase.

Table 10.6 outlines a range of TDM strategies and identifies the applicability of each potential measure.

TABLE 10.6: TRANSPORTATION DEMAND MANAGEMENT STRATEGIES

TDM Strategy		Land Use		
		Residential	Commercial	Employment
Exterior Design	Provide a clearly visible "way-finding system" which provides direction to everyone including persons with impairment of one or more senses. Features may include textured surfaces, coloured lines and patters, lights, raised letters, large lettering and other clearly understandable directional cues.	✓	✓	✓
	Locate signage indicating entrances, amenities such as showers, lockers, transit stations/stops and transportation information kiosk strategically throughout the site.		✓	✓
	Provide signage indicating clear direction from transit to public facilities and service centres.	✓	✓	✓
	Un-bundle parking costs from multi-family residential units at the time of purchase or rental.	✓		
Interior Design	Provide adequate signage and way-finding at main entrances to all facilities or amenities such as showers, lockers, information / transit ticket purchase service.			✓
	Provide a permanent TDM booth at main entrances of all buildings and facilities to display transportation information including a monitor with transit schedules for the nearest transit station/stop.	✓		✓
	Provide for direct access to transit facilities from the lobby of major buildings located along a transit route.	✓	✓	✓
Carpool	Promote carpooling initiatives and investigate partnerships with private ride-matching services.			✓
	Locate carpool parking stalls near the main entrance of the building.			✓
	Provide ample carpool stalls to meet or exceed requirements.			✓
	Clearly mark carpool parking stalls as reserved for carpool vehicles.			✓
	Direct carpoolers to reserved areas through the use of clear and intuitive signage.			✓

TABLE 10.6 (CONTINUED): TRANSPORTATION DEMAND MANAGEMENT STRATEGIES

Walking	Provide the most direct, convenient and shortest connections from buildings to public sidewalks, to off-site pedestrian paths, and to transit stops as well as direct connections between buildings on-site. Ensure sidewalks are paved and maintained in winter.	✓	✓	✓
	Ensure main entrances of new buildings front directly onto, and are clearly visible from, the public street.	✓	✓	✓
	Ensure pedestrian circulation is well-defined with safe and convenient connections to parking areas (both auto and bike parking) and off-site pedestrian facilities, and that pedestrian specific lighting is provided onto sidewalks and pathways.	✓	✓	✓
	Ensure sidewalks are continuous and barrier-free with at least 2.0 metres wide in order to accommodate simultaneous passage of a pedestrian and a wheelchair.	✓	✓	✓
	Construct multi-use pathways 3.0 to 4.5 metres in width with 1.0 metre "clear zones" on either side.	✓	✓	✓
	Design sidewalks and pathways to ensure personal security and safety through adequate lighting, unobstructed sign lines and provision of at-grade facilities.	✓	✓	✓
Transit	Ensure that transit services are provided to new development at an early stage, with support from developer funding.	✓	✓	✓
	Promote awareness of GO Transit and Brampton Transit services including the BRT.	✓	✓	✓
	Develop and encourage the use of employer transit pass programs.			✓
	Develop and encourage the use of a flexible transit pass program for students.	✓	✓	
	Provide covered shelters at transit stations and key bus stop locations which include adequate seating and lighting.		✓	✓

11 Implementation

11.1 Coordination with Other Studies

11.1.1 GTA West Corridor Environmental Assessment Study

Subsequent design and implementation of the Mayfield West Phase 2 Secondary planning area development should be coordinated with the GTA West Corridor Environmental Assessment Study to confirm that the planned development of Mayfield West Phase 2 does not conflict with the preferred corridor alignment and/or the future interchange requirements with Highway 410. On-going consultation with MTO will be required throughout the completion and implementation of both studies.

11.1.2 Class Environmental Assessment for Mayfield Road from Chinguacousy Road to Heart Lake Road

Detailed intersection and roadway design for Mayfield West Phase 2, in particular the design of arterial and collector roadways that are planned to intersect with Mayfield Road, are to be undertaken in coordination with Peel Region to ensure that final intersection design, right-of-way requirements and traffic control are consistent with the study recommendations made for the 2021 and 2031 horizon years as per the Schedule C Class EA for Mayfield Road from Chinguacousy Road to Heart Lake Road (Project #10-4350).

11.2 Class EA Requirements

The process followed in order to develop this Transportation Master Plan has intended to address the requirements of Phases 1 and 2 of the Municipal Class EA planning process by providing an assessment of existing problems and opportunities as well as presenting and evaluating a range of alternative transportation strategies. As a result of the TMP study, a number of future infrastructure projects have been identified as being required in order to accommodate the development of Mayfield West Phase 2. The range of improvements, inclusive of EA scope and determination of proponent, are summarized in **Table 11.1**. It is noted that a combined Class EA may be considered for the Spine Road and McLaughlin Road sections within the Secondary Plan area.

Recommended infrastructure projects that fall within the “Schedule C” category have been identified as having greater potential for environmental impacts, and as such, further project-specific EA studies are anticipated to be required which include the completion of Phases 3 through 5, additional points of public contact and submission of an Environmental Study Report to the Ministry of Environment. More complex projects involving the Highway 410 interchange require that the Provincial Class EA study process be undertaken and may require additional consultation with the Ministry of Environment.

TABLE 11.1: ROADWAY IMPROVEMENT ENVIRONMENTAL ASSESSMENT REQUIREMENTS

Project	Description	Proponent	Schedule	Timing
Highway 410 Interchange Highway 10 / Valleywood Boulevard	Interchange improvements required to accommodate future urban growth. May require an update of Highway 410 Phase 2 Extension Study or an individual EA Study.	TBD	Provincial Class EA for Transportation Facilities	Should proceed following approval of MW2 plan
Spine Road Hurontario Street to Chinguacousy Road	Study to determine ultimate roadway alignment, cross-section requirements and detailed intersection design; consistent with the land uses endorsed as part of the framework plan (2013).	Town	Schedule C Municipal Class EA	To be completed prior to any development of MW2
McLaughlin Road Mayfield Road to Old School Road	Study to determine the ultimate roadway alignment, cross-section requirements and detailed intersection design as well as determine impacts to Greenbelt Area.	Town	Schedule C Municipal Class EA	To be completed prior to any development of MW2
Chinguacousy Road Mayfield Road to North Limits	Study to determine ultimate cross-section requirements and detailed intersection design.	Town	Schedule C Municipal Class EA	To be completed after initial phase of development
Collector Road F Spine Road to Collector Road A	Ultimate road design, cross-section requirements, site access and traffic control to be determined through future traffic impact studies undertaken in support of the commercial, employment, transit hub and high density residential lands.	Developer	N/A	To be completed in conjunction with development of adjacent lands
Collector and Local Roads All	Planning and design of all other collector and local roadways is to be undertaken as part of the planning process through development agreements.	Developer	N/A	To be completed in conjunction with development of adjacent lands

Appendix A1

Summary of Public Consultation

Public Consulation - Summary of Project Consultation Activities To-Date (Additional Info to Follow)

Notice of Study Commencement	Notice #1
Advertisement	October 11 & 18, 2008 - Caledon Enterprise
	October 10 & 17, 2008 - Brampton Guardian

Public Information Centres	PIC 1	PIC 2	PIC 3
Advertisement	October 11 & 18, 2008 - Caledon Enterprise	N/A	N/A
	October 10 & 17, 2008 - Brampton Guardian	N/A	N/A
Date	11-Dec-08	25-Jun-09	25-Feb-10
Time	6:00 - 9:00 PM	N/A	N/A
Location	Margaret Dunn Valleywood Library	N/A	N/A
Attendance	28	N/A	N/A
Agenda	N/A	Presentation of Development Scenarios (USI)	N/A
Presentation Material	N/A	On-File	N/A
Comment Sheets Rec'd	N/A	N/A	On-File
Responses	N/A	N/A	N/A
Summary of PIC	N/A	N/A	N/A

Stakeholder Advisory Group	Mtg 1	Mtg 2	Mtg 3	Mtg 4	Mtg 5	Mtg 6	Mtg 7
Date	17-Apr-08	4-Dec-08	18-Jun-09	3-Dec-13	27-Feb-14	17-Mar-14	10-Jul-14
Time	N/A	7:00 PM - 9:30 PM	7:00 PM - 9:00 PM	10:00 AM	N/A	9:00 AM - 11:00 AM	7:00 PM - 9:00 PM
Location	N/A	Margaret Dunn Valleywood Library	Margaret Dunn Valewood Library	Town Hall, Caledon East	Town Hall, Caledon East	Town Hall, Caledon East	Brampton Fair Grounds
Attendance	N/A	See mintues	N/A	On-File	See Meeting Minutes	See Meeting Minutes	
Agenda	N/A	Review of Technical Studies	Presentation of Land Use Scenarios	Review of Endorsed Framework Plan	Review of MW2 Work - Specific to Spine Road	Spine Road Design through Village Centre	
Key Issues Discussed	N/A	Noise concerns raised	N/A	Transportation Network	Presentation of X-sections by AMEC	X-sections / Simulation of Spine Road	
Recommendations	N/A	N/A	N/A	N/A	PTSL to review possibility of 3-In Spine Road	Further investigation by Town Staff	
Copies of Minutes	N/A	On-File	N/A	N/A	On-File	On File	

Technical Advisory Committee	Mtg 1	Mtg 2	Mtg 3	Mtg 4
Date	25-Sep-08	18-Nov-08	18-Dec-09	26-May-14
Time	10:00 AM - 12:00 PM	1:00 PM - 3:00 PM	10:00 AM - 12:00 PM	2:30 - 5:00 PM
Location	Caledon Town Hall - Committee Room	Caledon Community Complex	Caledon Town Hall - Committee Room	Town Hall, Caledon East
Attendance	See Meeting Minutes	See Meeting Minutes	N/A	See Meeting Minutes
Agenda	On File	Review of Part A Transportation Report	Review of Part B Transportation Report	Project Background, TMP Overview
Key Issues Discussed	Acess to the east side of Hwy 10	Proposed guidelines for Land Use Concepts	N/A	GTA West Corridor; Interchange; Transit
Recommendations	None	None	N/A	None
Copies of Minutes	On File	On File	N/A	On File

Council Workshops	Workshop 1	Workshop 2	Workshop 3	Workshop 4	Workshop 5	Workshop 6	Workshop 7	Workshop 8
Date	3-Dec-08	7-Jan-09	17-Feb-09	22-Jun-09	16-Feb-10	7-Feb-12	5-Feb-13	17-Jun-14
Time	2:00 PM - 4:00 PM	10:00 AM - 3:00 PM	9:30 AM	N/A	N/A	9:30 AM	N/A	9:30 AM
Location	Caledon Community Complex	Brampton Fairgrounds	N/A	N/A	N/A	Council Chambers, Town Hall	N/A	Council Chamber, Town Hall
Attendance	N/A	See List	N/A	N/A	N/A	N/A	N/A	N/A
Agenda	Review Bkgd Material and Technical Studies	Community Design & Sustainability Workshop	N/A	N/A	N/A	MW2 Secondary Plan Update	N/A	Mayfield West Phase 2 Design Strategies
Presentation Material	N/A	N/A	Direction/Theme of MW2	Presentation of Land Use Scenarios (USI)	N/A	Presented by Tim Manley	Revised Planning Considerations On File	On File
Comments Rec'd	N/A	N/A	N/A	N/A	Council Comments On File	N/A	N/A	N/A
Responses	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Summary	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notice of Study Commencement

TOWN OF CALEDON

NOTICE OF PUBLIC OPEN HOUSE

Thursday, December 11, 2008 from 6 pm to 9 pm
Margaret Dunn Valleywood Library, 20 Snelcrest Drive, Caledon

FILE COPY

Mayfield West
Located in the southwest part of the Town, the Rural Service Centre of Mayfield West is being planned as a compact, well integrated community through a series of phased expansions. The Town of Caledon has revised the population forecast for Mayfield West for 2021 from 13,100 to 17,000 and is also proposing to allocate an additional 9,800 population to Mayfield West between 2021 and 2031. Through the Mayfield West Phase Two Secondary Plan, a decision will be made on the appropriate location and form for this future growth. Future growth of Mayfield West will occur within the Mayfield West Community Development Plan Study Area (see inset).

Public Input
The Town invites you to attend a Public Open House to learn more about the Mayfield West Phase Two Secondary Plan. The Open House provides an opportunity for the general public to learn more about the Secondary Plan process, review work done to date, meet the project team and to bring concerns to the attention of the Project Manager.

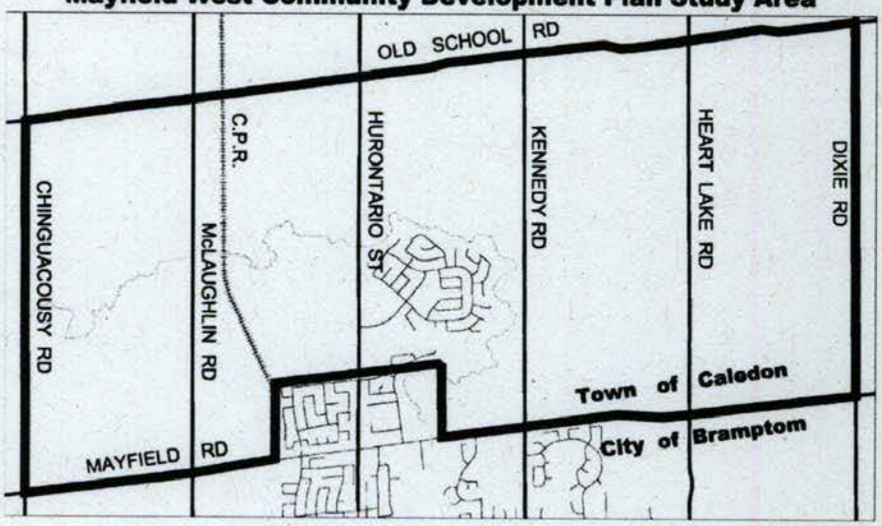
Enquiries
If you would like additional information regarding the Secondary Plan, please contact:

Tim Manley, Project Manager
Town of Caledon, Planning & Development Dept.
6311 Old Church Road, Caledon, ON L7C 1J6
(905) 584-2272, ext. 4285 tim.manley@caledon.ca

Information will be collected in accordance with the *Freedom of Information and Protection of Privacy Act*. With the exception of personal information, all comments will become part of the public record.

This Notice issued October 10 (Brampton Guardian) and October 11 (Caledon Enterprise), 2008.

Mayfield West Community Development Plan Study Area



TOWN HALL
6311 Old Church Road, Caledon, ON L7C 1J6
905.584.2272 | 1.888.CALEDON | FAX 905.584.4325 | www.caledon.ca

Public Information Centres

Stakeholder Advisory Group (SAG)

TOWN OF CALEDON

TOWN HALL
6311 Old Church Road, Caledon, ON L7C 1J6
905.584.2272 | 1.888.CALEDON | FAX 905.584.4325 | www.caledon.ca

Subject: **Stakeholder Advisory Group – Meeting #2**
Mayfield West Phase Two Secondary Plan
Phase 1 Technical Studies – An Update on Progress

Date: December 4, 2008

Time: 7:00 pm to 9:30 pm

Location: Margaret Dunn Valleywood Library, 20 Snelcrest Drive.

<u>Agenda</u>

1. Introductions. (Town staff)
2. Review of Meeting Notes from April 17, 2008 (All)
3. Project Background. (Town staff)
4. Phase 1 Technical Studies: (Presentations by technical team)
    - Comprehensive Environmental Impact Study and Adaptive Management Plan: Ron Scheckenberger, Philips Engineering & Jim Dougan, Dougan & Associates.
    - Water & Wastewater Servicing: Dave Kesler, R.J. Burnside.
    - Transportation Impact Study: Bill O'Brien, Paradigm Transportation Solutions.
    - Agricultural Impact Assessment: Sean Colville, Colville Consulting.
    - Noise Impact Assessment: Dalila Giusti, Jade Acoustics.
    - Cultural Heritage Landscapes and Built Heritage Resources Assessment: Andre Scheinman and Caroline Marshall, ENVision-The Hough Group.
5. Next Steps (Town staff)

	Stakeholder Name	Representative
1	Brampton Flying Club	Chris Tschirhart
2	Brampton Flying Club	Julie Pomeroy
3	Caledon Agricultural Advisory Committee	Hugh Metcalfe
4	Caledon Environmental Advisory Committee	Neil Morris
5	Caledon Environmental Advisory Committee	John Abbott
6	Caledon Environmental Advisory Committee	Bill Wilson
7	Caledon Chamber of Commerce	Kelly Darnley
8	Caledon Countryside Alliance	Karen Hutchinson
9	Mayfield Station Developers Group	Peter Le Blanc
10	Glen Schnarr & Associates*	Brian Sutherland
11	Gartner Lee Limited*	Mike Hensel
12	Heritage Caledon	Doug Beffort
13	Brampton Christian School	Al Tupper
14	Brampton Christian School	Rick Robson
15	Peel Federation of Agriculture	Jim Moore
16	Valleywood Residents Association	Rob Harrison
17	Valleywood Residents Association	Suzan Dass
18	Valleywood “Resident at Large”	Preet Kang

Chairperson: Regional Councillor Allan Thompson
Alternate Chairperson: Area Councillor Gord McClure

* Representing Mayfield Station Developers Group

Mayfield West Phase 2 Secondary Plan (MW2)

Stakeholders Advisory Group (SAG) – Meeting #2

December 4, 2008 – Margaret Dunn Valleywood Library – 7 p.m. to 9 p.m.

Attendees

1. Al Tupper: Brampton Christian School
2. John Abbott: Caledon Environmental Advisory Group (CEAC)
3. Steve McElroy: CEAC
4. Bill Wilson: CEAC
5. Chris Tschirhart: Brampton Flying Club (BFC)
6. Julie Pomeroy: BFC
7. Brian Sutherland: Glenn Schnarr & Associates (GSAI)
8. Glen Schnarr: GSAI
9. Mike Hensel: Hensel Design Group
10. Councillor Allan Thompson: Chairperson
11. Councillor Gord McClure: Alternate Chairperson
12. Tim Manley (TM): Senior Planner / Project Manager

Town of Caledon Consultant Team

13. Ron Scheckenberger (RS): Philips Engineering
14. Karl Konze (KK): Dougan & Associates
15. Bill Blackport (BB): Blackport & Associates
16. Shelly Gorenc (SG): Parish Geomorphic
17. Cam Portt (CP): C. Portt & Associates
18. Dave Kesler (DK): R.J. Burnside & Associates
19. Sean Colville (SC): Colville Consulting
20. Caroline Marshall (CM): ENVision The Hough Group
21. Andre Scheinman (AS)
22. Bill O'Brien (BOB): Paradigm Transportation Solution Limited
23. Dalila Guisti (DG): Jade Acoustics

Absent

1. Kelly Darnley: Caledon Chamber of Commerce
2. Hugh Metcalf: Caledon Agricultural Advisory Committee
3. Karen Hutchinson: Caledon Countryside Alliance
4. Peter Le Blanc: Mayfield Station Developers Group
5. Rick Robson: Brampton Christian School
6. Rob Harrison: Valleywood Residents Association (VRA)
7. Suzan Dass: VRA
8. Preet Kang: Valleywood Residents at Large

Introductions

The Town's consulting team introduced themselves to the SAG.

Review of Meeting Notes from April 17, 2008

The April 17 2008 SAG meeting notes were circulated in draft form to the group for review and comment on July 8, 2008. Input received was incorporated in to final meeting notes which were circulated to the group on December 2, 2008. TM provided the group with a further opportunity to review the April 17 meeting notes and provide comments. No comments were made.

TM explained to the group that the meeting notes will be the vehicle to track issues and/or concerns that the members raise at each meeting. Members are encouraged to raise additional issues at any time in the planning process.

Project Background

TM provided a short PowerPoint presentation regarding the project background e.g. project initiation, work program, and Phase 1 technical studies.

Project initiation:

Rural Service Centre of Mayfield West is being planned as a compact, well integrated community. Growth in Mayfield West is occurring through a series of phased expansions, based on long-term population and employment forecasts. 'Phase One' Secondary Plan was approved in October 2007. Phase Two Secondary Plan was formally initiated by Caledon on June 10, 2008 with the adoption of the General Terms of Reference.

Implementation of the local land use plan will require an amendment to the Peel Official Plan for a settlement boundary expansion. Provincial, Regional and Town policies require that technical studies be completed to support a settlement boundary expansion.

Work program:

The secondary planning exercise consists of twenty-five (25) steps structured into four distinct phases – see attachment to these meeting notes.

Phase 1 technical studies:

Phase 1 of MW2 consists of a series of background technical studies to determine existing conditions, characterization, opportunities and constraints within the MW2 study area.

Since approval of the GTR in June 2008, Caledon has retained a multi-disciplined team of external consultants to carry out the necessary background technical studies. The following eight (8) consultant firms have been retained to complete the following background technical studies:

1. Philips Engineering: Comprehensive Environmental Impact Study and Management Plan;
2. R.J. Burnside & Associates: Water & Wastewater Servicing Study;
3. Paradigm Transportation Solutions Limited: Transportation Impact Study;
4. Agricultural Impact Assessment: Colville Consulting Inc.;
5. Noise & Vibration Impact Assessment: Jade Acoustics Inc.;
6. Stage 1 Archaeological Assessment: Historic Horizons Inc.;
7. Cultural Heritage Landscapes Assessment & Built Heritage Resources Assessment: Andre Scheinman and ENVision –The Hough Group; and
8. Commercial Needs Assessment: W. Scott Morgan & Associates.

Purpose of the background technical studies, through a Part A work program, is to Identify and characterize existing conditions and issues, commence baseline monitoring, identify opportunities and constraints. To complete this task, activities include review existing information, data collection e.g. existing studies/reports and field work, modeling and data analysis/interpretation and reporting. With the exception of the Comprehensive Environmental Impact Study and Management Plan (EIS&MP), all Phase 1 background technical studies have been completed.

John Abbott (CEAC) reminded staff of the need to give SAG sufficient opportunity to provide comments at key stages of the secondary planning process such as the community design plan in Phase 3.

TM responded the General Terms of Reference (GTR) for MW2 includes the "lessons learned" from Mayfield West Phase 1 and incorporates many opportunities for the SAG to participate in the project, including three SAG meetings on the community design plan.

Phase 1 Technical Studies

A series of presentations were made by the Town's technical consulting team.

1. Comprehensive Environmental Impact Study & Management Plan:

Ron Scheckenberger (RS) and his team [KK: terrestrial ecology; BB: hydrogeology; CP: fisheries biologist; SG: fluvial geomorphology] presented the initial results and findings of the 2008 field monitoring program.

In regard to the Comprehensive EIS&MP, initial results and findings of the 2008 field monitoring component are contained in an 'interim report' which was presented to a study Technical Steering Committee (TSC) in November 2008; the TSC consists of representatives from Caledon, Peel, Toronto and Region Conservation, Credit Valley Conservation and Mayfield Station Developers Group. Components of the Comprehensive EIS&MP field monitoring component are still underway, specifically related to the well monitoring; all other field work has been completed. A formal draft Comprehensive EIS&MP Phase 1 report is being prepared by Philips' Environmental Team and is proposed to be circulated to the TSC for review and comment at the end of April 2009.

Bill Wilson (CEAC): Will the surface water monitoring continue after the secondary plan has been completed and approved?

RS: Yes, Part C of the Comprehensive EIS & MP requires the preparation and implementation of a long term monitoring plan and an associated comprehensive adaptive management plan. Surface water monitoring will be a key component of this plan.

Councillor Thompson reminded the team of a 1997 KMK study of the area wells conducted on behalf of the Region of Peel.

Chris Tschirhart (BFC) suggested that data to the south of Caledon i.e. from the City of Brampton Fletcher's Creek Study, should be shown on all maps/diagrams/figures. Currently, as shown, it appears that Caledon has already made a decision regarding location and phasing for MW2.

TM replied that this last observation was not the intent. Future maps/figures/diagrams will show, to the extent that is possible, decisions made south of and adjacent to MW2.

Bill Wilson (CEAC): What is a water budget and when will it be undertaken? CEAC is keen to follow this process.

RS: A water budget is a summation of precipitation (rainfall/snowfall), evaporation, infiltration, transpiration and runoff over a period of time (e.g. day, week, month, year). A hydrologic model integrated with a ground water model provides you with the amounts of each of the water budget components. One can then compare the water budget for current land use to future land use with and without various forms of mitigation/management. This assessment is included in Part C of the Comprehensive EIS & MP.

Steve McElroy (CEAC): Will there be opportunities to enhance the fisheries in the study area?

RS: Yes. Part C of the Comprehensive EIS & MP includes conclusions, recommendations, strategies and management measures to enhance and restore ecological form, function and attributes for features in the MW2 area, including fisheries.

John Abbott (CEAC): When should we start thinking about corridor connections (i.e. linking ecological features such as Etobicoke Creek and isolated woodlots)?

KK: At this time it is perhaps too early to start locating and sizing these corridors without the input from the other technical team members. Need to work closely with the land use planning team and conservation authorities to determine the best location and most appropriate size for corridors in the MW2 study area.

Steve McElroy (CEAC): How big should the corridors be, 100 metres wide?

KK and RS: The Town needs to consider the existing and future urban system and goals of the land use component.

2. Cultural Heritage Landscapes Assessment & Built Heritage Resources Assessment:

CM and AS presented the findings and recommendations of their study. AS concluded that the recommendations (i.e. recommending designating landscapes and built heritage resources) are not easy to implement as many property owners are not willing to participate.

3. Water and Wastewater Servicing:

DK presented the findings of the water and wastewater servicing study.

Chris Tschirhart (BFC): Can the proposed Kennedy Road elevated water tank service the west side of Highway 10?

DK: We believe not, although the Part A report will confirm this.

Chris Tschirhart (BFC): Can you confirm the north and east reservoir timing? Are they elevated tanks or reservoirs? BFC operations conflict with tower structures such elevated water tanks.

DK: Final Part A report will include an estimate of timing and likely structure type.

4. Transportation Impact Study (TIS):

BOB presented the findings of the transportation impact study.

John Abbott (CEAC): What do we know about the MTO east/west corridor? It's difficult to proceed with MW2 with such a level of uncertainty.

BOB: Ontario Ministry of Transportation (MTO) is represented on the TIS technical advisory team and is fully aware of Caledon's planning efforts in the area. MTO is currently undertaking a needs assessment for the east/west corridor. This is a precursor to a full environmental assessment. Caledon has to continue to pursue its' own goals and, at this time, that means planning MW2 with a level of uncertainty in regard to this potential corridor.

Steve McElory (CEAC): What is the potential for commuter rail service on the Brampton/Orangeville rail line? Is there potential for car-pool lots and public transit in MW2?

BOB: The potential for commuter rail service is low. Mount Pleasant GO rail station is in close proximity to MW2 study area. The TIS team will work closely with the land use planning team to provide opportunities for future potential transit service and enabling easy access to possible transit routes in MW2; this will include a well designed continuous system of local roads as a minimum.

5. Agricultural Impact Study:

SC presented the findings of the agricultural impact study. He acknowledged moving farm machinery safely between farming operations on public roads is a key concern for the farming community with new urban development.

Councillor Thompson raised concerns with the appropriateness/accuracy of the soil classification methodology.

6. Noise Impact Assessment:

DG presented the findings of the noise impact assessment.

John Abbott (CEAC): Do you provide mitigation for the wildlife in the area that is affected by noise from new urban development?

DG: No, we do not look at that. Typically adverse noise issues are a function of poor land use planning.

In regard to a potential commercial area at Highway 10/Highway410 Councillor Thompson raised the issue of noise generated by trucks loading/unloading and refridgeration units adjacent to the existing residential area to the south in Brampton.

Chris Tschirhart (BFC): BFC has signed a confidentiality agreement with Jade to release information/data so that Jade can complete a noise contour map for the BFC operations. Jade have been great to work with. BFC have entered in to dialogue with the Town to gain acknowledgement that BFC exist.

Next Steps

1. Public Open House: December 11, 2008.
2. Complete Part A Technical Studies.
3. Retain Community Design & Sustainability Consultant.
4. Community Design & Sustainability Workshop: January 7, 2009.

Meeting adjourned @ 10:00 p.m.

Tracking issues and /or concerns

Stakeholder Group	**Issue and/or concern to be tracked**
Brampton Flying Club	1. Concerned with urban land uses moving closer, could raise noise concerns, especially from residents. 2. Elevated water tanks.
Valleywood Residents Association	Noise.
Heritage Caledon	Keeping all stakeholders informed of the process and decisions is important.
Valleywood Residents at Large	None raise to date.
Brampton Christian School	Plans for future development on school site; want to protect this opportunity.
Peel Federation of Agriculture	1. Drainage concerns. 2. Well water supply.
Caledon Environmental Advisory Group	1. Management of storm water runoff. 2. Opportunity to provide input at key stages of the project. 3. Water budget. 4. Corridors connecting ecological features.
Mayfield Station Developers Group	Project timing – keeping to the schedule in the GTR.

End of Meeting Notes for December 4, 2008 meeting.

Meeting Notes

Paradigm Transportation Solutions Limited

PROJECT: MAYFIELD WEST PHASE 2 TRANSPORTATION PLAN
PROJECT NUMBER: 101380

DATE: February 27, 2014

LOCATION: **CALEDON TOWN HALL**

ATTENDEES:

NAME	AGENCY	NAME	AGENCY
SILVANO TARDELLA	NAK	BILL O'BRIEN	PARADIGM
JENNIFER MAHONEY	NAK	JOHN VAN DER MARK	PARADIGM
PAUL BROWN	URBANTECH WEST	JOHN KOKE	GENSTAR
VICTORIA COX	CALEDON	MATT MACCHARLES	GENSTAR
JANET SPERLING	CALEDON	HAYDEN MATTHEWS	LAURIER HOMES
RYAN GRODECKI	CALEDON	DAVID SINKE	AMEC
DAVE HURST	CALEDON	RICK VANGOTICH	FIELDGATE
BRIAN SUTHERLAND	GSAI	STEVEN SILVERBERG	LAURIER HOMES
ANDREW BROWN	LEA		

PURPOSE: **DISCUSSION OF MW2 TRANSPORTATION PLANS**

Item	Discussion	Action By
1	Tim Manley introduced the meeting and explained that the purpose was to bring everybody up to date on the current work on roadway plans, particularly for the Spine Road.	
2	Bill O'Brien reviewed the overall context of the road network. Key components are the new interchange at Highway 410 and Valleywood which will require an updated EA Study and the east – west Spine Road which is seen as an arterial road connecting to the new interchange. The details of the Spine Road within the planned village centre at McLaughlin are currently under discussion. Bill also reviewed the current plans for a trails and cycling plan throughout MW2.	

3 David Sinke reviewed the current plan for the Spine Road in the critical area between Collector Road F and west of McLaughlin Road intersection. This plan is under discussion and subject to refinement but currently consists of:

Two through lanes in each direction

Centre left turn lane at intersections and at local street connections and driveways. With the current connections to the Spine Road this results in a continuous left turn lane from west of McLaughlin through the railway crossing.

On-road bike lanes of 2.0 m in width, including buffer strip.

Parking in bays along the live-work block frontage

Widened sidewalks adjacent to the live-work block and a 2.0 m sidewalk along the south side.

This plan provides a good level of traffic service in the peak period but there are concerns that it does not support the desired village character on the Spine Road.

4 Andrew Brown reviewed some road plans prepared by LEA. He suggested that more traffic could be accommodated on the collector roads around the Village Centre.

5 Considerable discussion ensued.

It was suggested that a three lane cross-section on the Spine Road through the Village Centre should be further reviewed to assess the impacts of downsizing the Spine Road.

Paradigm will further assess the options for the Spine Road and prepare a visual simulation using SimTraffic for discussion.

6 Meeting adjourned at 12:15 PM

PARADIGM TRANSPORTATION SOLUTIONS LIMITED

W. B. O'Brien
M.A.Sc., P. Eng.
Senior Transportation Consultant

Meeting Notes

PROJECT: MAYFIELD WEST PHASE 2 TRANSPORTATION PLAN
PROJECT NUMBER: 101380

Paradigm Transportation Solutions Limited

DATE: March 17, 2014

LOCATION: **CALEDON TOWN HALL**

ATTENDEES:

NAME	AGENCY	NAME	AGENCY
SILVANO TARDELLA	NAK	TIM MANLEY	CALEDON
JOHN RICHARD	NAK	BILL O'BRIEN	PARADIGM
KANT CHALWA	CALEDON	JOHN VAN DER MARK	PARADIGM
VICTORIA COX	CALEDON	JOHN KOKE	GENSTAR
JANET SPERLING	CALEDON	MATT MACCHARLES	GENSTAR
RYAN GRODECKI	CALEDON	DAVID SINKE	AMEC
DAVE HURST	CALEDON	RICK MANGOTICH	FIELDGATE
BRIAN SUTHERLAND	GSAI	STEVEN SILVERBERG	LAURIER HOMES
ANDREW BROWN	LEA	PAUL MONDELL	BROOK VALLEY
EMANUEL NICOLESCU	LEA		

PURPOSE: **DISCUSSION OF SPINE ROAD PLANS FOR VILLAGE CENTRE**

Item	Discussion	Action By
1	Tim Manley introduced the meeting and explained that the purpose of the meeting was to follow-up on the 27 February meeting regarding the discussion of the Spine Road design through the Village Centre.	
2	Bill O'Brien reviewed four roadway scenarios, involving different lane configurations and traffic diversion assumptions for the Spine Road (Hurontairo – Collector Rd D). A copy of the presentation notes is attached to these Meeting Notes. Scott Catton provided a SimTraffic simulation of the four different scenarios.	

4 Andrew Brown and Emanuel Nicolescu provided some video clips of the traffic operations at different points along the Spine Road and also at a couple of other key intersections.

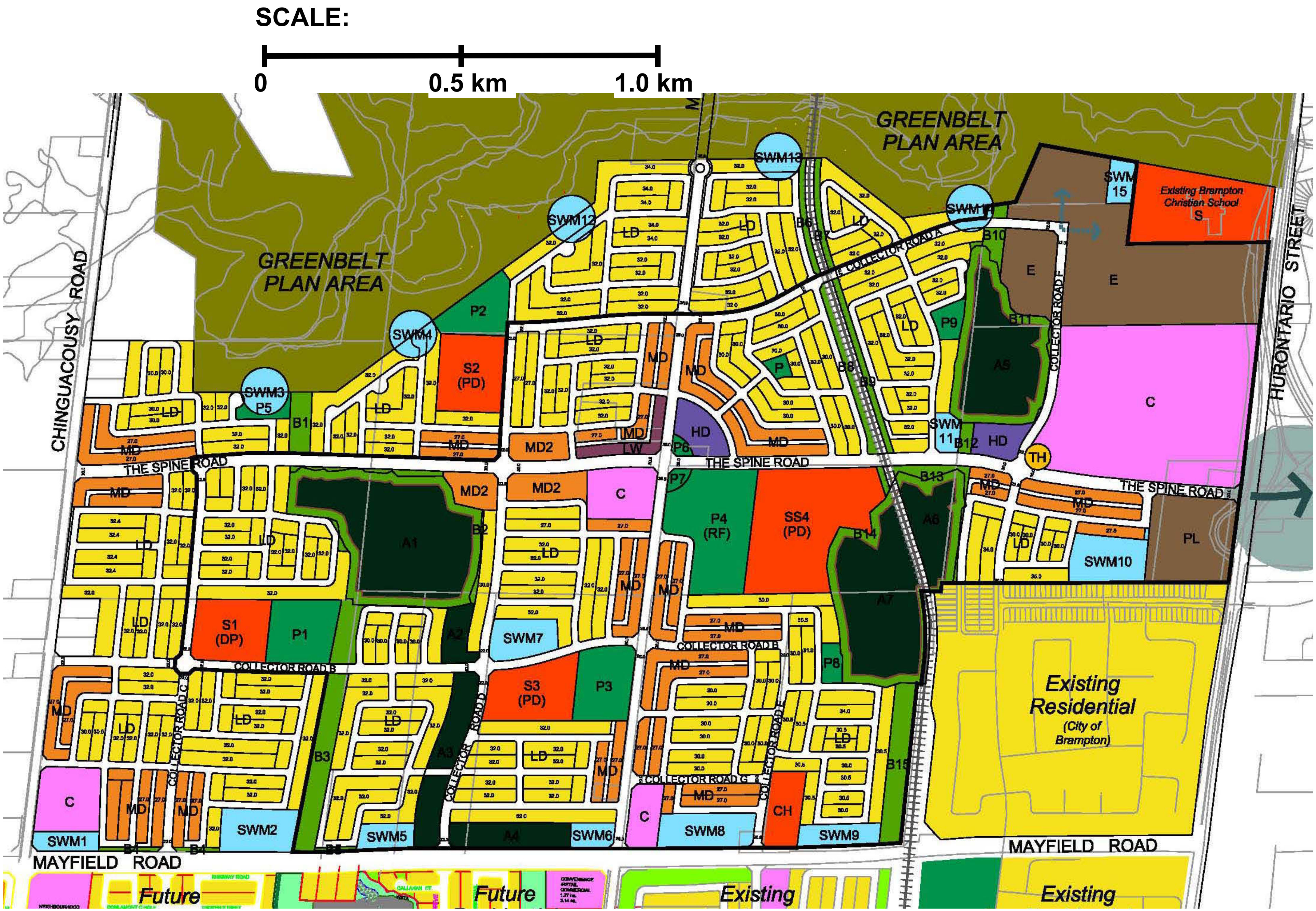
5 A discussion of the different scenarios was held with reasonable recognition of the implications of the different scenarios.

Tim Manly summarized by advising the group he wishes to discuss this further with the Town staff and he asked the landowner group to have their own discussion on this matter and to come back to the Town with their preferred position.

6 Meeting adjourned at 11:00 AM

PARADIGM TRANSPORTATION SOLUTIONS LIMITED

W. B. O'Brien
M.A.Sc., P. Eng.
Senior Transportation Consultant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GREENBELT PLAN AREA
GREENBELT PLAN AREA
CHINGUACOUSY ROAD
HURONTARIO STREET
MAYFIELD ROAD
MAYFIELD ROAD
THE SPINE ROAD
THE SPINE ROAD
THE SPINE ROAD
COLLECTOR ROAD A
COLLECTOR ROAD B
COLLECTOR ROAD B
COLLECTOR ROAD C
COLLECTOR ROAD D
COLLECTOR ROAD E
COLLECTOR ROAD F
COLLECTOR ROAD G
Existing Brampton Christian School
S
Existing Residential (City of Brampton)
S1 (DP)
S2 (PD)
S3 (PD)
SS4 (PD)
P1
P2
P3
P4 (RF)
P5
P6
P7
P8
P9
A1
A2
A3
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A6
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SCALE:
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GREENBELT PLAN AREA
GREENBELT PLAN AREA
CHINGUACOUSY ROAD
HURONTARIO STREET
THE SPINE ROAD
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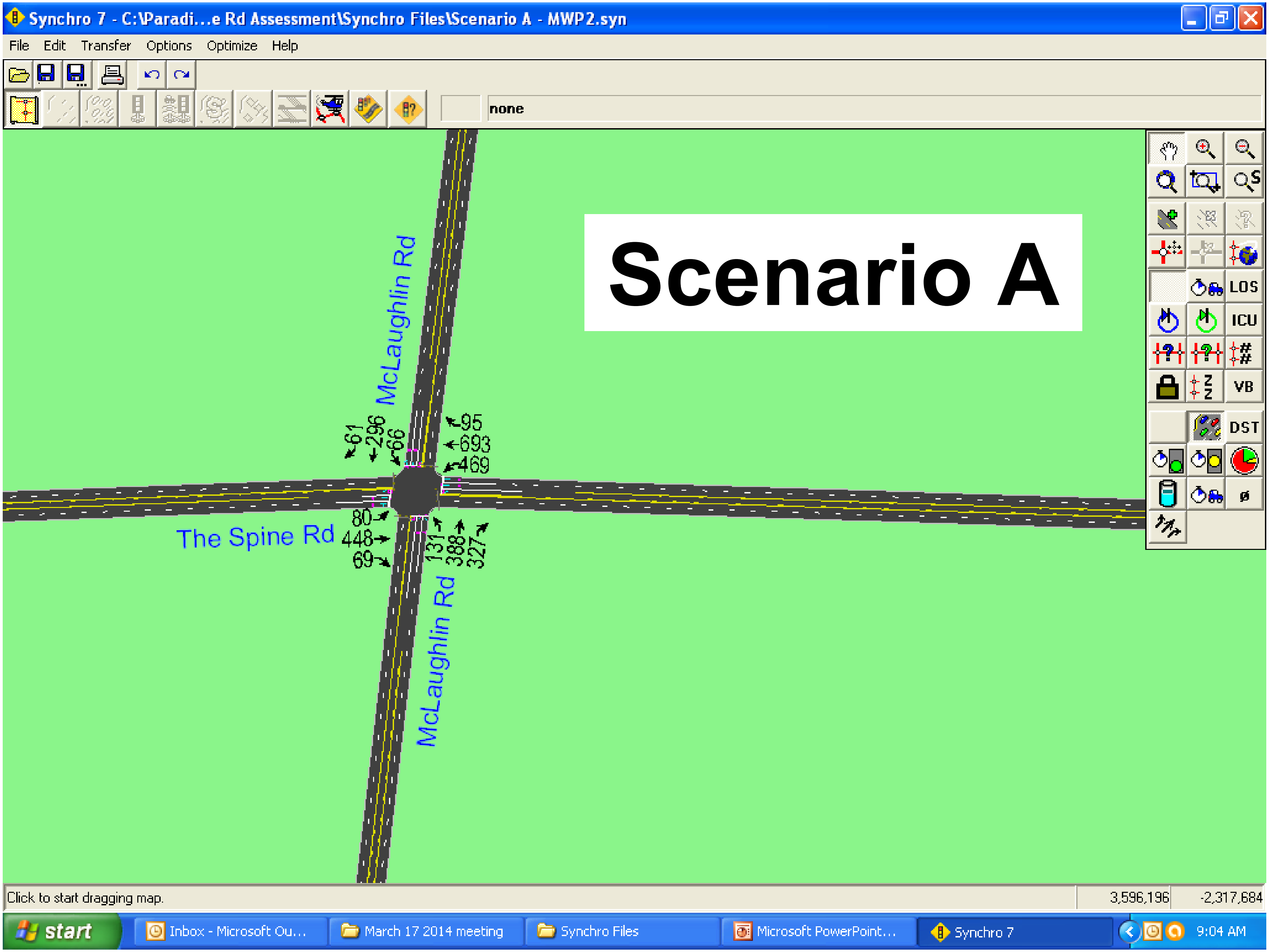
COLLECTOR ROAD A
COLLECTOR ROAD B
COLLECTOR ROAD B
COLLECTOR ROAD C
COLLECTOR ROAD D
COLLECTOR ROAD E
COLLECTOR ROAD F
COLLECTOR ROAD G
MAYFIELD ROAD
MAYFIELD ROAD
Traffic Simulation Area
Village Centre
Existing Brampton Christian School
S
Existing Residential (City of Brampton)
Future
Future
Existing
Existing
S1 (DP)
S2 (PD)
S3 (PD)
P1
P2
P3
P5
P6
P7
P8
P9
SWM1
SWM2
SWM3
SWM4
SWM5
SWM6
SWM7
SWM8
SWM9
SWM10
SWM 11
SWM12
SWM13
SWM 15
A1
A2
A3
A4
A5
A6
A7
E
E
C
C
C
C
PL
TH
CH
HD
HD
LW
MD2
MD2
MD2
(RF)

Four Scenarios Investigated for Spine Road (Full Build out PM Peak Hour Traffic Conditions):

Scenario A	Base Case with 4 thru lanes & left turn lanes on Spine Road (Collector F to Collector D) and 4 thru lanes & left turn lanes on McLaughlin. PM peak hour traffic assigned to most direct route.
Scenario B	Spine Road reduced to 2 thru lanes & left turn lane from High School entrance to Collector D. McLaughlin has 4 thru lanes & left turn lane thru Village Centre. PM peak hour assigned to most direct route (as in Scenario A)
Scenario C	Reduced lanes on Spine Road as in Scenario B but traffic volumes reduced by reassigning some east – west traffic to Collector F and Collector A
Scenario D	Reduced lanes on Spine Road as in Scenario B but traffic volumes further modified by assigning traffic to an extension of Collector E to intersect with Spine Rd. This involves a change to approved land use framework plan.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Scenario A
McLaughlin Rd
The Spine Rd
McLaughlin Rd
61
296
66
95
693
469
80
448
69
131
388
327
LOS
ICU
VB
DST
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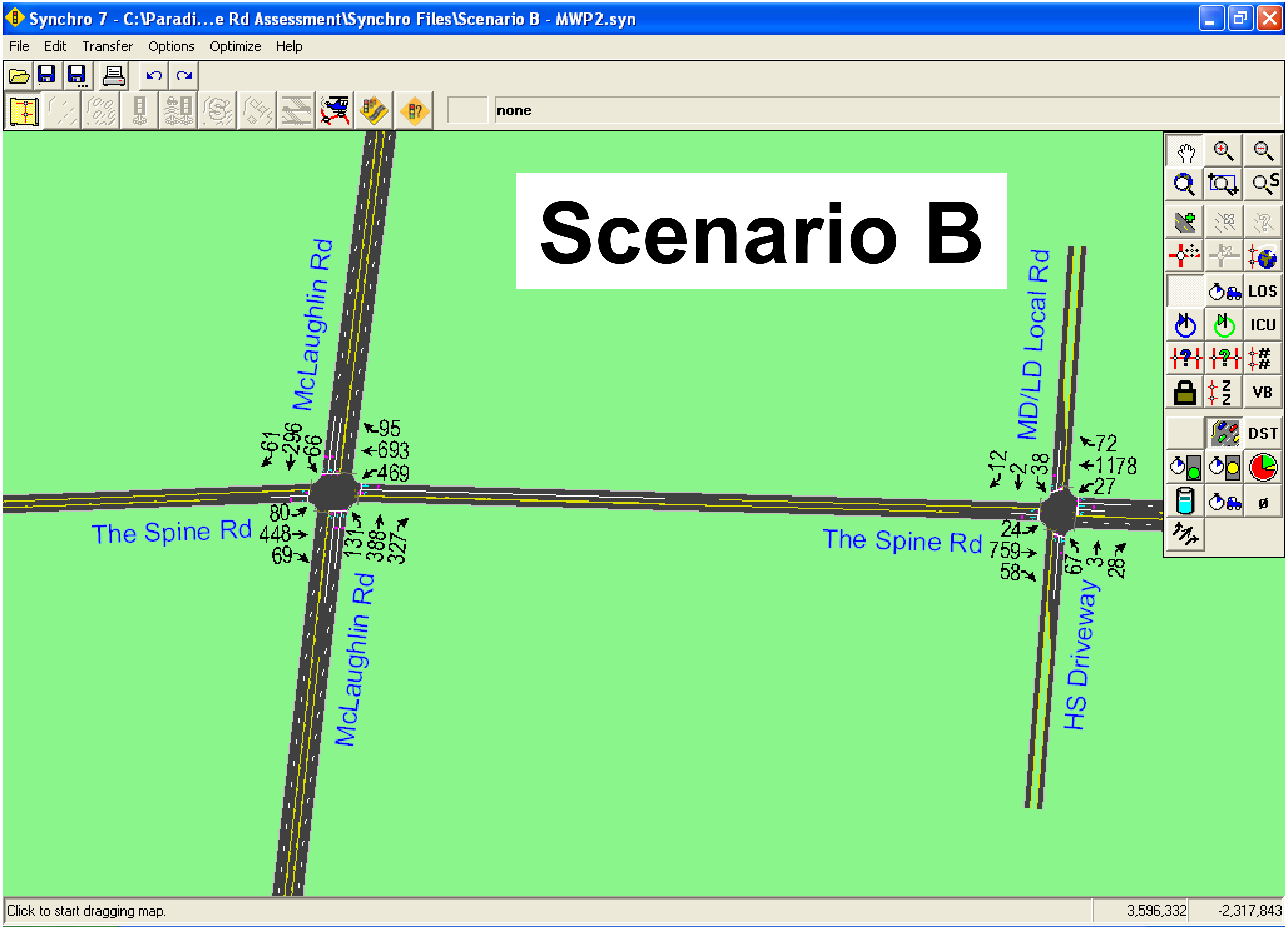
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Scenario B
McLaughlin Rd
MD/LD Local Rd
The Spine Rd
The Spine Rd
McLaughlin Rd
HS Driveway
61
296
66
95
693
469
80
448
69
131
388
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12
2
38
72
1178
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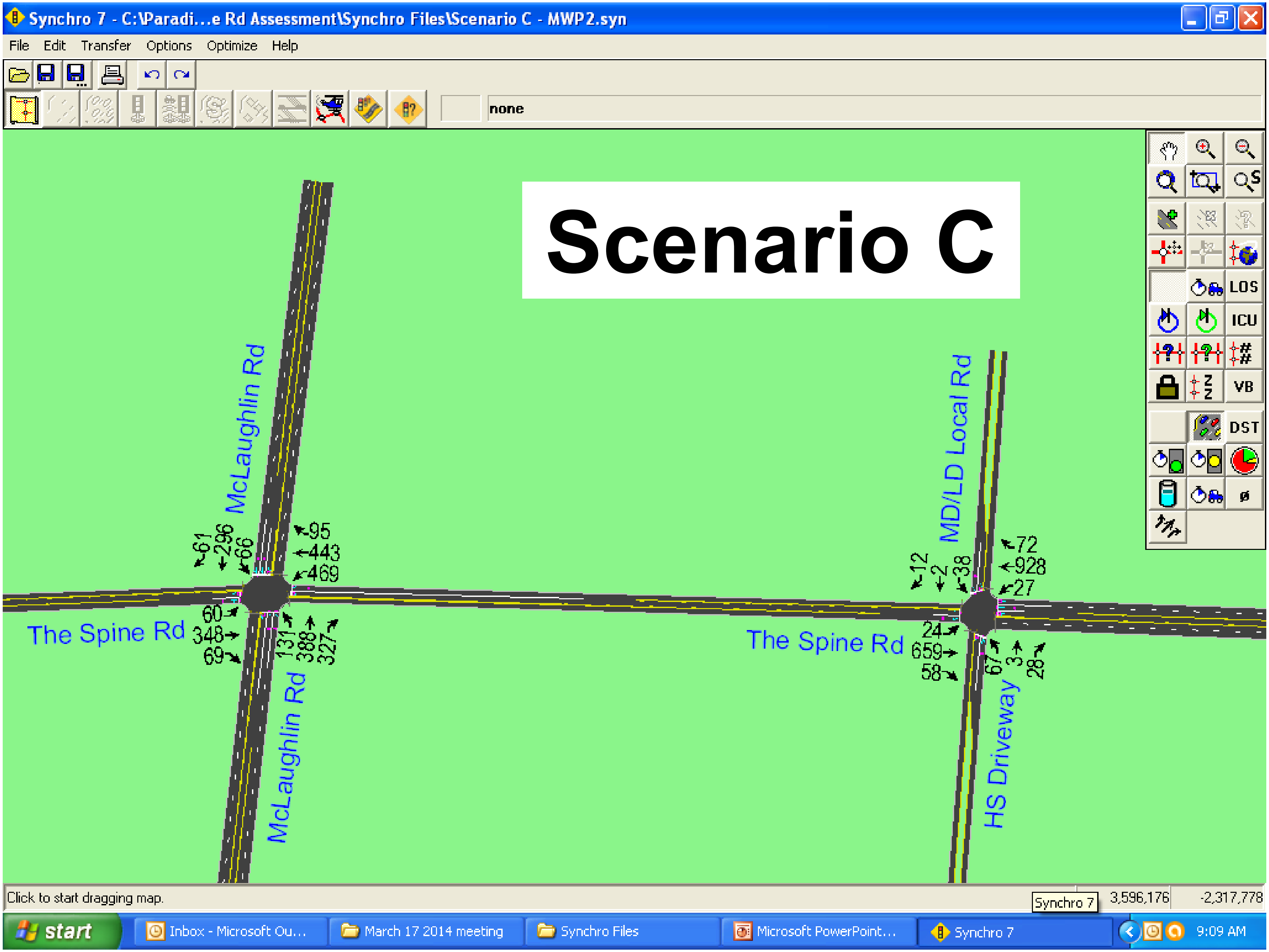
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Scenario C
McLaughlin Rd
MD/LD Local Rd
The Spine Rd
The Spine Rd
McLaughlin Rd
HS Driveway
61 296 66
95
443
469
60
348
69
131 388 327
12 2 38
72
928
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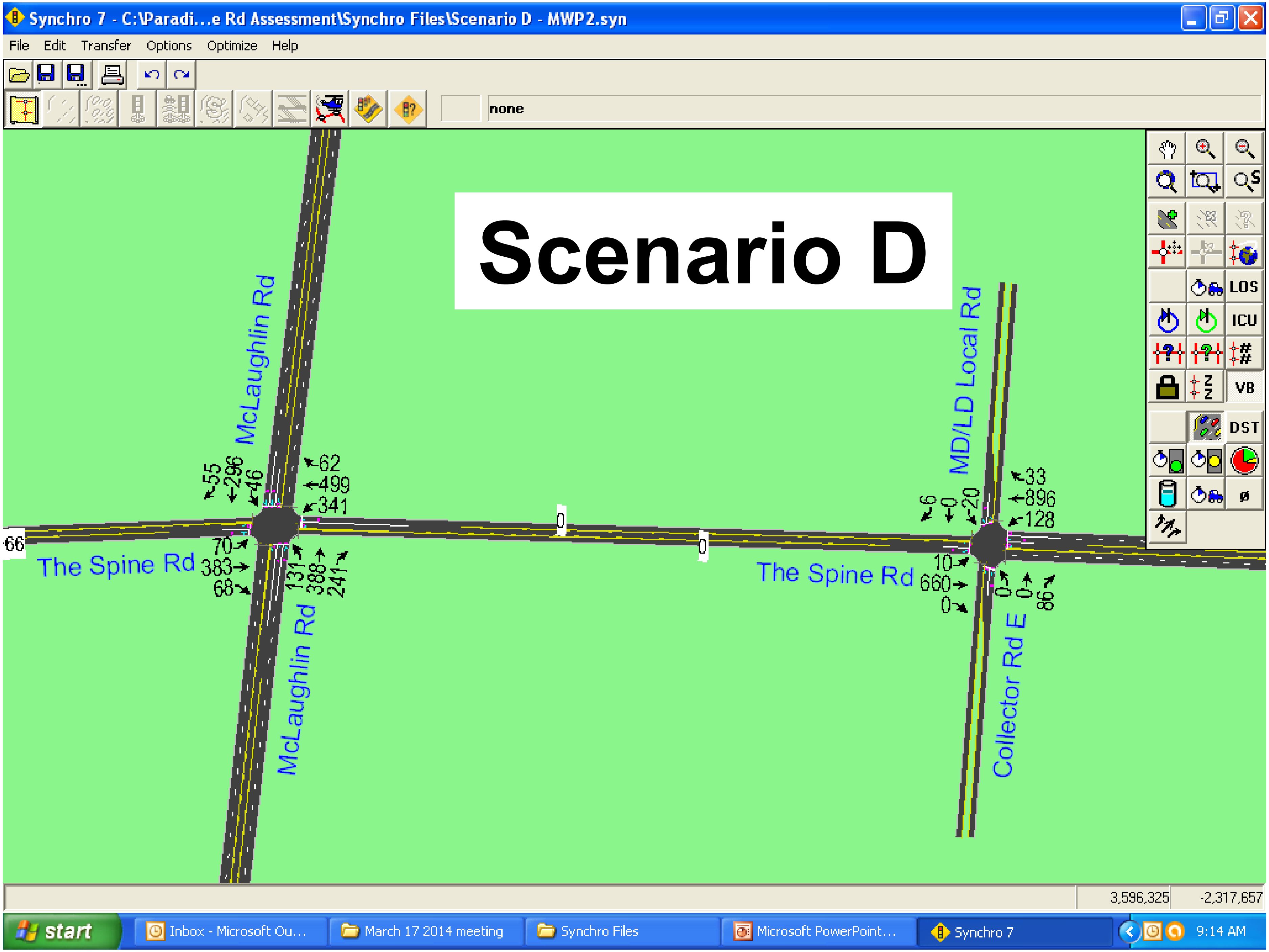
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Scenario D
McLaughlin Rd
McLaughlin Rd
The Spine Rd
The Spine Rd
MD/LD Local Rd
Collector Rd E
55
296
46
62
499
341
70
383
68
131
388
241
66
0
0
6
0
20
33
896
128
10
660
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Performance Summary Comparison:

Conditions at Spine Rd & McLaughlin Rd Intersection	**Overall Intersection Performance**			**Critical Movements (v/c > 0.9)**		
	LOS	Average Delay (seconds per vehicle)	Intersection Capacity Utilization	Movement	Average Delay (seconds per vehicle)	Volume / Capacity (v/c)
Scenario A	C	27	85%	n/a		
Scenario B	D	45	94%	EB T	58	0.90
				WB L	56	0.97
				NB T	54	0.92
Scenario C	D	37	88%	WB L	44	0.92
Scenario D	C	30	83%	n/a		

Technical Advisory Committee (TAC)

From: Tim Manley [tim.manley@caledon.ca]
Sent: August 28, 2008 2:31 PM
To: Carrick, Jim; Self, Kennedy; Waters, David; Lagakos, Ted (MTO); Brian Sutherland
Cc: Bill O'Brien; Haiqing Xu; Craig Campbell
Subject: Caledon Mayfield West Transportation Impact Study

Importance: High

On June 10, 2008, Caledon Council approved the General Terms of Reference (GTR) for the Mayfield West Phase Two Secondary Plan.

Caledon has revised the 2021 population forecast for Mayfield West from 13,100 to 17,000. Caledon is also proposing to allocate an additional 9,800 population to Mayfield West between 2021 and 2031. As a result, Caledon has begun a planning exercise, known as the Mayfield West Phase Two Secondary Plan, to make a decision on the appropriate location and form for this growth.

A transportation impact study is identified as a required technical study in the GTR. The Town has retained a team led by **Bill O'Brien at Paradigm Transportation Solutions Limited** to complete the transportation study.

The study work plan requires the establishment of a technical advisory team (TAT). The TAT will provide input, guidance and advice to Caledon; it is not a decision making body. As well as Town staff and the Study consultant, staff from Peel, City of Brampton, MTO, and a landowners group are being invited to join the TAT. The first TAT will likely be in **late September 2008**. Please provide me with the **names of the representatives** from your organization who will be participating on this project so that the Town can schedule the September meeting. Your earliest attention to this matter is much appreciated.

For your reference I have attached the GTR and DTR. A project webpage has been established at:

http://www.caledon.ca/townhall/departments/planningdevelopment/Mayfield_West_Phase_II_Secondary_Plan.asp

Please do not hesitate to call me if you have any questions.

Thanks.

Tim Manley | Senior Policy Planner
Planning & Development Department
Town of Caledon
905.584.2272 x4285 | www.caledon.ca

Mayfield West Phase Two Secondary Plan

Transportation Impact Study

Technical Advisory Team

	Name	Title	Phone #	email
Town of Caledon	Haiqing Xu	Senior Transportation Planner	905-584-2272 x 4293	haiqing.xu@caledon.ca
	Tim Manley	Project Manager	905-584-2272 x 4285	tim.manley@caledon.ca
	David Atkins	Manager, Engineering & Construction	905-584-2272 x 4128	david.atkins@caledon.ca
Region of Peel	Kennedy Self	Manager, Development Planning	905-791-7800 x 4418	kennedy.self@peelregion.ca
	Jim Carrick	Manager, Traffic Engineering	905-791-7800 x 7850	jim.carrick@peelregion.ca
	Damian Jamroz	Supervisor, Traffic Development	905-791-7800 x 7856	damian.jamroz@peelregion.ca
	Murray McLeod	Manager, Transportation Planning	905-791-7800 x 4352	murray.mcleod@peelregion.ca.
City of Brampton	Kant Chawla		905-874-2410	kant.chawla@city.brampton.on.ca.
	Brad Hale		905-874-2573	brad.hale@city.brampton.on.ca.
	Chris Duyvestyn		905-874-2544	chris.duyvestyn@city.brampton.on.ca.
MTO	Trevor Greenman	Transportation Planner	416-585-7332	trevor.greenman@ontario.ca
Landowner's Group	Brian Sutherland	Planner	905-568-8888	brians@gsai.ca
	Andrew Brown	LEA Consulting	(905) 470-0015	abrown@lea.ca
Paradigm	Bill O'Brien	Study Consultant	905-381-2229 x 3	bobrien@ptsl.com

PROJECT: MAYFIELD WEST PHASE 2 SECONDARY PLAN TRANSPORTATION IMPACT STUDY

PROJECT NUMBER: 081260

Paradigm Transportation Solutions Limited

DATE:	**September 25, 2008**
TIME:	**10:00 AM - NOON**
LOCATION:	**CALEDON TOWN HALL, CALEDON EAST, COMMITTEE ROOM**
PURPOSE:	**TECHNICAL ADVISORY TEAM MEETING # 1**

ITEM	DESCRIPTION	RESPONSIBILITY
1	Introductions	
2	Background to Study (Development area, other studies)	Tim Manley
3	Study Work Plan (distributed in advance)	Bill O'Brien
4	Discussion of Preliminary Issue Areas	Bill O'Brien
5	Data & Information Request (preliminary list distributed in advance)	Bill O'Brien
6	Other Business	

WBO/jjlm

MEETING NOTES

PROJECT: MAYFIELD WEST PHASE 2 SECONDARY PLAN TRANSPORTATION IMPACT STUDY

PROJECT NUMBER: 081260

DATE: September 25, 2008

TIME: 10:00 AM - NOON

LOCATION: CALEDON TOWN HALL, COMMITTEE ROOM

ATTENDEES:

Name	Agency	Name	Agency
Tim Manley	Town of Caledon	Jim Carrick	Region of Peel
David Atkins	Town of Caledon	Damian Jamroz	Region of Peel
Trevor Greenman	MTO	Kennedy Self	Region of Peel
Kant Chawla	City of Brampton	Andrew Brown	Lea Consultants
Chris Duyvertyn	City of Brampton	Bill O'Brien	Paradigm Consultants
Brian Sutherland	Glenn Schnarr & Assoc		

PURPOSE: MEETING 1 TECHNICAL ADVISORY COMMITTEE

Item	Description	Action By
1	**Introductions.**	
	A list of the Technical Advisory Team members was distributed and is available on request from Tim Manley.	
2	**Background to Study.**	
	Tim reviewed the Mayfield West Phase 2 potential development area and noted the other parallel studies underway. The area would potentially support a population of 14,000 persons. The plan is to have the studies complete by June 2009 and to gain Council approval to apply to the Region for an urban boundary expansion.	
3	**Transportation Study Work Plan.**	
	Bill O'Brien distributed the Transportation study work plan and reviewed the different tasks. Specific items noted are as follows:	

	▲ Planned meetings dates are Council workshop on December 3rd, Stakeholder Advisory on December 4th, Public Open House on December 11th. Next meeting of the Technical Advisory Committee (TAT) is planned for November 18th at 1 PM. Dates to be noted.	**All**
	▲ Information is needed on Peel Region police Facility for the land use scenarios.	**Peel Staff**
	▲ Andrew Brown will do an assessment of the options related to the Peel Police lands. He will provide work plan to Tim and Bill.	**A Brown**
	▲ Paradigm were asked if they would use Synchro Version 6 or 7 and are flexible in terms of using either version. TAT members are asked to advise Tim Manley of any preference.	**All**
4	**Preliminary Issues Areas.**	
	▲ Discussion of the access to the east side (Hurontario Street/Hwy 10 frontage) of the development lands was discussed. See item above re options for Police Lands.	
	▲ Existing/planned and committed road connections to the south side of Mayfield Road in Brampton will need to be considered. City of Brampton staff to provide plans.	**City of Brampton**
5	**Data & Information Request**	
	▲ The data request list was reviewed and an updated version is attached. Members were asked to provide traffic count data and related information by October 3, 2008 to Bill O'Brien with copy to Tim.	**All**
	▲ After October 3rd, Paradigm should follow up with TAT members for any other information needed/requested.	**Paradigm**
6	**Meeting concluded at 12:00 Noon.**	

PARADIGM TRANSPORTATION SOLUTIONS LIMITED

W. B. O'Brien, M.A.Sc., P. Eng.

cc: all TAT members

WBO/jjlm

MEETING NOTES

PROJECT: MAYFIELD WEST PHASE 2 SECONDARY PLAN TRANSPORTATION IMPACT STUDY

PROJECT NUMBER: 081260

Paradigm Transportation Solutions Limited

DATE: November 18, 2008

TIME: 1:00 PM – 3:00 PM

LOCATION: CALEDON COMMUNITY COMPLEX, LIONS DEN ROOM

ATTENDEES:

Name	Agency	Name	Agency
Tim Manley	Town of Caledon	Jim Carrick	Region of Peel
Haiqing Xu	Town of Caledon	Murray Mcleod	Region of Peel
Trevor Greenman	MTO	Kennedy Self	Region of Peel
Kant Chawla	City of Brampton	Andrew Brown	Lea Consultants
Chris Duyvestyn	City of Brampton	Bill O'Brien	Paradigm Consultants
Brian Sutherland	Glenn Schnarr & Assoc		

PURPOSE: MEETING 1 TECHNICAL ADVISORY COMMITTEE

Item	Description	Action By
1	**Introductions.**	
	Tim Manley welcomed those in attendance.	
2	**Review of Draft Report (Part A Existing Conditions)**	
	Bill O'Brien reviewed the draft report circulated in advance of the meeting. Comments were noted as follows:	
	▲ Kant noted that the Brampton TTMP is being updated and the capital plan has some changes. He will advise of any change to the plan outlined in the report.	**K Chawla**
	▲ The road classification was discussed. Jim Carrick noted the Region is doing a road rationalization review.	
	▲ Jim Noted the Region has a controlled access bylaw and he will forward to Paradigm.	**J Carrick (done)**
	▲ Driveway connections to Regional roads should meet minimum crossing sight distance for a design speed 10	

km/h over the posted speed.

	▲ The Region would like their By-law to apply to roads that may become future arterials.	**Paradigm**
	▲ MTO Corridor Management guidelines should be checked in regards to Highways 10 and 410.	**Paradigm**
	▲ Should check plans for east side commercial development proposal at Highwood & Hurontario.	
	▲ Tim will provide a map of the environmental constraints.	**T Manley**
	▲ It was noted that the Orangeville Rail Line may now be owned by an aggregate landowner for hauling of aggregate materials. Currently this line has 2 trains per week. Paradigm will check with the Town of Orangeville on the status of this line.	**Paradigm**
	Tim Manley asked that all comments on the draft report be provided to him by December 19th, 2008 and that Paradigm should completed an updated version of the report by December 24th, 2008.	**All**
3	**Discussion of Proposed Guidelines for Land Use Concepts**	
	See notes above.	
	Andrew Brown of LEA Consulting provided a draft work plan for a study of the proposed land exchange with the Region Police, adjacent to the Highway 410 & Hurontario interchange. He will keep the Team advised of his study progress. Any question son the work plan to be addressed to Andrew.	**A Brown** **All**
4	**Review of Additional Information Requested**	
	▲ Kant provided material on several secondary plan areas south of Mayfield Road.	
	▲ Information on Caledon pedestrian and bicycle plans pending.	
	▲ Trevor Greenman will check further on the availability of traffic estimates for the Highway 410 & Hurontario interchange.	
5	**Next Steps in Study**	
	▲ Tim has provided a note indicating the planned public information centre (PIC) dates.	
6	**Meeting concluded at 3:00 PM**	

PARADIGM TRANSPORTATION SOLUTIONS LIMITED

W. B. O'Brien, M.A.Sc., P. Eng.

cc: all TAT members

WBO/jjlm

Agenda

PROJECT: MAYFIELD WEST PHASE 2 SECONDARY PLAN TRANSPORTATION IMPACT STUDY

PROJECT NUMBER: 081260

Paradigm Transportation Solutions Limited

DATE:	**November 18, 2008**
TIME:	**1:00 PM – 3:00 PM**
LOCATION:	**CALEDON COMMUNITY COMPLEX, 6215 OLD CHURCH ROAD (BEHIND OPP), LIONS DEN ROOM (BASEMENT LEVEL)**
PURPOSE:	**TECHNICAL ADVISORY TEAM MEETING # 2**

ITEM	DESCRIPTION	RESPONSIBILITY
1	Introduction	
2	Review of Draft Report (Part A Existing Conditions) (Report to be distributed by e-mail in advance – please bring copy to meeting)	Bill O'Brien
3	Discussion of Proposed Guidelines for Land Use Concepts	Bill O'Brien
4	Review of Additional Information Requested	Bill O'Brien
5	Next Steps in Study	
6	Other Business	

WBO/jjlm

Agenda

PROJECT: MAYFIELD WEST PHASE 2 SECONDARY PLAN TRANSPORTATION IMPACT STUDY

PROJECT NUMBER: 081260

Paradigm Transportation Solutions Limited

DATE:	**December 18, 2009**
TIME:	**10:00 AM TO 12:00 NOON**
LOCATION:	**CALEDON TOWN HALL, 6311 OLD CHURCH ROD, COMMITTEE ROOM**
PURPOSE:	**TECHNICAL ADVISORY TEAM MEETING # 3**

ITEM	DESCRIPTION	RESPONSIBILITY
1	**Introductions**	
2	**Background to Mayfield West Phase 2 Secondary Plan Studies**	**Tim Manley**
3	**Review of Land Use Options**	**Tim Manley & Bill O'Brien**
4	**Overview of Part B: Transportation Assessment Report** *(please bring copies distributed previously)*	**Bill O'Brien**
5	**Discussion of Transportation Issues**	**All Participants**
6	**Next Steps in Study**	**Tim Manley**
7	**Other Business**	

WBO/jjlm

TOWN OF CALEDON

Mayfield West Phase Two Secondary Plan
Transportation Impact Study

Study Objectives:

Part A:

- Assess Existing Transportation Conditions
- Provide Input to Development of Land Use Concepts

Part B:

- Determine Transportation Impacts of Different Land Use Scenarios
- Recommend Preferred Plan

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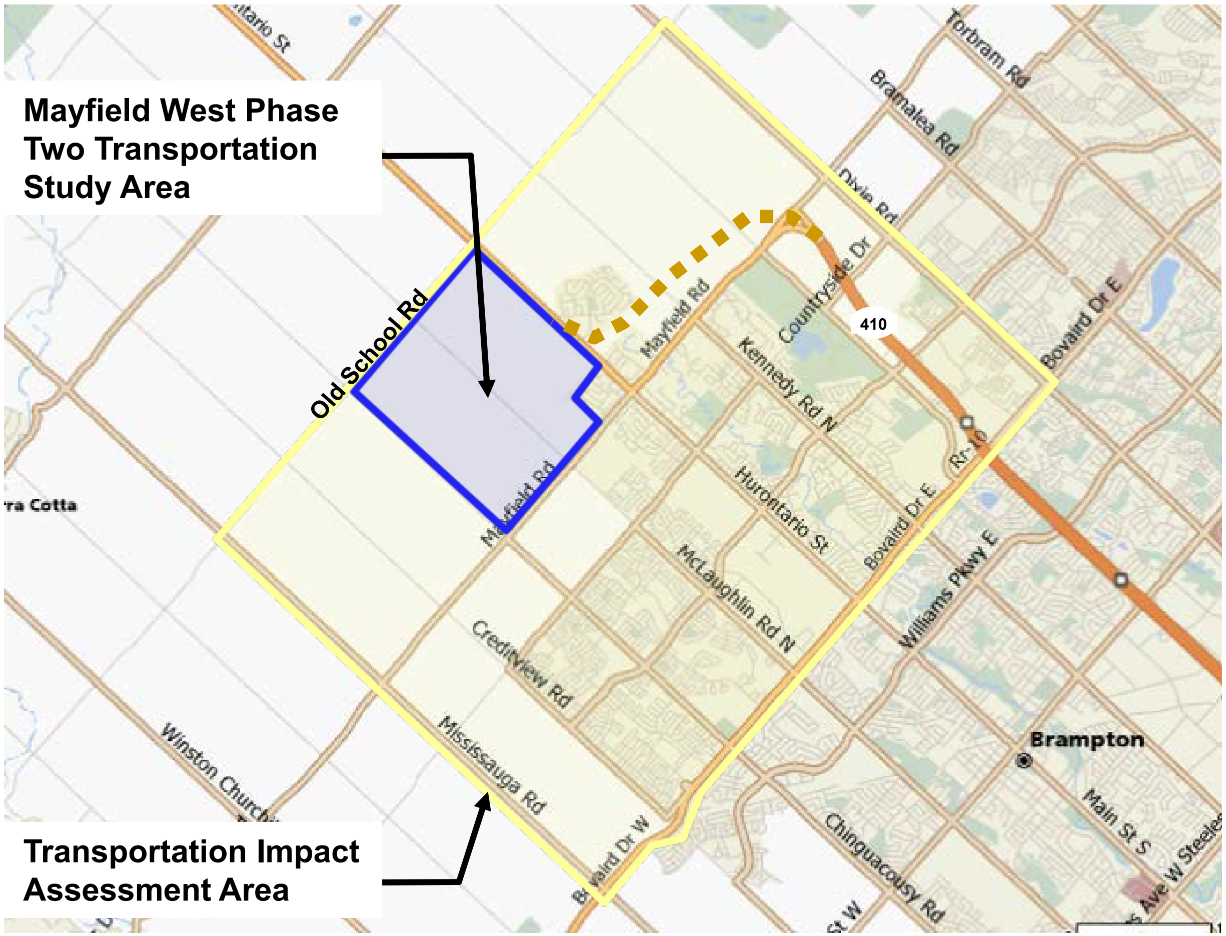
TOWN OF CALEDON

Mayfield West Phase Two Secondary Plan
Transportation Impact Study

Transportation Study Area:



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TOWN OF CALEDON

Mayfield West Phase Two Secondary Plan
Transportation Impact Study

Part B Study Approach

- Background traffic forecast to 2031 based on Peel Region model
- Major intersections assessed across the broad area network More detailed background traffic estimates adjacent to development area based on previous studies and Peel Model
- New development area divided into TAZ with development estimates for each TAZ for each scenario
- Developed turning movement estimates in & adjacent new development areas
- Assessed LOS and roadway requirements for each scenario
- Evaluated each land use scenario under several high level criteria as input to the land use planning process

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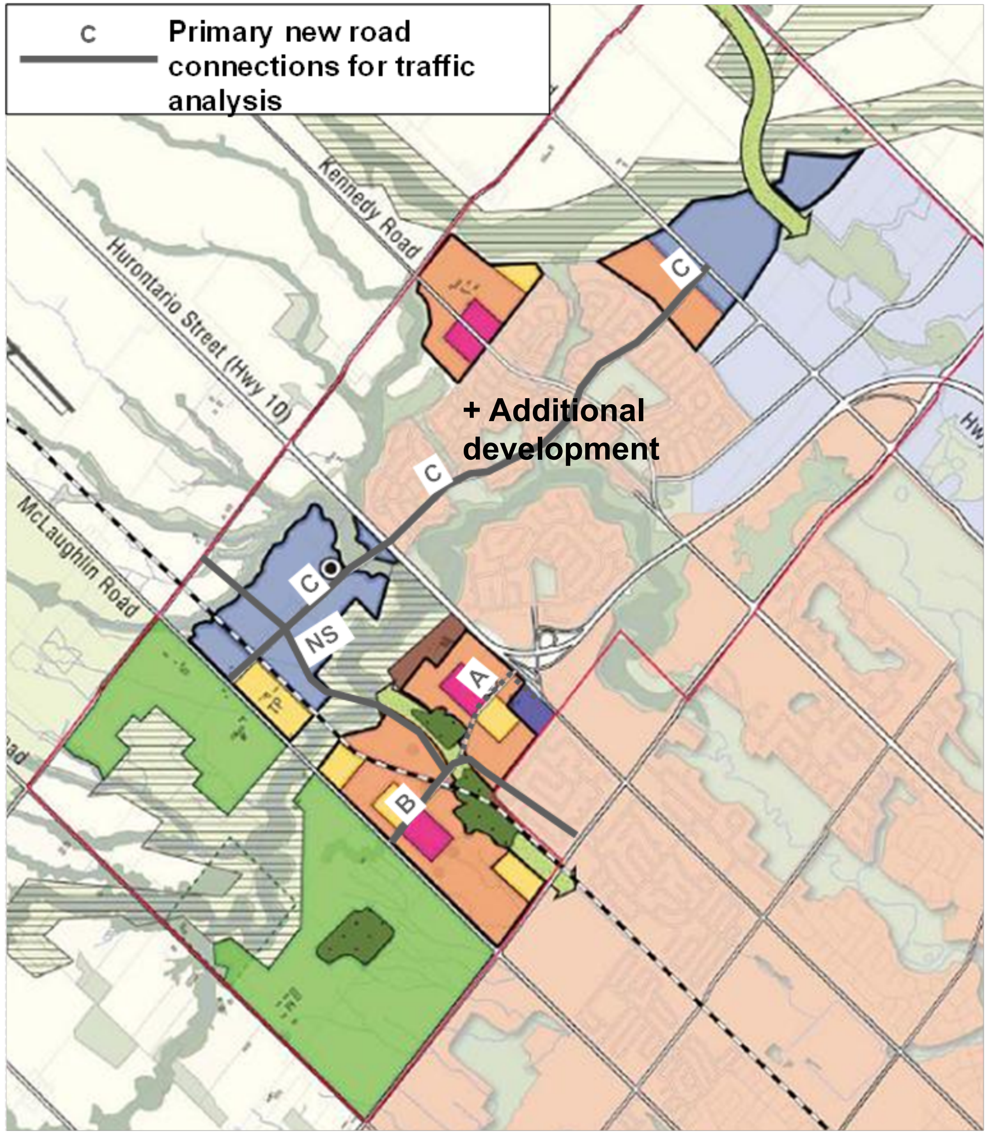
TOWN OF CALEDON

Mayfield West Phase Two Secondary Plan
Transportation Impact Study

Land Use Scenario A



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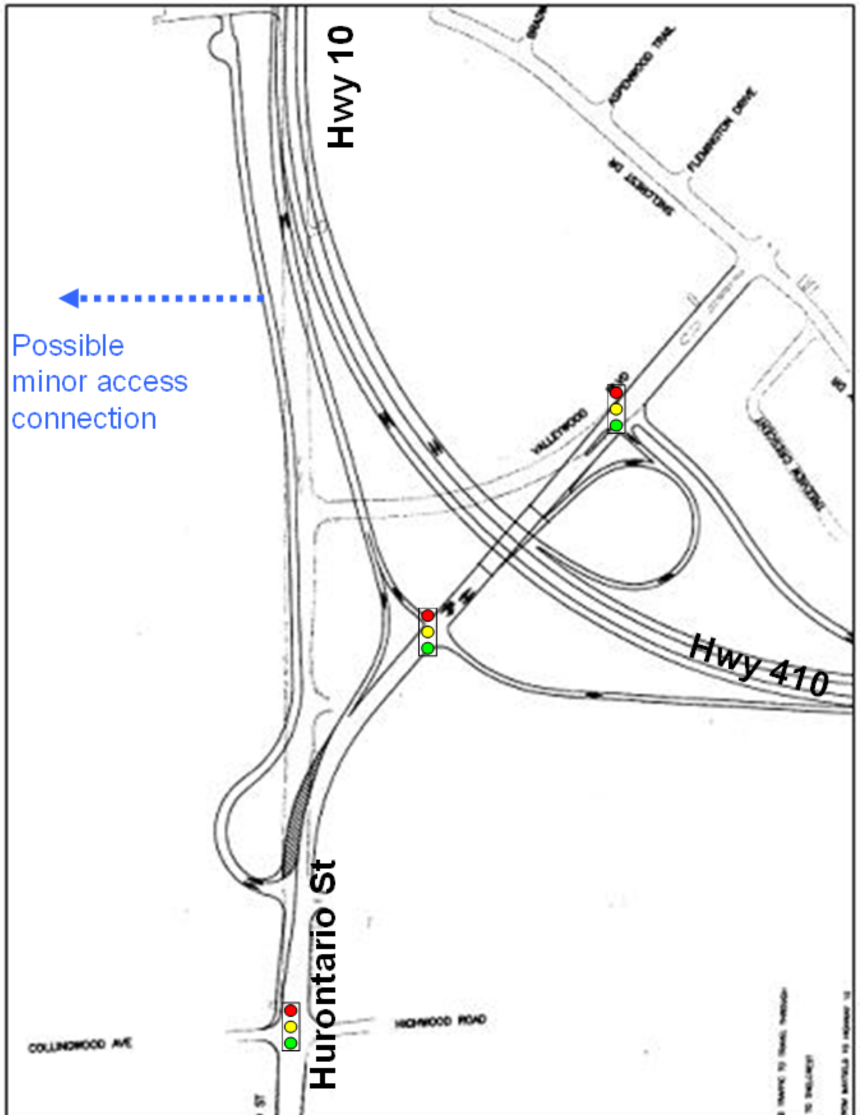
TOWN OF CALEDON

Mayfield West Phase Two Secondary Plan
Transportation Impact Study

Hwy 410 Valleywood Interchange with Scenario A



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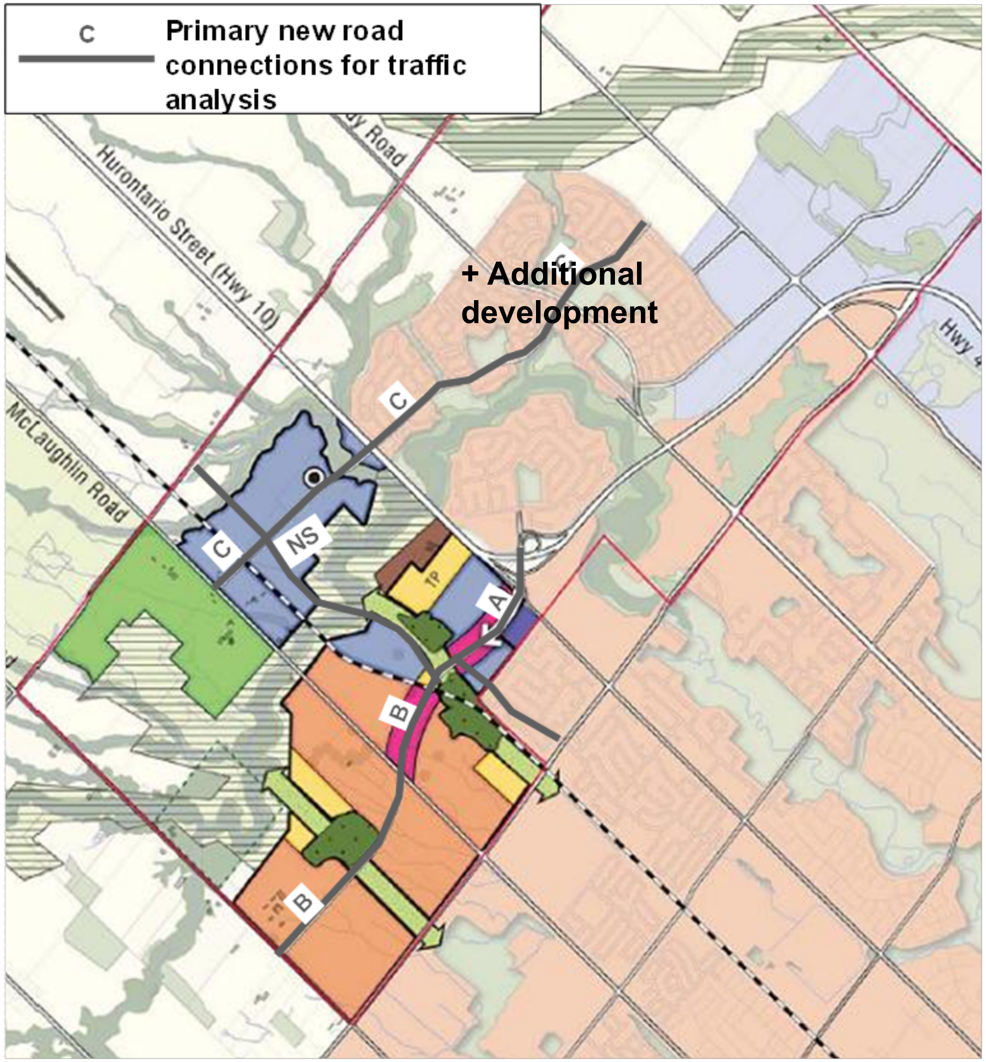
TOWN OF CALEDON

Mayfield West Phase Two Secondary Plan
Transportation Impact Study

Land Use Scenario B



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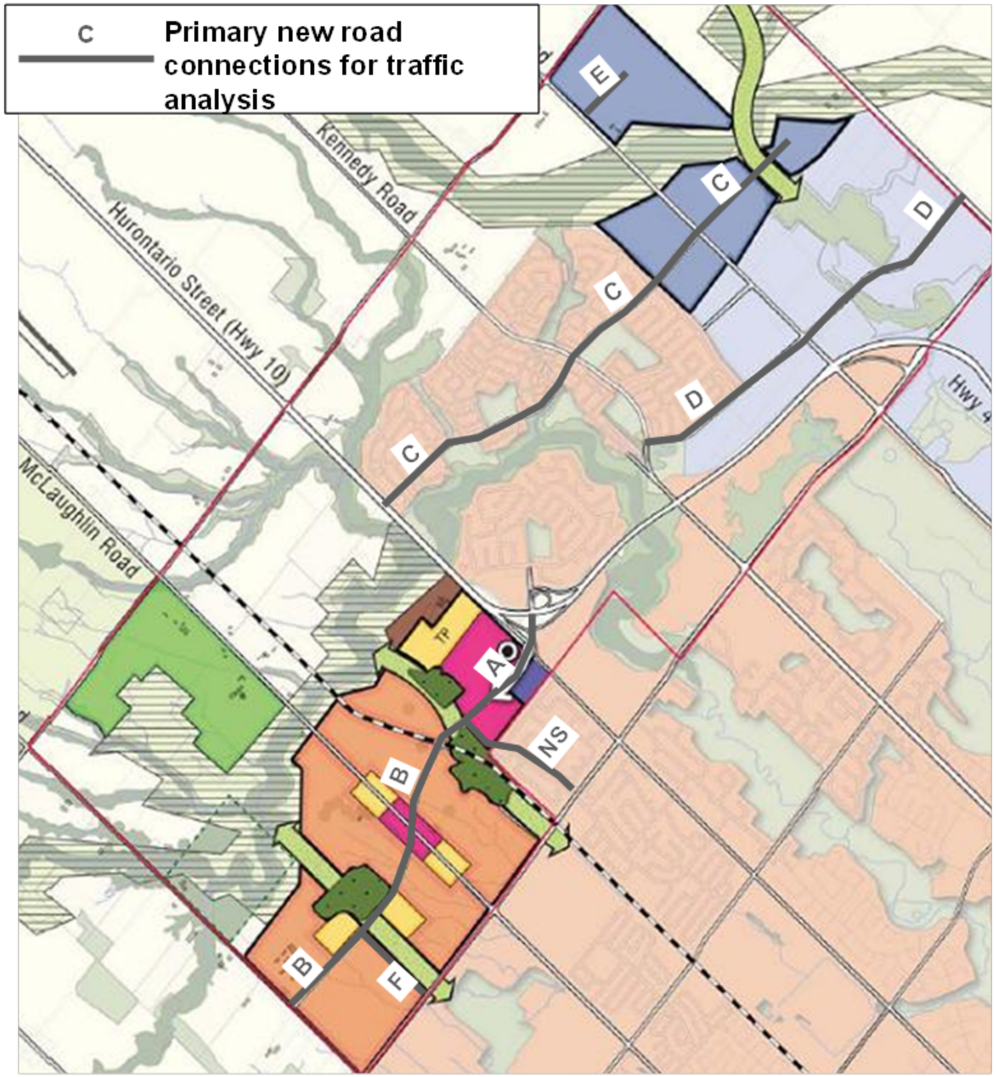
TOWN OF CALEDON

Mayfield West Phase Two Secondary Plan
Transportation Impact Study

Land Use Scenario C



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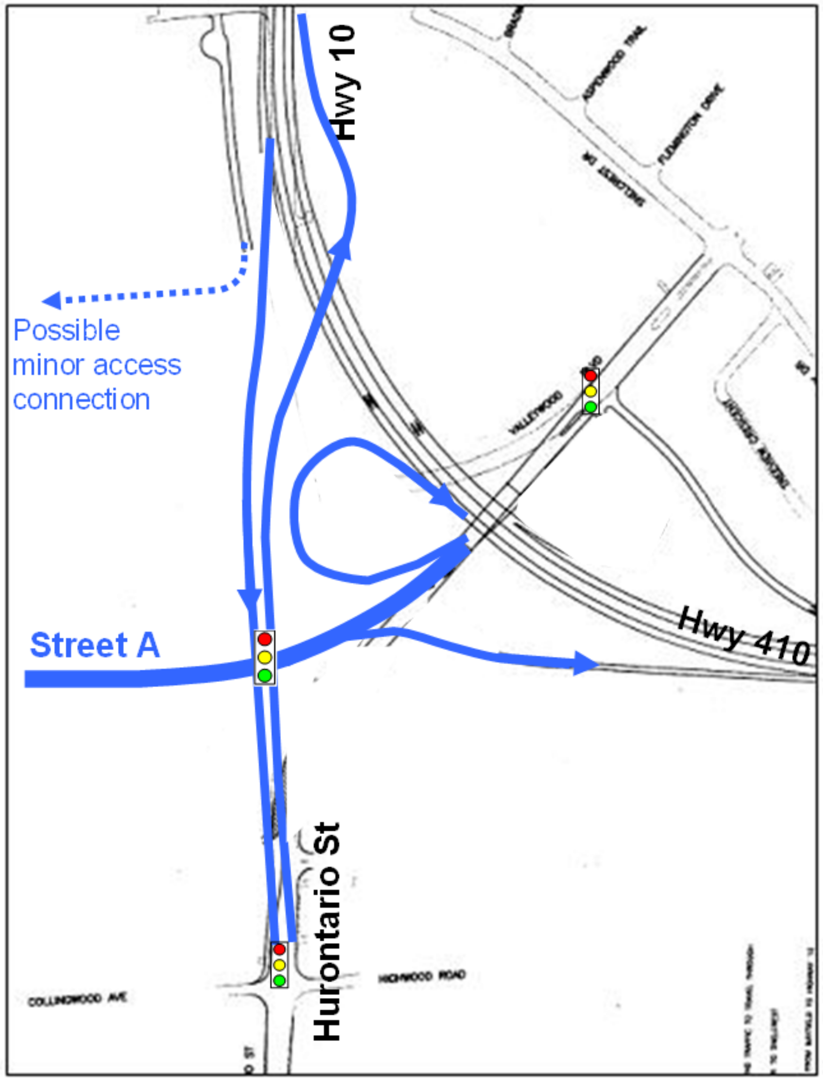
TOWN OF CALEDON

Mayfield West Phase Two Secondary Plan
Transportation Impact Study

Hwy 410 Valleywood Interchange with Scenarios B & C



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TOWN OF CALEDON

Mayfield West Phase Two Secondary Plan
Transportation Impact Study

2031 Background Network Conditions

Intersections	Level of Service	Intersection Capacity Utilization
Bovaird Dr and Chinguacousy Rd	E	1.10
Bovaird Dr and McLaughlin Rd	E	1.15
Bovaird Dr and Hurontario St	F	1.24
Bovaird Dr and Kennedy Rd	F	1.28
Bovaird Dr and Hwy 410 SB off Ramp	B	0.75
Bovaird Dr and Hwy410 NB off Ramp	C	0.91
Bovaird Dr and Dixe Road	D	1.05
Sandalwood Pkwy and Creditview Rd	C	0.87
Sandalwood Pkwy and Chinguacousy Rd	C	0.84
Sandalwood Pkwy and McLaughlin Rd	D	0.85
Sandalwood Pkwy and Hurontario St	C	0.98
Sandalwood Pkwy and Kennedy Rd	D	0.99
Sandalwood Pkwy and Hwy 410 off Ramp	C	0.63
Sandalwood Pkwy and Dixie Road	C	0.87
Mayfield Rd and Creditview Rd	C	0.75
Mayfield Rd and Chinguacousy Rd	C	0.85
Mayfield Rd and McLaughlin Rd	D	0.83
Mayfield Rd and Hurontario St	F	1.07
Mayfield Rd and Kennedy Rd	D	1.02
Mayfield Rd and Heart Lake Rd	C	0.70
Mayfield Rd and Hwy 410 SB off Ramp	D	0.70
Mayfield Rd and Hwy 410 NB off Ramp	D	0.70
Mayfield Rd and Dixie Rd	C	0.76
Hwy SB Ramp & Valleywood Blvd	C	0.37
Hwy 410 NB Ramp & Valleywood Blvd	C	0.56

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TOWN OF CALEDON

Mayfield West Phase Two Secondary Plan
Transportation Impact Study

2031 Network Impacts

Intersections	2031 Future Total (Scenario A)		2031 Future Total (Scenario B)		2031 Future Total (Scenario C)	
	Level of Service	Intersection Capacity Utilization	Level of Service	Intersection Capacity Utilization	Level of Service	Intersection Capacity Utilization
Bovaird Dr and Chinguacousy Rd	E	1.11	E	1.13	E	1.13
Bovaird Dr and McLaughlin Rd	E	1.12	F	1.17	F	1.17
Bovaird Dr and Hurontario St	F	1.26	F	1.31	F	1.31
Bovaird Dr and Kennedy Rd	F	1.28	F	1.30	F	1.32
Bovaird Dr and Hwy 410 SB off Ramp	B	0.75	B	0.75	B	0.75
Bovaird Dr and Hwy410 NB off Ramp	C	0.91	C	0.91	C	0.91
Bovaird Dr and Dixe Road	D	1.05	D	1.05	D	1.05
Sandalwood Pkwy and Creditview Rd	C	0.85	C	0.90	C	0.90
Sandalwood Pkwy and Chinguacousy Rd	C	0.85	C	0.86	C	0.86
Sandalwood Pkwy and McLaughlin Rd	D	0.88	D	0.91	D	0.91
Sandalwood Pkwy and Hurontario St	D	1.01	D	1.02	D	1.03
Sandalwood Pkwy and Kennedy Rd	D	1.03	D	1.03	D	1.03
Sandalwood Pkwy and Hwy 410 off Ramp	C	0.63	C	0.63	C	0.63
Sandalwood Pkwy and Dixie Road	C	0.87	C	0.87	C	0.87
Mayfield Rd and Creditview Rd	C	0.87	C	0.86	C	0.87
Mayfield Rd and Chinguacousy Rd	D	0.99	D	1.03	D	1.04
Mayfield Rd and McLaughlin Rd	D	0.96	D	0.99	D	1.01
Mayfield Rd and Hurontario St	F	1.20	F	1.19	F	1.23
Mayfield Rd and Kennedy Rd	E	1.15	D	1.13	D	1.15
Mayfield Rd and Heart Lake Rd	D	1.20	C	1.05	F	1.23
Mayfield Rd and Hwy 410 SB off Ramp	C	0.90	D	0.74	C	1.01
Mayfield Rd and Hwy 410 NB off Ramp	D	0.90	D	0.74	D	1.01
Mayfield Rd and Dixie Rd	D	0.78	D	0.78	D	0.78
Hurontario St and Valleywood Blvd/Street A	C	0.74	D	0.98	D	1.02
Hwy SB Ramp & Valleywood Blvd	C	0.62				
Hwy 410 NB Ramp & Valleywood Blvd	B	0.75	C	0.73	C	0.71

Paradigm Transportation Solutions Limited

TOWN OF CALEDON

Mayfield West Phase Two Secondary Plan
Transportation Impact Study

Broad Area Network Implications

- 2031 network background congestion areas at major intersections along Bovaird Dr and also central section of Mayfield Rd
- At Bovaird Dr intersections the additional traffic conditions are not significantly worse and the three scenarios are quite similar
- With all three scenarios, the LOS conditions along Mayfield Rd are reduced. Some differences between 3 scenarios (A is worse at Hurontario, C worse at HLR)
- All land use scenarios add considerable additional traffic to Hwy 410
- Scenarios B & C require major revision to Hwy 410 Valleywood I/C

Paradigm Transportation Solutions Limited

TOWN OF CALEDON

Mayfield West Phase Two Secondary Plan
Transportation Impact Study

2031 Local Roads Conditions - Scenario A

Intersections	Scenario A			
	AM Peak Hour		PM Peak Hour	
	Level of Service	Intersection Capacity Utilizaton	Level of Service	Intersection Capacity Utilizaton
Mayfield Rd and Chinguacousy Rd	D	0.99	D	0.96
Mayfield Rd and McLaughlin Rd	D	0.97	D	1.02
Mayfield Rd and Hurontario St	F	1.20	F	1.12
Mayfield Rd and Kennedy Rd	D	1.14	E	1.21
Mayfield Rd and Heart Lake Rd	E	1.18	F	1.34
Valleywood Blvd and Hwy 410 SB Off Ramp	B	0.41	B	0.64
Valleywood Blvd and Hwy 410 NB Off Ramp	C	0.56	C	0.69
Mayfield Rd and NS St	C	0.63	D	0.69
McLaughlin Rd and Road B	B	0.40	B	0.69
NS St and Road B	C	0.60	C	0.77
McLaughlin Road and Road C	A	0.37	B	0.63
NS St and Road C	C	0.87	C	1.02
Hwy 10 and Road C	F	1.35	F	1.44
McLaughlin Road and Old School Road	B	0.34	C	0.59
Hwy 10 and Old School Rd	C	0.87	D	1.03
Kennedy Rd and Road C	D	0.89	D	0.96
Heart Lake Rd and Rd C	C	0.90	C	0.95

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TOWN OF CALEDON

Mayfield West Phase Two Secondary Plan
Transportation Impact Study

Scenario A Road Requirements

Road	Section	Improvements
McLaughlin Road	Mayfield Road to Old School Road	Lane widening - 4 lanes
McLaughlin Road	At Road B intersection	Signals, turn lanes (SBL, WBL)
McLaughlin Road	At Road C intersection	Possible Signals, turn lanes (SBL)
McLaughlin Road	Old School Road	Possible Signals, turn lanes (WBL)
Road B	McLaughlin Road to east of NS street	2 lane road
Road C	West of Highway 10 to NS Road	4 lane road
Road C	East of Kennedy Rd	Likely widening to 4 lanes
Road C	At Hwy 10 intersection	Signals, turn lanes (LT all approaches, EBR, WBR and NBR)
Road C	At Kennedy Road intersection	Signals, turn lanes
Road C	At Heart lake Road intersection	Signals, turn lanes
NS Street	Mayfield Road to Road B	2 lane road
NS Street	Road B to Road C	2 lane creek crossing possibly req'd
NS Street	At Old School Road intersection	Stop on NS Street
Old School Road	At Hwy 10 intersection	Signals, turn lanes
Hwy 410 NB Off Ramp	At Valleywood Blvd intersection	Signals, Dual NBL
Heart Lake Road	Mayfield Road to Old School Road	Lane widening - 4 lanes

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TOWN OF CALEDON

Mayfield West Phase Two Secondary Plan
Transportation Impact Study

2031 Local Roads Conditions - Scenario B

Intersections	Scenario B			
	AM Peak Hour		PM Peak Hour	
	Level of Service	Intersection Capacity Utilizaton	Level of Service	Intersection Capacity Utilizaton
Mayfield Rd and Chinguacousy Rd	D	1.02	D	0.94
Mayfield Rd and McLaughlin Rd	D	0.99	D	0.99
Mayfield Rd and Hurontario St	F	1.16	F	1.12
Mayfield Rd and Kennedy Rd	E	1.15	C	1.04
Mayfield Rd and Heart Lake Rd	D	1.05	E	1.09
Hurontario St and Valleywood Blvd/Street A	D	0.97	E	1.05
Valleywood Blvd and Hwy 410 NB Off Ramp	C	0.73	C	0.82
Mayfield Rd and NS St	B	0.64	D	0.65
McLaughlin Rd and Road B	C	0.91	C	0.98
NS St and Road B	C	0.61	B	0.74
McLaughlin Rd and Road C	B	0.61	B	0.53
Hwy 10 and Road C	E	1.11	E	1.06
Hwy 10 and Old School Rd	C	0.97	C	0.89
Kennedy Rd and Rd C	B	0.69	C	0.75
Heart Lake Rd and Rd C	C	0.75	C	0.71

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TOWN OF CALEDON

Mayfield West Phase Two Secondary Plan
Transportation Impact Study

Scenario B Road Requirements

Road	Section	Improvements
McLaughlin Road	Mayfield Road to Old School Road	Lane widening - 4 lanes
McLaughlin Road	At Road B intersection	Signals, turn lanes (SBL, WBL)
McLaughlin Road	At Road C intersection	Possible Signals
McLaughlin Road	At Old School Road intersection	Possible Signals
Road A	Hurontario Street to west of Hurontario Street	4+ lane road
Road B	West of NS St to Chinguacousy Road	4 lane road
Road B	At NS Street intersection	Signals, turn lanes
Road B	At Chinguacousy Road intersection	Stop sign on Road B
Road C	McLaughlin Road to Hwy 10	2 lane road
Road C	At Hwy 10 intersection	Signals, turn lanes
Road C	Kennedy Rd to Heart Lake Rd	Widen to 4 lanes
Road C	At Heart Lake Road	Signals, turn lanes
NS Street	Mayfield Road to Road B	2 lane north south road
NS Street	Road B to Road C	New creek crossing not req'd
NS Street	At Old School Road intersection	Stop sign on NS Street
Old School Road	At Hwy 10 intersection	Signals, turn lanes
Hwy 410 NB Off Ramp	At Valleywood Blvd intersection	signals, Dual NBL
Valleywood Boulevard	Hwy 410 NB Off Ramp to Hurontario Street	Possible extra lanes

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TOWN OF CALEDON

Mayfield West Phase Two Secondary Plan
Transportation Impact Study

2031 Local Roads Conditions - Scenario C

Intersections	Scenario C			
	AM Peak Hour		PM Peak Hour	
	Level of Service	Intersection Capacity Utilizaton	Level of Service	Intersection Capacity Utilizaton
Mayfield Rd and Chinguacousy Rd	D	1.04	D	0.96
Mayfield Rd and McLaughlin Rd	D	1.00	E	1.06
Mayfield Rd and Hurontario St	F	1.23	F	1.14
Mayfield Rd and Kennedy Rd	E	1.16	C	0.98
Mayfield Rd and Heart Lake Rd	F	1.23	F	1.43
Hurontario St and Valleywood Blvd/Street A	E	1.01	E	1.11
Valleywood Blvd and Hwy 410 NB Off Ramp	C	0.71	C	0.87
Mayfield Rd and NS St	B	0.69	C	0.72
McLaughlin Rd and Road B	C	0.85	C	0.89
NS Street and Road B	C	0.62	B	0.63
Hwy 10 and Road C	A	0.62	C	0.75
Hwy 10 and Old School Rd	B	0.84	C	0.82
Heart Lake Rd and Rd C	C	0.88	D	1.00
Kennedy Rd and Rd C	C	0.86	C	0.86

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TOWN OF CALEDON

Mayfield West Phase Two Secondary Plan
Transportation Impact Study

Scenario C Road Requirements

Road	Section	Improvements
Chinguacousy Road	At Road B intersection	Possible Signals
McLaughlin Road	Mayfield Road to Road B	Lane widening - 4 lanes
McLaughlin Road	At Road B intersection	Signals, turn lanes (EBL, WBL, NBL, SBL)
McLaughlin Road	Road B to Old School Rd	2 lane road
Road A	West of Hurontario Street	4+ lane road
Road A	At Hurontario Street intersection	signals, turn lanes
Road B	Road A to Chinguacousy Road	4 lane east west road
Road B	At NS Street intersection	Signals, turn lanes
Road C	Kennedy Rd to east of Heart Lake Road	Widen to 4 lanes
Road C	At Hwy 10 intersection	Signals, turn lanes
Road C	At Kennedy intersection	Signals, turn lanes
Road C	At Heart Lake Road	Signals, turn lanes
NS Street	Mayfield Road to Road A	2 lane road
NS Street	At Mayfield intersection	Signals, turn lanes
Old School Road	At Hwy 10 intersection	Signals, turn lanes
Hwy 410 NB Off Ramp	At Valleywood Blvd intersection	signals, Dual NBL
Valleywood Boulevard	Hwy 410 NB Off Ramp to Hurontario Street	Possible extra lanes
Heart Lake Road	Mayfield Road to Old School Road	Lane widening - 4+ lanes

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TOWN OF CALEDON

Mayfield West Phase Two Secondary Plan
Transportation Impact Study

Evaluation – Impact on Existing Transportation System

	Land Use Scenario A	Land Use Scenario B	Land Use Scenario C
Broad area road network congestion problems	Very minor impacts south of Mayfield Rd Mayfield Road (McLaughlin – Heart Lake) Connections to Hwy 10	Very minor impacts south of Mayfield Rd Mayfield Road (Hurontario – Heart Lake) Connections to Hwy 10	Very minor impacts south of Mayfield Rd Mayfield Rd (Chinguacousy – Heart Lake Rd)
Local Transportation Impacts	Widen / improve McLaughlin, Heart Lake Rd Need collector connection to Robt Davies Dr w/o Road A to Hurontario	Widen/improve Mclaughlin Need major upgrade to Valleywood I/C	Widen/improve ½ Mclaughlin, extend & widen Heart Lake Rd Need major upgrade to Valleywood I/C
Public Transit Service Implications	Need service in several different areas; poor access to Hurontario	Established east – west corridor thru main new development area; need service extended to north employment area	Established east – west corridor thru main new development area; need service extended to north east employment area
Overall Assessment:	Scenario A rated worse than Scenarios B and C; Not a significant difference between Scenarios B and C and both B and C require major Valleywood I/C upgrade		

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TOWN OF CALEDON

Mayfield West Phase Two Secondary Plan
Transportation Impact Study

Evaluation – Impact on Natural Environment

	Land Use Scenario A	Land Use Scenario B	Land Use Scenario C
New Creek Crossings	Need to widen McLaughlin Rd and possible new N-S road across Etobicoke Creek	Need to widen McLaughlin Rd across Etobicoke Creek	Likely improvement to Heart Lake Rd across creek
Overall Assessment:	Scenario B and C have less impact related to creek crossings and are preferred		

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TOWN OF CALEDON

Mayfield West Phase Two Secondary Plan
Transportation Impact Study

Evaluation – Impact on Local Built Environment

	Land Use Scenario A	**Land Use Scenario B**	**Land Use Scenario C**
Additional Traffic on Existing and planned Streets	Connection thru Robt Davies Drive / Collingwood Needed for Access Some additional traffic on Mayfield	Additional traffic along Mayfield	Additional traffic along Mayfield
Additional Traffic in Planned New Development Areas	Additional traffic on Kennedy & Heart Lake Rd, also additional traffic on Road C	No significant additional traffic	Additional traffic on Heart Lake Rd and east section of Road C
Overall Assessment:	Scenario A has most impact with connection to Robt Davies Dr / Collingwood, traffic on Road C		

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Evaluation – Accommodation of Alternate Travel Modes

	Land Use Scenario A	**Land Use Scenario B**	**Land Use Scenario C**
Transit Opportunities	Different development areas increases bus service costs	East- west corridor provides bus service opportunity	East- west corridor provides bus service opportunity Major commercial node is possible terminus for Hurontario RT
Pedestrian Opportunities	Small neighbourhood centres more amenable to walking Isolated employment areas more auto dependant	Overall more compact area for walking	Overall more compact area for walking Isolated employment areas more auto dependant
Cycling provisions	East – west collector road could provide bike route	East – west collector road could provide bike route	Main development area more compact for cycling
Overall Assessment:	Scenario B is most compact may be less auto dependant.		

TOWN OF CALEDON

Mayfield West Phase Two Secondary Plan
Transportation Impact Study

Discussion

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TOWN OF CALEDON
Mayfield West Phase 2 Secondary Plan

Transportation Master Plan
Technical Advisory Committee

May 26, 2014
Town Hall, Caledon East

Today's Agenda

Part 1 – Town Staff

(a) Welcome and Introductions
(b) Project Background
(c) Council Endorsed Framework Plan

Part 2 – Paradigm Transportation Solutions Limited

(a) Transportation Master Plan Overview
- Travel Forecasts
- Roads Network
- Transit Concept Plan
- Cycling & Trails Plan

(b) Items for Discussion
- Hwy 410/Valleywood Interchange
- GTA-West Corridor EA
- Transit Service Provision
- Spine Road Character & Urban Village Centre

Part 3 – Town Staff

(a) Moving Forward & Next Steps

Part 1 – Town Staff

(a) Welcome & Introductions

(b) Project Background

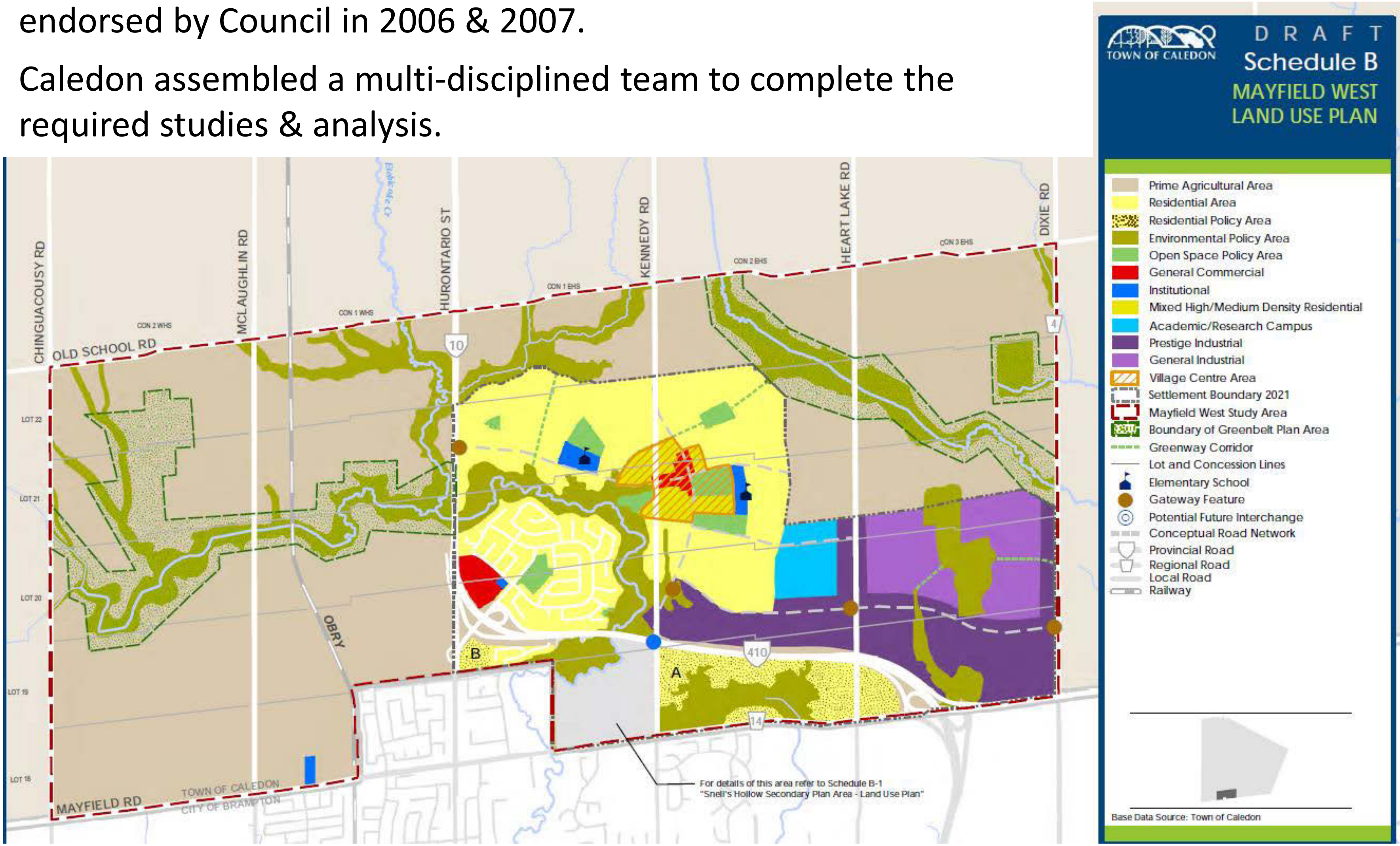
(c) Council Endorsed Framework Plan

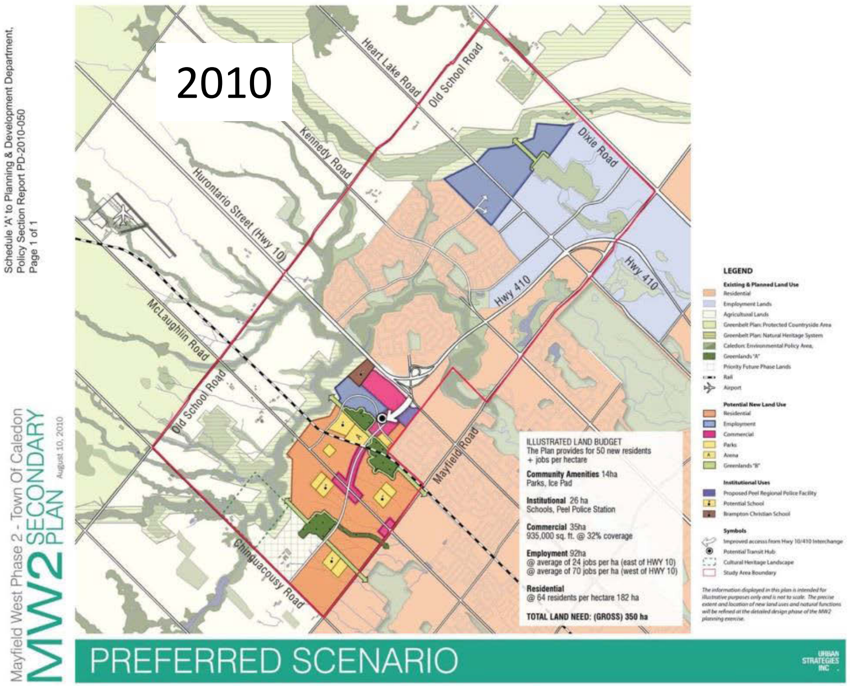
Presented by: Tim Manley

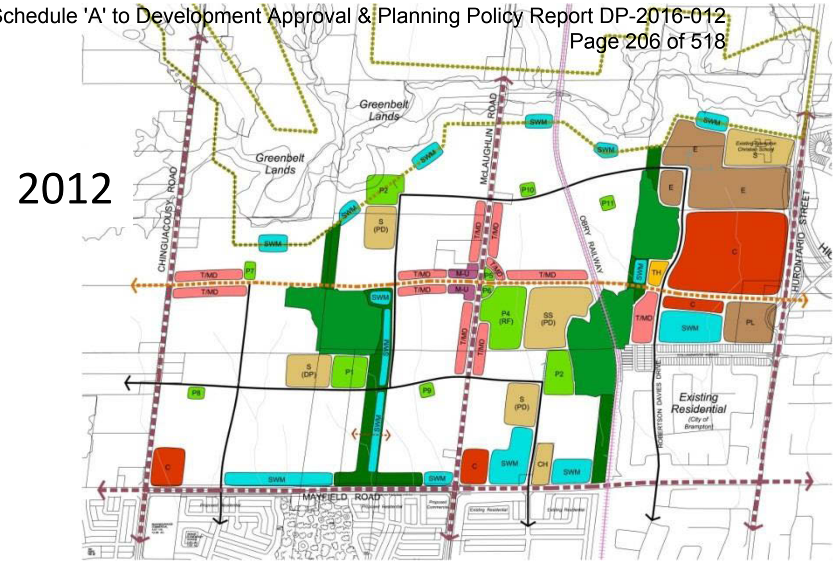
(b) Project Background

MW2 was initiated in 2008 on the basis of planning considerations endorsed by Council in 2006 & 2007.

Caledon assembled a multi-disciplined team to complete the required studies & analysis.







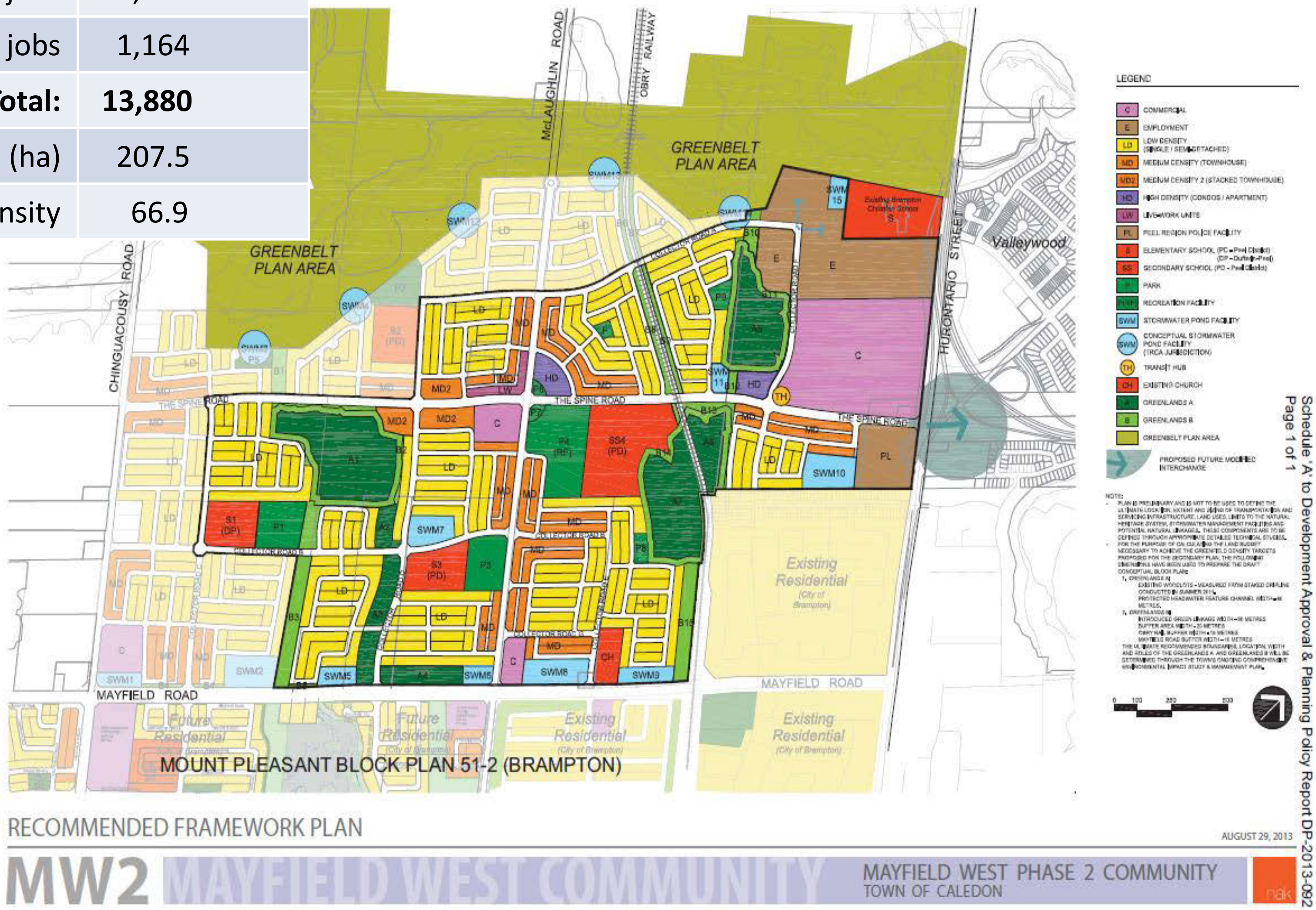
CONCEPTUAL FRAMEWORK PLAN – OPTION A

CONCEPTUAL FRAMEWORK PLAN – OPTION B

MW2: Planning Considerations (2010 & 2012)	
Population	11,638
Population-related jobs	2,907
Employment Area jobs	2,988
Total:	**17,533**
Land Area (ha)	350
Density	50.1

MW2: Planning Considerations (2013)

Population	10,081
Population-related jobs	2,635
Employment Area jobs	1,164
Total:	**13,880**
Land Area (ha)	207.5
Density	66.9



(c) Council Endorsed Framework Plan 2013

Provides opportunity to reduce dependency on the car and promote healthy & active lifestyle through the development of a mixed-use, transit-supportive, pedestrian-friendly community plan.

Key Components of the Plan

Residential Lands (LD, MD, MD2, HD and L/W)

- Provide a range & mix of housing types including detached and semi-detached, townhouse, mid-rise apartment and live/work.
- New schools & community parks will compliment the population growth.
- High quality public open space & easy access to local stores & services.

Employment Area (E)

- Located adjacent to & west of Highway 410.
- This location is considered suitable for higher density employment uses, such as an office/business park.

Commercial Lands (C)

- Regional-scale commercial centre adjacent to & west of Highway 410.
- Smaller commercial nodes are planned for the “urban village” centre & at the northeast corner of Mayfield Road and McLaughlin Road.

Transit Hub (TH)

- Proposed within the regional-scale commercial centre.
- Supports future inter-regional, intra-regional, & local transit service to/from MW.
- The location and size of the commercial centre & employment lands provide the opportunity to attract a viable public transit service to MW2.

Natural Heritage System

- Greenlands A - existing woodlots, wetlands & headwater features
- Greenlands B - associated buffers & enhancement corridors.
- Collectively, the NHS will provide for a connected greenlands/natural heritage & open space system, & provide opportunities for passive recreation activities.

Local Official Plan Amendment

The Mayfield West Phase 2 Secondary Plan (MW2) will be implemented through an amendment to Caledon's official plan.

The following 5 plans are being undertaken to inform & support MW2.

(1) Community Design Plan – NAK Design Strategies.
(2) Comprehensive EIS & MP – Amec Environment & Infrastructure.
(3) Transportation Master Plan – Paradigm Transportation Solutions.
(4) Water and Wastewater Servicing Plan – R.J. Burnside & Associates / TMIG
(5) Fiscal & Economic Impact Assessment – Watson & Associates.

All 5 plans active & are moving forward on the basis of the Sept 2013 framework plan.

Transportation Master Plan

This plan will consist of a series of coordinated & iterative individual plans that encompass road network & streetscape design, transit routes, pedestrian, cycling & trails network, & traffic calming.

Part 2 – Paradigm Transportation Solutions Limited

(a) Transportation Master Plan Overview

(b) Items for Discussion

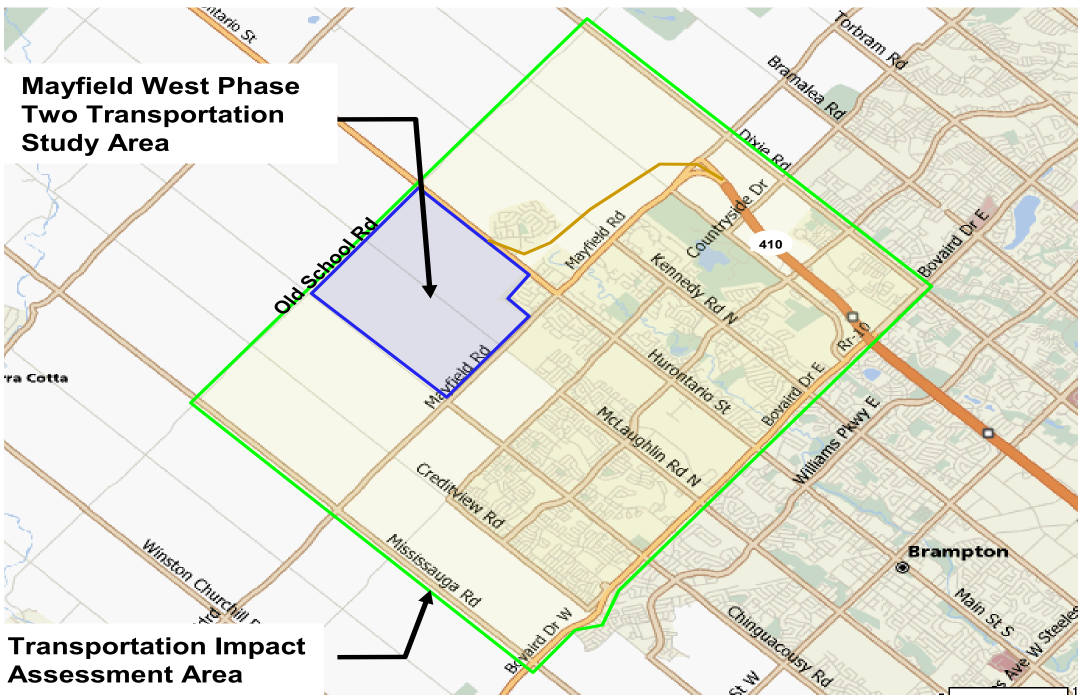
Presented by: Bill O'Brien

(a) Transportation Master Plan Overview

2009 Transportation Impact Study

A transportation impact study was completed by Paradigm in 2009 and informed the development of the 2010 & 2012 scenarios / framework plans. The study was a key input to selection of the recommended framework plan in 2013.

Transportation Impact Study Area:



Key findings of the study included:

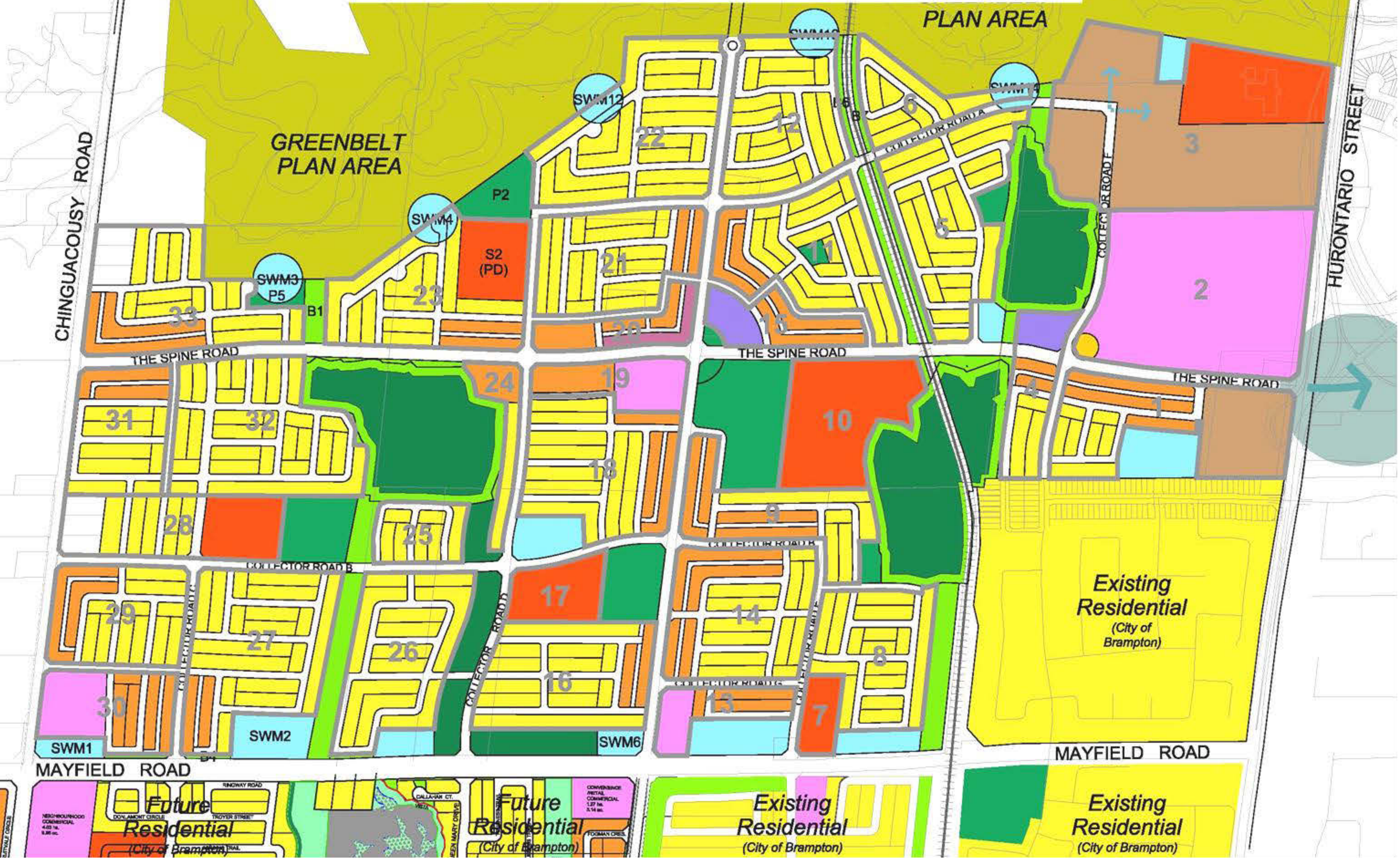
- External traffic impact similar for all scenarios.
- Major traffic increase occurs along Mayfield Rd. and on Hwy 410 corridor.
- MW2 requires a modified Hwy 410/Valleywood interchange and a new east – west arterial road between Hwy 410/Valleywood & Chinguacousy Road.
- New (likely 2) OBRY Rail Line crossings will be required.
- Opportunities to provided enhanced transit, cycling and walking services and infrastructure.

Hwy 410/Valleywood Interchange

Transportation Impact Study identified the need for modifications to the Hwy 410/Valleywood interchange in order to provide access to the lands west of Hwy 410.

These modifications are a key requirement to support full build-out of MW2 as proposed by Caledon.

MW2 BUILD OUT PLAN (with TAZ)



Travel Forecasts

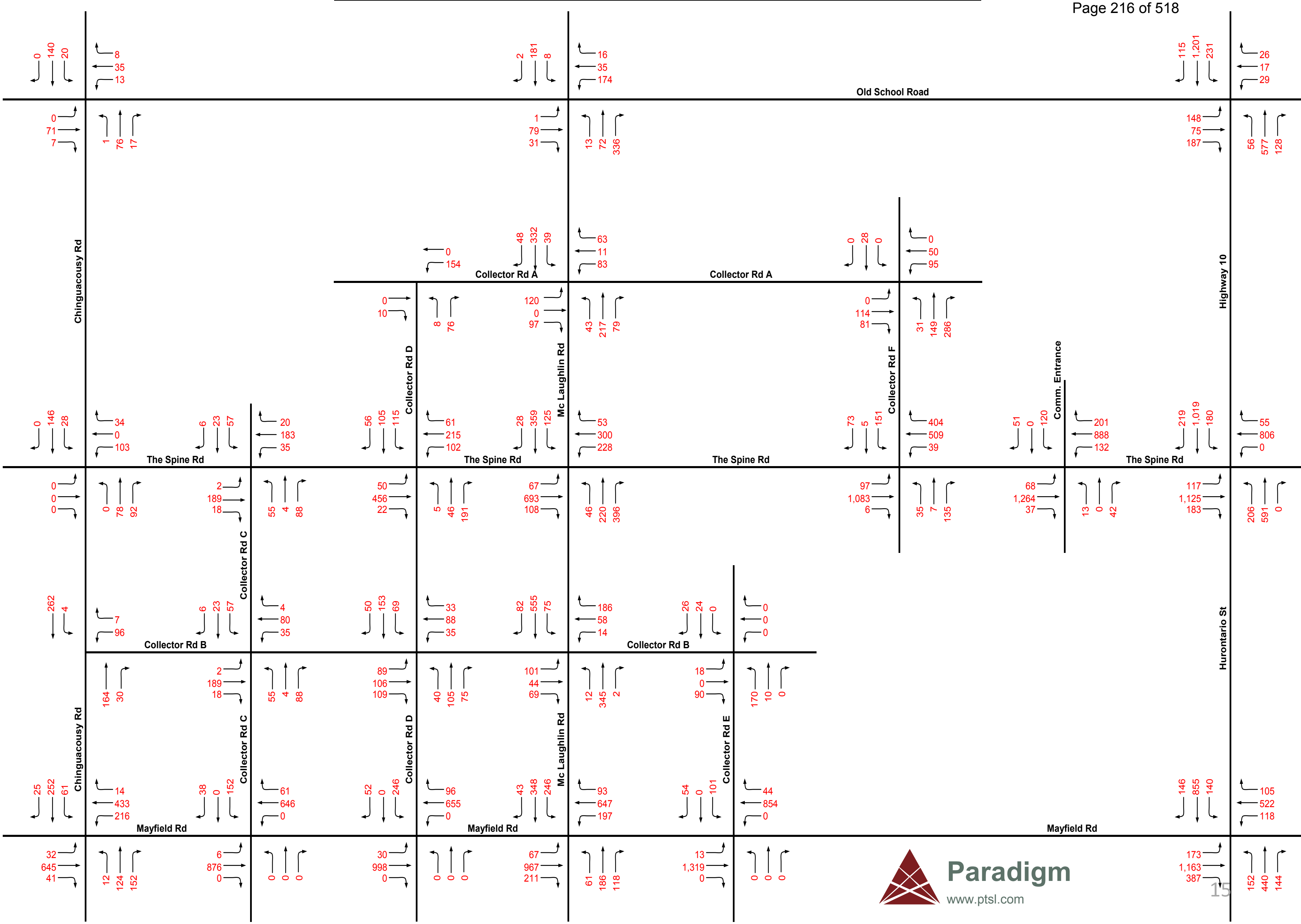
Weekday peak hour travel forecasts developed for 33 TAZ based on ITE trip generation rates reduced by 5% for increased mode share to transit & active travel modes. Trip distribution based on most recent TTS distribution for north Brampton.

Travel forecasts and analyses based on full build out scenario (i.e. includes future development east to Chinguacousy Road & north to the south limit of the Greenbelt Plan Area).

Peak hour trip generation as follows:

Number of Peak Hour Trips								
AM			PM			Saturday		
In	Out	**Total**	In	Out	**Total**	In	Out	**Total**
2,785	**3,630**	**6,415**	**3,984**	**3,261**	**7,245**	**3,701**	**3,281**	**6,982**

Weekday AM Peak Hour Traffic Estimates



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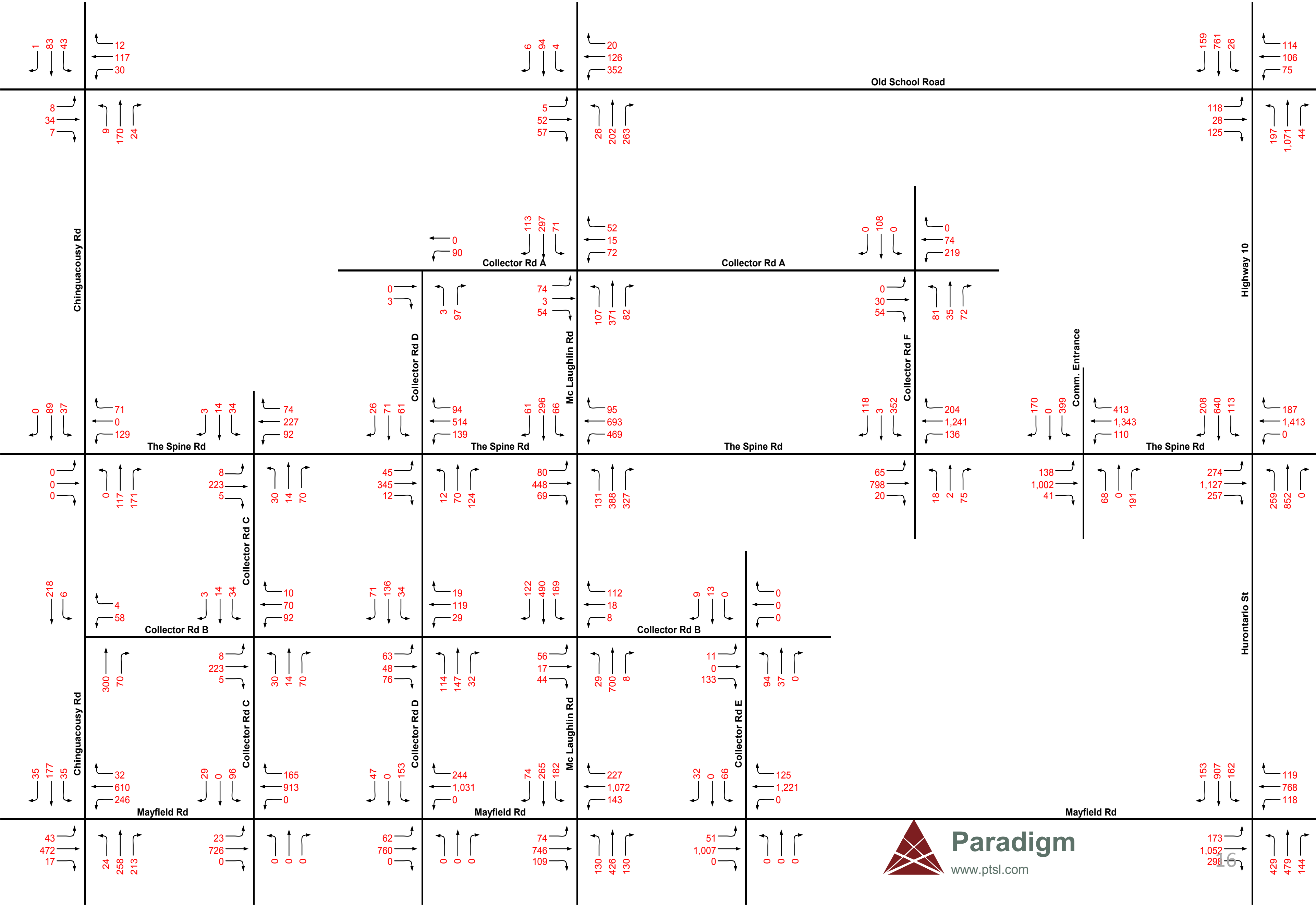
Weekday PM Peak Hour Traffic Estimates



Intersection Analyses

Intersection	Traffic Control	Eastbound			Westbound			Northbound			Southbound		
		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
1: Mayfield Rd & Chinguacousy Rd	TCS												
2: Mayfield Rd & Collector Rd C	TCS												
3: Mayfield Rd & Collector Rd D	TCS												
4: Mayfield Rd & McLaughlin Rd	TCS												
5: Mayfield Rd & Collector Rd F	TCS												
6: Mayfield Rd & Hurontario St	TCS												
7: The Spine Rd & Chinguacousy Rd	TWSC - EW												
8: The Spine Rd & Collector Rd C	TWSC - NS												
9: The Spine Rd & Collector Rd D	TCS												
10: The Spine Rd & McLaughlin Rd	TCS												
11: The Spine Rd & local street	TCS												
12: The Spine Rd & Collector Rd E	TCS												
13: The Spine Rd & Commercial Access	TCS												
14: The Spine Rd & Hurontario St	TCS												
15: Chinguacousy Rd & Collector Rd B	TWSC - EW												
16: Chinguacousy Rd & Collector Rd C	TWSC - EW												
17: Chinguacousy Rd & Old School Rd	TWSC - EW												
18: McLaughlin Rd & Collector Rd G	TWSC - EW												
19: McLaughlin Rd & Collector Rd B	TCS												
20: McLaughlin Rd & Collector Rd A	TCS												
21: McLaughlin Rd & Old School Rd	TCS												
22: Hurontario St & Old School Rd	TCS												
23: Collector Rd B & Collector Rd C	TWSC - NS												
24: Collector Rd B & Collector Rd D	TWSC - EW												
25: Collector Rd G & Collector Rd E	TWSC - EW												
26: Collector Rd D & Collector Rd A	TWSC - EW												
27: Collector Rd A & Collector Rd F	TWSC - ALL												

Intersection LOS Conditions

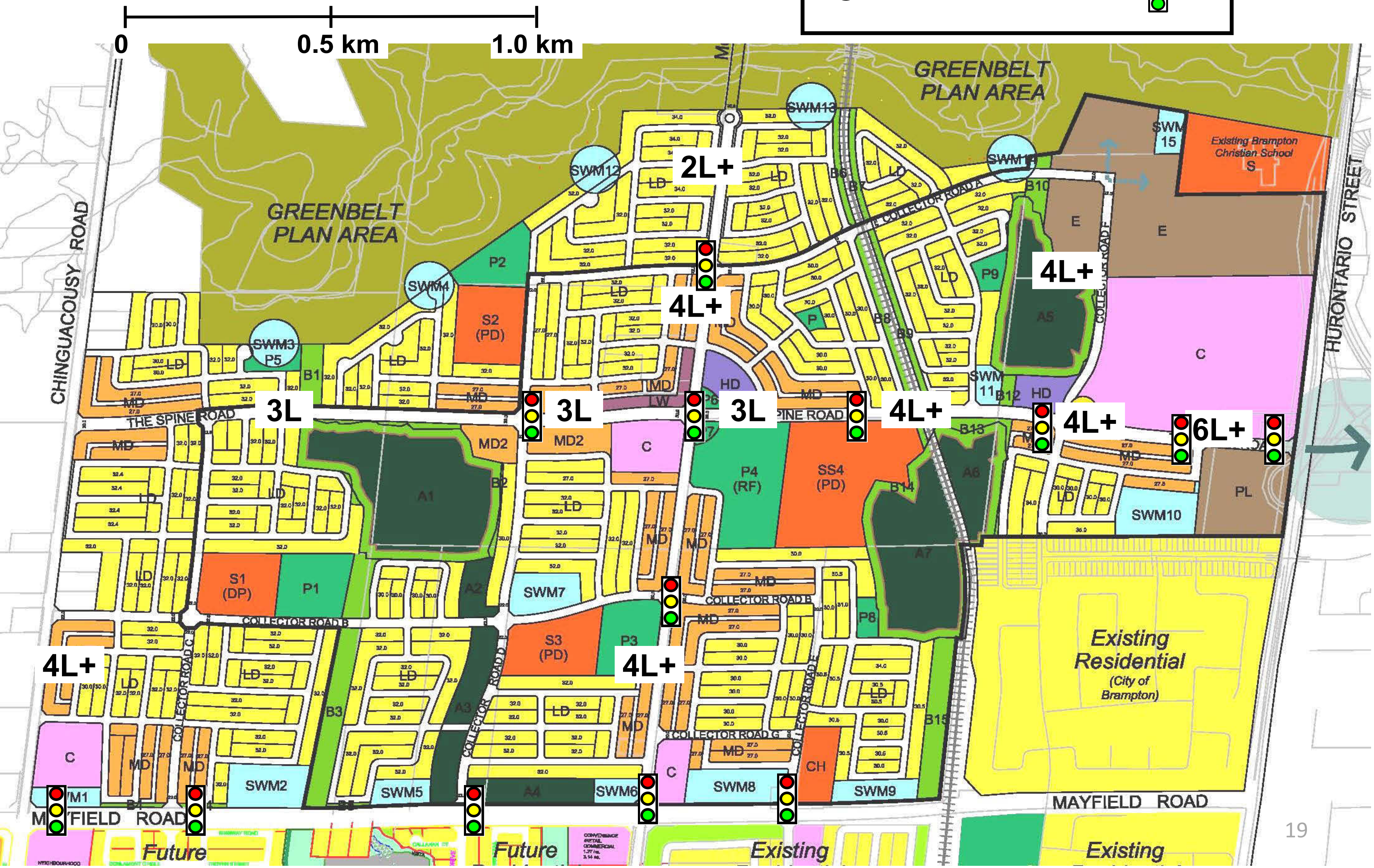
Intersection	Traffic Control	AM Peak Hour		PM Peak Hour	
		HCM Overall LOS	ICU Percent	HCM Overall LOS	ICU Percent
1: Mayfield Rd & Chinguacousy Rd	TCS	C	76%	D	78%
2: Mayfield Rd & Collector Rd C	TCS	B	53%	A	60%
3: Mayfield Rd & Collector Rd D	TCS	B	61%	A	68%
4: Mayfield Rd & McLaughlin Rd	TCS	C	79%	C	81%
5: Mayfield Rd & Collector Rd E	TCS	B	67%	A	67%
6: Mayfield Rd & Hurontario St	TCS	D	85%	E	101%
7: The Spine Rd & Chinguacousy Rd	TWSC - EW	B	21%	B	23%
8: The Spine Rd & Collector Rd C	TWSC - NS	C	34%	C	38%
9: The Spine Rd & Collector Rd D	TCS	B	65%	B	64%
10: The Spine Rd & McLaughlin Rd	TCS	D	85%	D	87%
11: The Spine Rd & local street	TCS	C	77%	D	74%
12: The Spine Rd & Collector Rd F	TCS	B	60%	B	62%
13: The Spine Rd & Commercial Access	TCS	B	64%	C	81%
14: The Spine Rd & Hurontario St	TCS	C	82%	D	88%
15: Chinguacousy Rd & Collector Rd B	TWSC - EW	B	26%	B	30%
16: Chinguacousy Rd & Collector Rd C	TWSC - EW	B	18%	B	20%
17: Chinguacousy Rd & Old School Rd	TWSC - EW	B	32%	C	40%
18: McLaughlin Rd & Collector Rd G	TWSC - EW	B	27%	B	37%
19: McLaughlin Rd & Collector Rd B	TCS	A	55%	B	53%
20: McLaughlin Rd & Collector Rd A	TCS	A	46%	B	57%
21: McLaughlin Rd & Old School Rd	TCS	A	47%	B	60%
22: Hurontario St & Old School Rd	TCS	C	74%	C	69%
23: Collector Rd B & Collector Rd C	TWSC - NS	B	36%	C	39%
24: Collector Rd B & Collector Rd D	TWSC - EW	E	50%	D	47%
25: Collector Rd G & Collector Rd E	TWSC - EW	A	23%	B	27%
26: Collector Rd D & Collector Rd A	TWSC - EW	A	27%	A	24%
27: Collector Rd A & Collector Rd F	TWSC - ALL	C	55%	B	50%

Overview of Road Network

Number of Lanes **(>2)** 4L

Signalized Intersection

SCALE:



Transit Concept Plan for MW2

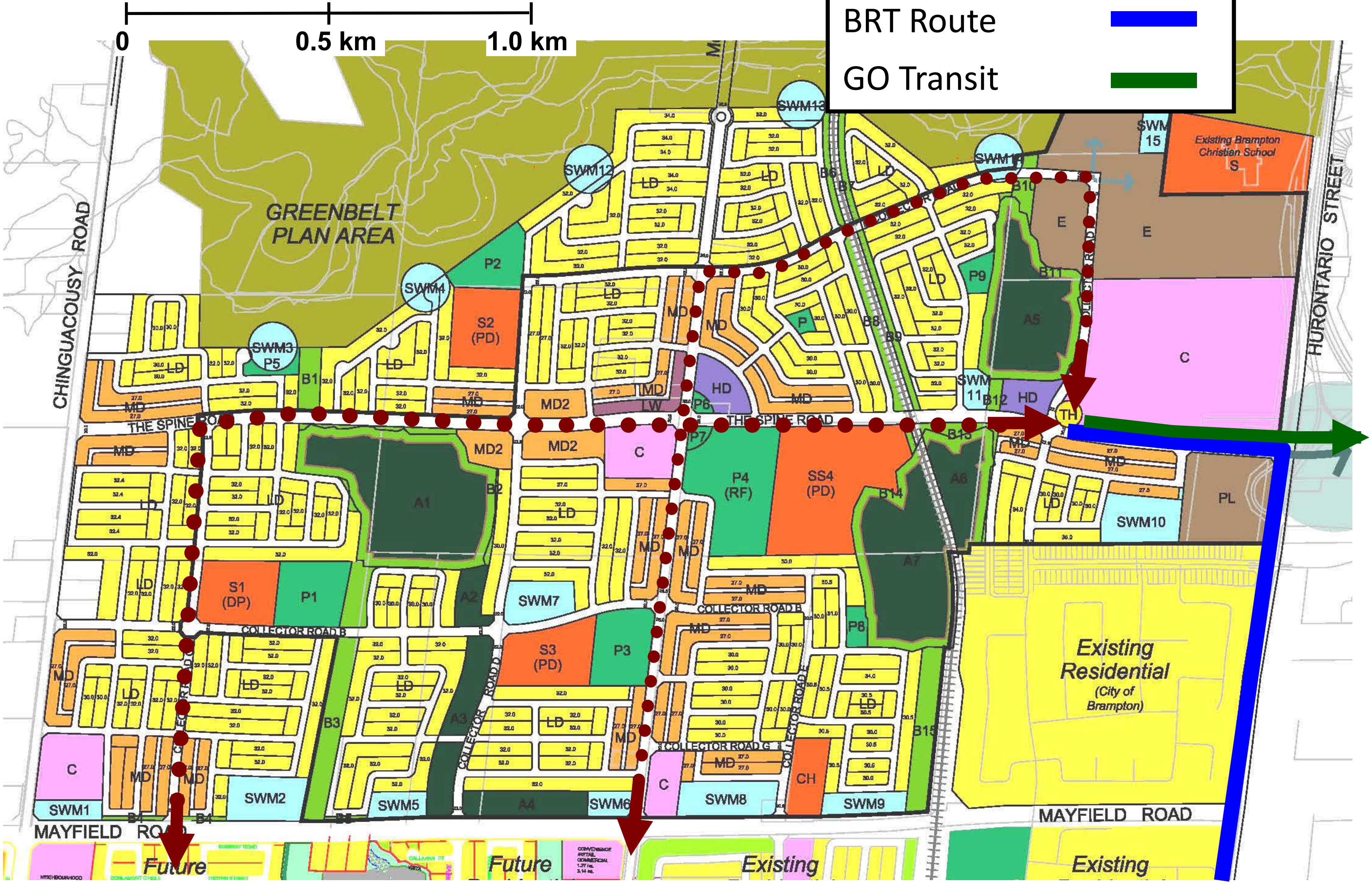
Transit Service is an important component of MW2 Transportation Master Plan – service should be provided as development proceeds.

Transit Concept Plan includes:

- Extension of Brampton Transit into MW2 community, connecting to Brampton Downtown Terminal (route 24 & 25) & Mount Pleasant GO Station (route 4 & 4A).
- Possible local bus route connecting to Mayfield West Phase 1 (east of Highway 10).
- Terminus for BT Hurontario BRT service.
- Connections to Orangeville & Trinity Commons GO Transit routes.

Off-street transit hub provided adjacent and in close proximity to major commercial & employment areas for local service and interconnections.

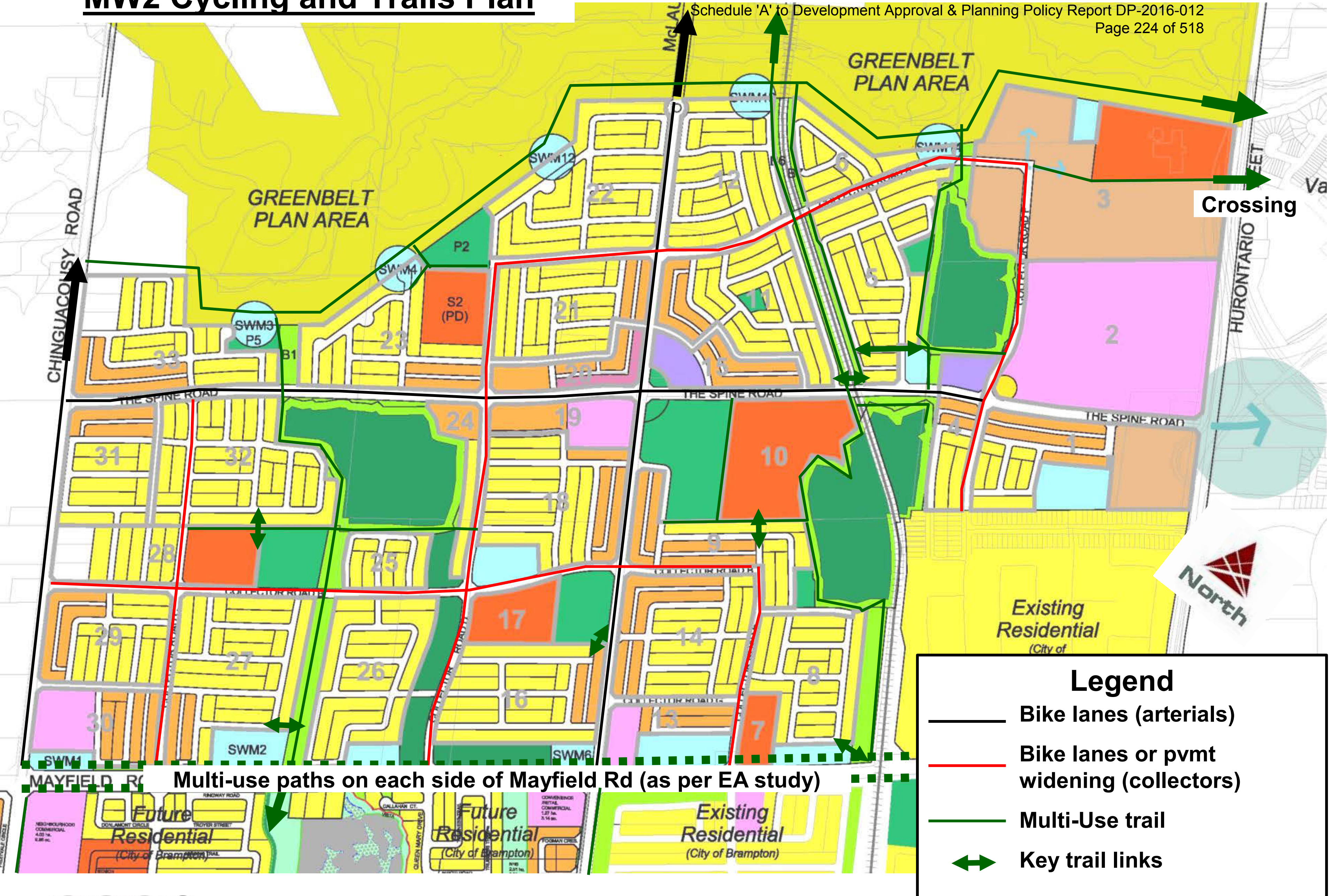
Overview of Transit Service Concept



Cycling & Trails Plan for MW2

- Full cycling network to accommodate recreational & commuter cyclists.
- Bike lanes provided on each side of arterial and main collector roads (2.0 m on Spine Rd, 1.8 m on McLaughlin Rd, & 1.5 m on Collector roads).
- Continuous network of off-road multi-use trails for recreational cyclists.
- Cycling network provides continuity with routes in Brampton and along Mayfield Road.
- Continuous multi-use trail system utilizing green links and open spaces.
- Trails connect to Brampton & Regional trails as well as Etobicoke Creek Greenbelt Plan Area.
- Key linkages identified for connections to local street areas.
- Sidewalks provided on all streets (except short cul-de-sacs).

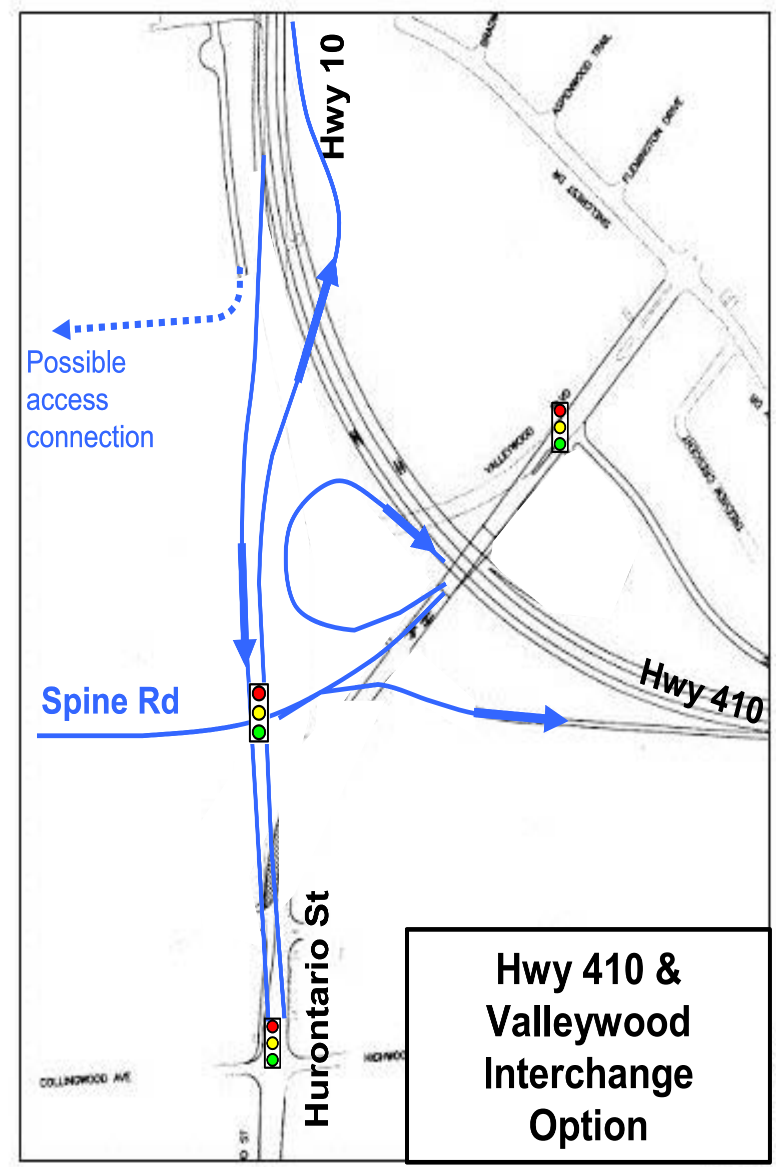
MW2 Cycling and Trails Plan

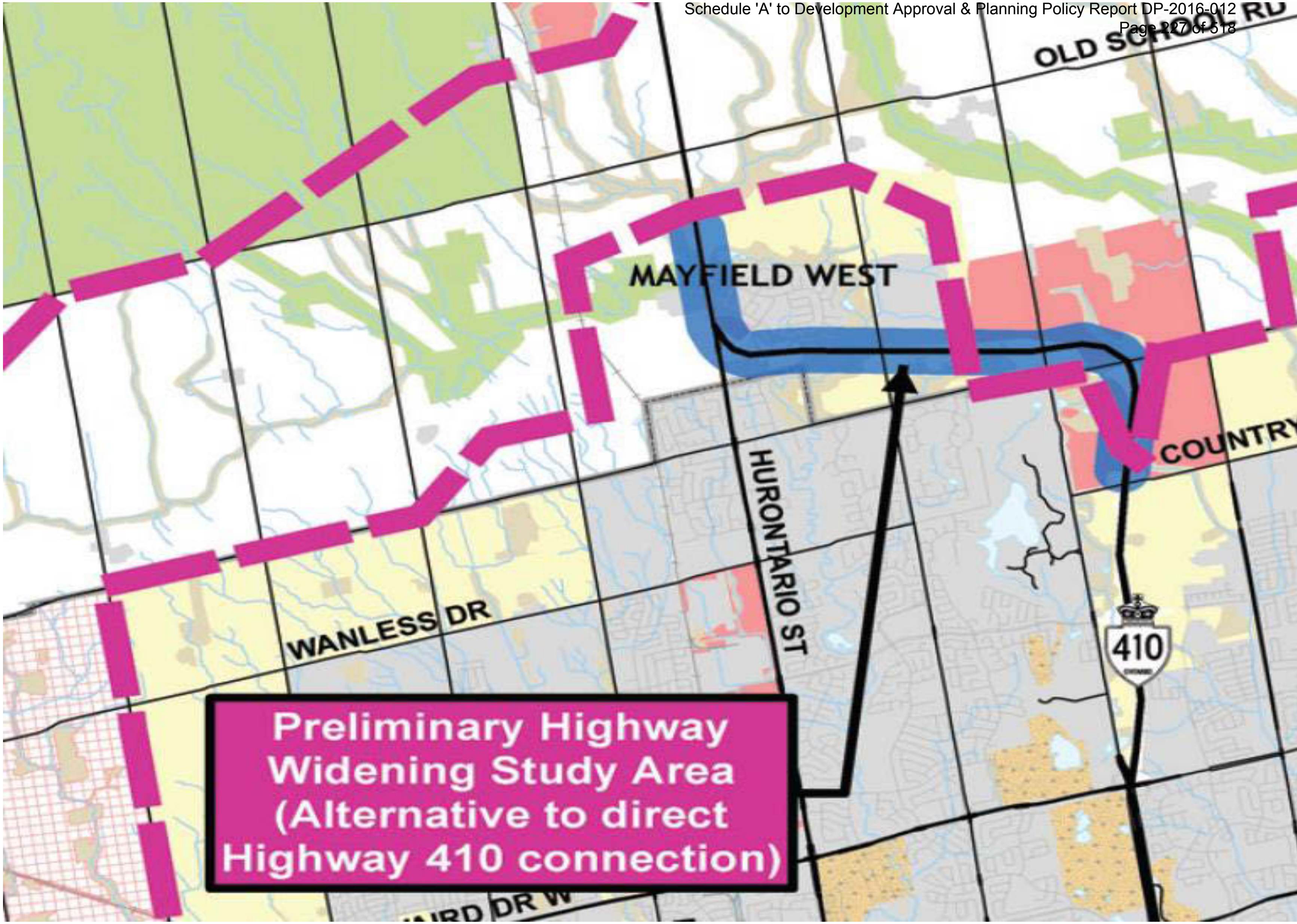


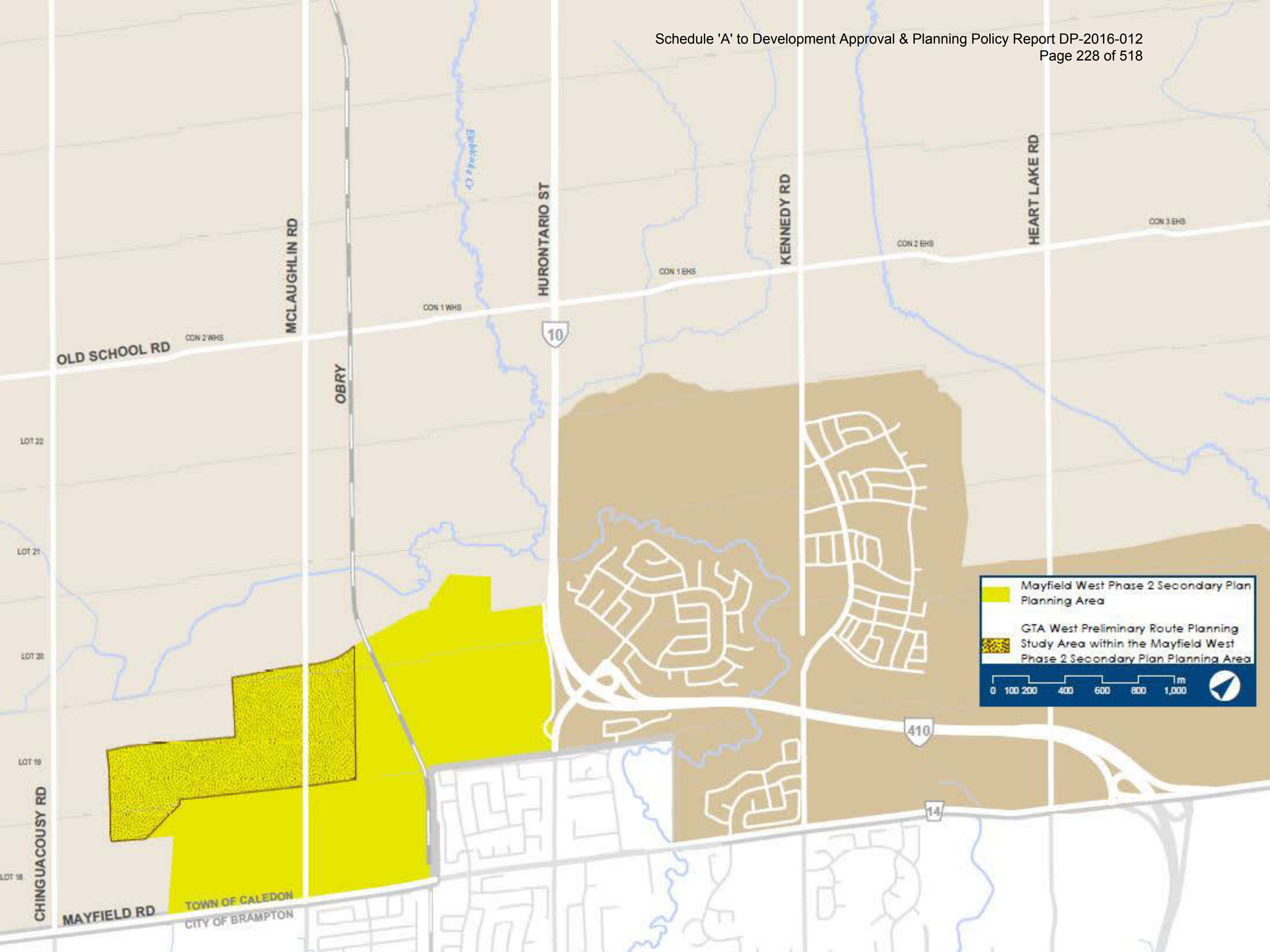
(b) Key Items for Discussion Related to MW2

- The need to modified the Hwy 410/Valleywood Interchange
- GTA-West Corridor EA
- Provision of Transit Service into MW2
- Spine Road Character & Urban Village Centre

This slide shows one possible configuration for the Hwy 410/Valleywood interchange; it is similar to the "Ultimate Vision" identified in MTO's Hwy 410 Extension Pre-Design Study.

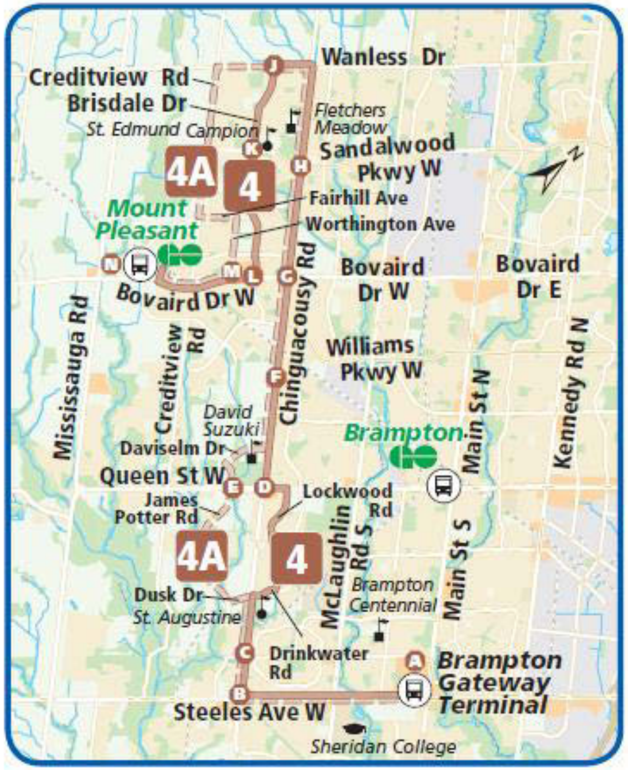


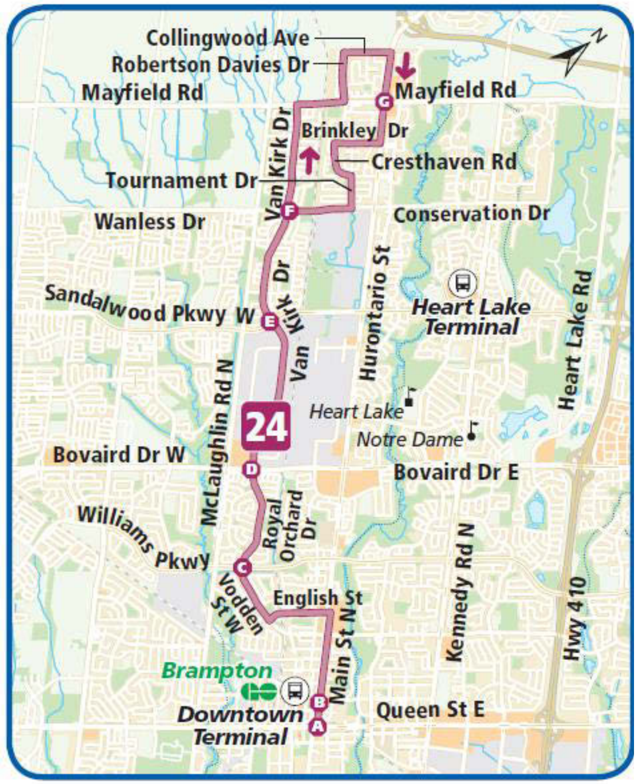

MAYFIELD WEST
HURONTARIO ST
WANLESS DR
COUNTRY
410
Preliminary Highway Widening Study Area (Alternative to direct Highway 410 connection)

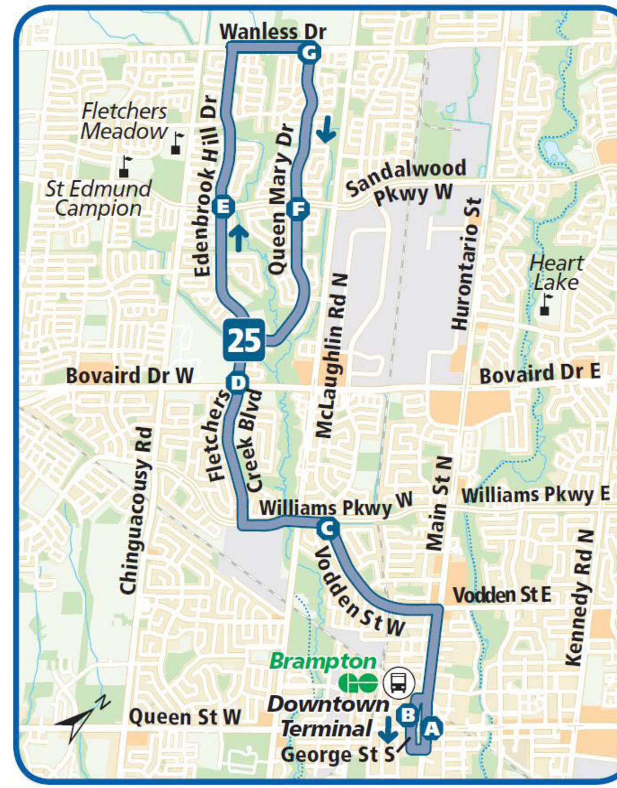

HEART LAKE RD
KENNEDY RD
HURONTARIO ST
MCLAUGHLIN RD
OBRY
OLD SCHOOL RD
CON 2 WHS
CON 1 WHS
CON 1 EHS
CON 2 EHS
CON 3 EHS
10
410
14
LOT 22
LOT 21
LOT 20
LOT 19
LOT 18
CHINGUACOUSY RD
MAYFIELD RD
TOWN OF CALEDON
CITY OF BRAMPTON
Mayfield West Phase 2 Secondary Plan Planning Area
GTA West Preliminary Route Planning Study Area within the Mayfield West Phase 2 Secondary Plan Planning Area
0 100 200 400 600 800 1,000 m

Transit Concept Plan includes:

- Extension of Brampton Transit into MW2 community, connecting to Brampton Downtown Terminal (route 24 & 25) & Mount Pleasant GO Station (route 4 & 4A).







Part 3 – Town Staff

(a) Moving Forward & Next Steps

Presented by: Tim Manley

(a) Moving Forward & Next Steps

Regional Official Plan Amendment (ROPA)

Jan 2014 – Caledon submitted an application to Peel Region to amend the Regional Official Plan to establish the MW2 settlement area boundary expansion.

Statutory Public Meeting held May 22, 2014.

Regional Council consideration of ROPA anticipated September 2014.

Local Official Plan Amendment (LOPA)

MW2 will be implemented through an amendment to Caledon's Official Plan.

Public Open House proposed for July 2014.

Draft Transportation Master Plan released to technical advisory team for review & comments in July 2014.

Caledon Council consideration of LOPA anticipated by the end of 2014.

Meeting Minutes

Transportation Planning

Transit Planning

Traffic Engineering

Parking Planning

Philip E. Grubb
B.A.Sc., P.Eng.
President

James J.L. Mallett
M.A.Sc., P.Eng., PTOE
Vice President

Stewart K. Elkins
BES, MITE
Vice President

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FILE: 101380

PROJECT: MAYFIELD WEST PHASE 2 SECONDARY PLAN

SUBJECT: TECHNICAL ADVISORY COMMITTEE MEETING

DATE: MONDAY MAY 26, 2014

TIME: 2:30 PM – 5:00 PM

LOCATION: TOWN HALL – CALEDON EAST

Introductions & Attendance

Introduction of meeting attendees:

Name	Organization
Kaylan Edgcumbe	PTSL
Bill O'Brien	PTSL
John Vandermark	PTSL
Tim Manley	Town of Caledon
Brian Sutherland	GSAI
David Stowe	City of Brampton - Transit
Kant Chawla	Town of Caledon
Ryan Grodecki	Town of Caledon
Eric Chan	Peel Region
Damian Jamroz	Peel Region
Natalie Rouskov	MTO
Margie Chung	Peel Region
Paul Mondell	Brookvalley Developments
Rick Mangotich	Fieldgate Developments
Andria Oliveira	City of Brampton
Jennifer Maestre	Peel Region
Sherwin Gumbs	GO Planning / Metrolinx
Emanuel Nicolescu	Lea Consulting Ltd
Hayden Matthews	Laurier Homes
Matthew MacCharles	Genstar Development Company
Dave Hurst	Town of Caledon
Jennifer Mahoney	NAK Design Strategies
Rose Hercia	Peel Region – Real Estate
Gayle Gorman	Peel Region – Real Estate

Project Background

- Tim reviewed the project background to-date and provided details with respect to the Council Endorsed Framework Plan (as endorsed September 2013);
- Emphasized that the endorsed framework plan achieves the goal of promoting an active lifestyle and that special consideration was given to providing interconnected natural heritage systems within MW2 and the existing systems south of Mayfield Road;

Transportation Overview

- Bill O'Brien reviewed transportation work completed to-date (including two previous impact assessments which were conducted in 2009 and 2012) which provided input into the development of the resulting framework plan;
- Summarized key findings of previous studies. Of importance was the finding that the development of MW2 will require a major reconfiguration of the Highway 410 / Valleywood interchange;
- Natalie Rouskov noted that the MTO anticipates a PIC in late 2014 for the GTA West study where various alternate corridors will be presented to the public. In terms of connections with Highway 410, the ultimate connection will be likely determined in late 2015;
- Review of travel forecasts. Note that the trip generation estimates and resulting peak hour forecasts are based on the full build-out area;
- Review of future level-of-service conditions and resulting road network requirements;
- Review of transit service concept. David Stowe of Brampton Transit indicated that the City is currently studying existing and future routes and service. The in-house study is anticipated to be completed at the end of 2014 and will take into consideration MW2 and logical connections into the lands north of Mayfield Road;
- Sherwin Gumbs confirmed that the proposed Transit Hub location is acceptable to GO transit and may be utilized by GO Route 37 via Hurontario Street. Also indicated that the extension of BRT along Hurontario is shown in the Big Move and as such, is consistent with the placement of the Transit Hub;
- Tim Manley reiterated that the Town's goal is potential home owners in MW2 will know that transit is coming or on the horizon from day 1. This development is to be marketed as a transit supportive community. David Stowe confirmed that this is consistent with the vision of Brampton Transit; and
- John VanDerMark provided a detailed review of the proposed cycling and trails plan within MW2.

Key Items

A number of key items were discussed:

- The requirement for a reconfigured interchange at Highway 410 / Valleywood;
- Status of the GTA-West Corridor Study;
- Provision of Transit Service into MW2;
- Character of the Spine Road and reduced cross-section through the Village Centre.

Moving Forward

- Tim Manley provided a status summary of the ROPA and LOPA applications;
- Council workshop scheduled for June 17, 2014;
- July 21 target date for draft studies to be submitted to Town staff for review and comment.

Meeting Minutes Prepared by Kaylan Edgcumbe, PTSL.

Distribution: All in attendance.

Council Workshops

TOWN OF CALEDON

TOWN HALL
6311 Old Church Road, Caledon, ON L7C 1J6
905.584.2272 | 1.888.CALEDON | FAX 905.584.4325 | www.caledon.ca

Subject: **Council Information Workshop**
Mayfield West Phase Two Secondary Plan
Phase 1 Technical Studies – An Update on Progress

Date: December 3, 2008

Time: 2:00 pm to 4:00 pm

Location: Caledon Community Complex, 6215 Old Church Road, Caledon East
Community Room (basement level)

Agenda

1. Introductions (Town staff)
2. Project Background (Town staff)
3. Phase 1 Technical Studies: (Presentations by technical team)
   - i) Comprehensive Environmental Impact Study and Adaptive Management Plan: Ron Scheckenberger, Philips Engineering.
   - ii) Water & Wastewater Servicing: Dave Kesler, R.J. Burnside.
   - iii) Transportation Impact Study: Bill O'Brien, Paradigm Transportation Solutions.
   - iv) Agricultural Impact Assessment: Sean Colville, Colville Consulting.
   - v) Noise Impact Assessment: Dalila Giusti, Jade Acoustics.
   - vi) Cultural Heritage Landscapes & Built Heritage Resources Assessment: Andre Scheinman and Caroline Marshall, ENVision-The Hough Group.
4. Next Steps (Town staff)

TOWN OF CALEDON

MAYFIELD WEST PHASE TWO SECONDARY PLAN

INVITATION TO THE MAYFIELD WEST PHASE TWO COMMUNITY DESIGN & SUSTAINABILITY WORKSHOP

The Town of Caledon Planning & Development Department is hosting a Workshop for the Mayfield West Phase Two Secondary Plan.

Date: January 7, 2009

Location: Brampton Fairgrounds
12836 Heart Lake Road, Caledon.

Time: 10 a.m. to 3 p.m.

Lunch and snacks will be provided.

The Workshop will provide an opportunity to bring together a diverse group of interests and expertise to take a fresh look at the Planning & Design Principles endorsed by Caledon Council for the 'Phase One' Secondary Plan in 2003.

The Workshop will also provide an opportunity to generate new ideas and approaches for planning and designing a distinctive and sustainable new phase of Mayfield West.

Please RSVP by Monday, January 5, 2009 to:

Tim Manley, Senior Policy Planner

Planning & Development Department

905-584-2272 ext. 4285

tim.manley@caledon.ca

TOWN OF CALEDON

ATTACHMENT TO WORKSHOP INVITATION

Information about the Mayfield West Phase Two Secondary Plan:
Located in the southwest part of Caledon, the Rural Service Centre of Mayfield West is being planned by Caledon as a compact, vibrant and well integrated community through a series of phased expansions.

Caledon has revised the 2021 population forecast for Mayfield West from 13,100 to 17,000, an increase of 3,900. Caledon is also proposing to allocate an additional 9,800 population to Mayfield West between 2021 and 2031. Consequently, Caledon has begun the Mayfield West Phase Two Secondary Plan to determine the appropriate location and form for this future growth. In this regard, Caledon Council approved General Terms of Reference for the Phase Two Secondary Plan in June 2008.

With the introduction of The Growth Plan for the Greater Golden Horseshoe, 2006 and recent changes to the Planning Act, the Government of Ontario has engaged new thinking in respect of the way future growth occurs in the Greater Golden Horseshoe. Part of this new thinking is an emphasis of developing greenfield communities which are compact, integrated and more sustainable.

The Ontario Planning Act requires that planning authorities, such as Caledon, in carrying out their responsibilities under the Act, shall have regard to, among other matters, matters of provincial interest that include the promotion of development that is designed to be sustainable, to support public transit and to be oriented to pedestrians.

Caledon is proud of its reputation as the Greenest Town in Ontario, a reputation that has been earned through the collaborative efforts of the entire community and through various progressive sustainable planning measures. In order to sustainably accommodate the future growth proposed in Mayfield West, and as a clear demonstration of its continued commitment to being "green", it is intended that Caledon will fully explore the opportunities that exist to incorporate sustainable community design in to the Phase Two Secondary Plan.

Study Area:
In the context of planning for the 2021 planning horizon and the additional 3,900 population allocated to Mayfield West, the study area for the Phase Two Secondary Plan is confined to lands west of Highway 10, encompassing lands west of Highway 10, north of Mayfield Road, south of Old School Road and east of Chinguacousy Road. In the context of planning for the 2031 planning horizon, the study area is confined to lands within the Mayfield West Community Development Plan Study Area, a study area that is established in Caledon's Official Plan in Schedule B – Mayfield West Land Use Plan.

Technical Studies:
A set of technical studies are being undertaken for Caledon by a team of external consultants. The findings and recommendations of these studies will contribute to the development and evaluation of a set of land use scenarios and ultimately a preferred land use plan for an expanded Mayfield West community.

Role of the Workshop in the planning process:
Caledon has retained the consulting firm of Urban Strategies Inc. (USI) to be Caledon's Community Design & Sustainability Consultant for the Phase Two Secondary Plan. One of their tasks will be to facilitate the January 7 Workshop.

Urban Strategies will prepare a summary report documenting the results of the Workshop and this report will be presented by Caledon staff to Council for their endorsement.

As an initial starting point to generate planning and design principles for the Phase Two Secondary Plan, the planning and design principles endorsed by Caledon Council for the Mayfield West 'Phase One' Secondary Plan will be reviewed at the Workshop.

TOWN OF CALEDON

'PHASE ONE' PLANNING & DESIGN PRINCIPLES

In September 2003, Caledon Council endorsed the following 11 planning and design principles for the 'Phase One' Secondary Plan.

1. **Regional Context** – Recognize the regional context and its unique natural and cultural heritage qualities.
2. **Public Transportation** – Integrate with regional public transportation plans. Minimize the use of the automobile and ensure that all residents have safe, economic, and convenient access to transit. Explore potential for future train transportation.
3. **Pedestrian Based Design** – Adopt a 5-10 minute walking radius as an important planning parameter. Design street-based pedestrian systems whereby public transit, schools, shops, public facilities etc. are within a 5-10 minute walking distance.
4. **Mixed Housing.** – Provide a mix of housing types and tenures (freehold, condominium, non-profit) in integrated street patterns. Avoid single use segregation.
5. **Concentrate Public Buildings.** – Locate and concentrate public buildings at strategic locations to help create landmarks thereby contributing to the image and identity of the community.
6. **Design Public Spaces** – Design public spaces as accessible neighbourhood focal points. Plan events and activities and frame them with public entrances and access points. Avoid public spaces and school grounds that back onto private rear yards.
7. **Protect/Regenerate Natural Habitats** – Protect and regenerate natural habitats to provide continuous vegetative and wildlife corridors. Establish new core forests wherever possible by reconnecting isolated woodlots. Integrate with hiking and bicycle riding paths and trails.
8. **Develop Local Economy** – Support local farmers, artisans, and craftspeople to develop a distinct economy. Create an environment where people can support and integrate with each other.
9. **Design for Human Scale** – Design road, parking standards, and structures that are respectful of human neighbouring and social interaction, enhance the visual quality of the community, and assist in creating safe streets.
10. **Utilize Sustainable Energy Systems** – Plan for the integration of sustainable energy systems that utilize solar, wind and ground effect systems. Consider district heating opportunities and plan for the southerly orientation of dwelling units for active and passive solar utilization.
11. **Conserve/Protect Water** – Conserve and re-use water by capturing site rain and snow runoff, and by using water reduction devices in all buildings.

Mayfield West P2: January 7, 2009 Community Design & Sustainability Workshop - Invitees

	Organization	Area of Interest / Specialization
	Town of Caledon	
1	Mayor Morrison	
2	Councillor Doug Beffort	Area Councillor Ward 1
3	Councillor Nick De Boer	Area Councillor Wards 3 & 4
4	Councillor Annette Groves	Regional Councillor Ward 5
5	Councillor Gord McClure	Area Councillor Ward 2 (Mayfield West ward)
6	Councillor Richard Paterak	Regional Councillor Ward 1
7	Councillor Jason Payne	Area Councillor Ward 5
8	Councillor Allan Thompson	Regional Councillor Ward 2 (Mayfield West ward)
9	Councillor Richard Whitehead	Regional Councillor Ward 3 & 4
10	Tim Manley	Planning Dept - Senior Policy Planner/Project Manager
11	Mary Hall	Planning Dept - Planning Director
12	Todd Salter	Planning Dept - Manager of Policy
13	Ohi Izirein	Planning Dept - sustainability lead re: provincial policy conformity (PPC)
14	Sara Peckford	Planning Dept - Environmental Progress Officer
15	Eriks Eglite	Recreation & Property Services Dept.
16	Marc Sequin	Recreation & Property Services Dept.
17	Craig Campbell	Public Works & Engineering Dept.
18	David Atkins	Public Works & Engineering Dept.
19	Brian Baird	Public Works & Engineering - Parks Manager
20	Norm Lingard	Economic Development Dept.
21	Ben Roberts	Economic Development Dept.
22	Mary Schofield	Building & By-law Dept.
	Mayfield West Stakeholder Advisory Group	
23	Chris Tschirhart	Brampton Flying Club
24	Julie Pomeroy	Brampton Flying Club
25	Hugh Metcalf	Caledon Agricultural Advisory Committee
26	John Abbott	Caledon Environmental Advisory Committee
27	Steve McElroy	Caledon Environmental Advisory Committee
28	Bill Wilson	Caledon Environmental Advisory Committee
29	Kelly Darnley	Caledon Chamber of Commerce
30	Karen Hutchinson	Caledon Countryside Alliance
31	Al Tupper	Brampton Christian School
32	Rick Robson	Brampton Christian School
33	Jim Moore	Peel Federation of Agriculture
34	Rob Harrison	Valleywood Residents Association
35	Suzan Dass	Valleywood Residents Association
36	Preet Kang	Valleywood Resident at Large
37	Peter LeBlanc	Mayfield Station Developers Group (MSDG)
38	Mike Hensel	Gartner Lee Limited, representing MSDG
39	Brian Sutherland	Glen Schnarr & Associates, representing MSDG
	Conservation Authorities	
40	Quentin Hanchard	TRCA, Manager, Development, Planning and Regulation
41	Wendy McWilliam	TRCA, Planner, Planning, Development and Regulation
42	Chandra Sharma	TRCA
43	Richard Clark	CVC
44	Rizwan ul Haq	CVC, Water resource specialist
45	Karen Chisholme	CVC, Ecologist
	Region of Peel	
46	Kennedy Self	Manager, Planning
47	Junior Mohammad	Development Engineering
48	Murray McLeod	Transportation Planning
49	Naheed Jamal	Planning Policy - sustainability lead re: PPC
	Caledon Consultants	
50	Bill O'Brien	Paradigm Transportation Solutions (transportation)
51	Ron Scheckenberger	Philips Engineering (environmental study team lead)
52	Dave Kesler	R.J. Burnside (water and wastewater servicing)
53	Karl Konze	Dougan & Associates (ecologist)

WORKING DRAFT

Guiding Principles for Mayfield West Phase 2 (MW2):

The MW2 community should be planned and designed to:

1. Achieve **Net Gain.**
   The impact for each of the social, environmental, cultural and economic functions in MW2 will result in a net gain. In particular, MW2 will strive to restore and enhance local and regional ecological and environmental functions. The merit of proposed initiatives in Mayfield West will be measured by the resulting overall net impact (social, environmental, cultural, and economic), and not their individual impact.

   Implications and Illustrations:
   Should proposed urban development result in a loss of ecological function, an amount of ecological function greater than the amount lost will be provided elsewhere within, or in the vicinity of, MW2. Every effort will be made to create appropriate linkages between key ecological functions such as the Etobicoke Creek and isolated woodlots.

2. Adopt **progressive approaches** to community planning and design.
   MW2 will be planned and designed using an integrated design process. The integrated design process is a multi-disciplinary team approach that aims to achieve greater sustainability and a more balanced and holistic setting and quality of life. All disciplines will be brought together at the start of the planning and design process to enable collective decision making, thus ensuring innovation and opportunity are not precluded by individual decision making.

   Implications and Illustrations:
   The Canada Green Building Council (CaGBC) is in the process of developing a LEED Canada Neighbourhood Development (LEED Canada-ND) rating system. This rating system is being informed by the US Green Building Council LEED ND pilot. In the context of MW2, Caledon will explore the applicability of the LEED Canada-ND rating system when it becomes available.

3. Foster a **local identity** rooted in the spirit of the Town of Caledon.
   The design of MW2 will leverage the area's heritage, environmental assets, and rural character to promote an identity that is distinctly local. The community identity will reflect and celebrate Caledon's unique natural, historic, cultural, economic, and social qualities. The community will also be designed to fit within and around the surrounding landscape.

   Implications and Illustrations:
   The preservation of existing buildings and landscapes may figure prominently. Existing buildings may be adapted for new uses. Street design may preserve the existing "country road" character in some places. New development will be supportive of, and integrated with, established buildings and places. You should be able to recognize the place that is there today in the place that will be there tomorrow.

4. Establish the structure for a **close knit small town** that fosters local sustainability.
   The MW2 community design will support interaction and an integrated mix of uses, and cultivate a sense of place common to rural small towns. MW2 will be self sustaining, serving the daily needs of

its residents with places to meet and recreate and with a vibrant local economy that supports the production of local food and local employment opportunities.

Implications and Illustrations:
This implies a small, fine-grained scale development that is highly connected both internally and to other places. It also implies a place which is closely integrated into its surrounding natural setting. A sense of completeness, that you can find most everything you need for daily life in one place, is also suggested. This place will "feel" like a community.

5. Accommodate a **full spectrum** of ages, cultures, and incomes.
   MW2 will provide a mix of housing types, support aging in place, and accommodate the cultural needs of its residents. MW2 will also support a range of employment uses that enhance the opportunity for people to live and work within the community.

   Implications and Illustrations:
   The creation of a variety of housing forms and tenures will be possible, which would enable people to live in the community through all stages of life.

6. Prioritize **walking, cycling and transit** opportunities.
   MW2 will be a transit supportive community, prioritize pedestrian and cycling movement, and minimize the need for automobile use. The public realm will be shaped to ensure pedestrians and cyclists have a safe and desirable environment. MW2 will be a place where walking is a viable option and enjoyable experience for attending to daily needs.

   Implications and Illustrations:
   Public spaces will be planned and designed so as to create a safe, friendly and desirable environment for pedestrians and cyclists, and to promote the interaction of people of all ages and abilities. Walking distances to community facilities will be an important planning parameter. Traffic calming strategies (which may include initiatives such as the creation of narrower street right-of-ways) will be promoted.

7. Maximize **conservation and innovation** (water, waste, energy).
   The Town will require development patterns that mitigate impacts and enable more sustainable lifestyles. The Town will encourage the use of low impact development (LID) and the adoption of LEED standards. The Town may also set custom performance benchmarks that require new development to achieve zero waste, minimize energy use (and explore the potential for district energy), maximize use of alternative sustainable energy solutions, minimize consumption of water, and seek by-product synergies where the waste from one system is used as the input for another.

   Implications and Illustrations:
   Low impact development techniques include such things as green roofs, permeable paving material and the enhancement of traditional curbs and gutters with bioswales (a shallow depression that slows, transports and treats storm water runoff). Energy Star qualified homes may be the minimum requirement for all applicable residential development. Applicable LEED certification (e.g. LEED for new construction, etc) will be encouraged for all residential development.

8. Ensure design coherence at **all scales.**
The design for MW2 will take into account its interdependence and linkages among the site, street, block, study area, Town, watershed, landscape and global scales. MW2 will include direct street and natural heritage connections to surrounding neighbourhoods. Further, MW2 will be cognisant of its location adjacent to the greenbelt.

Implications and Illustrations:
Some local streets may also have to accommodate through traffic. There will be local storm water ponds that are part of larger environmental networks. The design and planning of MW2 will have to respond to, balance, and ultimate integrate multiple, and sometimes conflicting, objectives.

9. Support **adaptive change.**
MW2 will adopt block patterns, streetscapes, built form, infrastructure, community facilities and an open space network that are adaptable and able to respond to the evolving character, form and needs of the community.

Implications and Illustrations:
Key characteristics such as road network, infrastructure, streetscapes, open spaces network building form and community facilities will be planned so as to enable MW2 to adapt over time to an evolving character, form, and community needs. Often all of the networks and elements will need to evolve together in a holistic manner.

MAYFIELD WEST PHASE TWO SECONDARY PLAN

Council Information Workshop | February 17, 2009

TOWN OF CALEDON

TOWN OF CALEDON

TODAY'S AGENDA

1. Introductions.
2. Background / Workshop Purpose.
3. 2009 Principles – a working draft.
4. Next steps

TOWN OF CALEDON

FRESH THINKING

September 2003, Caledon Council endorsed a set of planning and design principles that guided the preparation of Mayfield West Phase One.

January 7, 2009 Workshop was designed to take a fresh look at the Principles endorsed by Caledon Council in 2003.

The Workshop also provided an opportunity to generate new ideas and approaches for planning and designing a distinctive and sustainable community.

TOWN OF CALEDON

WORKSHOP PARTICIPANTS

January 7 workshop was attended by 48 participants representing a variety of government agencies, stakeholders and interested groups.

- Town of Caledon.
- Advisory committees to Caledon Council.
- Agencies / other groups.
- Property owners.
- Technical Consultants for Caledon.

TOWN OF CALEDON

2009 WORKSHOP

The workshop was kicked off with a presentation by Caledon staff outlining the workshop purpose and background history on Mayfield West.

Caledon's planning consultant followed with a presentation introducing key elements to sustainable community design and provided an overview of the study area.

A plenary discussion was held to draw out a vision for MW2 – What should the community look like? Distinguishing features? How could it be a sustainable community?

TOWN OF CALEDON

2009 WORKSHOP

Caledon staff reviewed the successes and challenges implementing some of the 2003 Principles.

A break out session followed where the workshop participants critically reviewed the 2003 Principles and developed core directions/themes for new planning and design principles for MW2.

TOWN OF CALEDON

2009 PRINCIPLES: A WORKING DRAFT

1. Achieve net gain.

2. Adopt progressive approaches to community planning and design.

3. Foster a local identity rooted in the spirit of Caledon.

TOWN OF CALEDON

2009 PRINCIPLES: A WORKING DRAFT

4. Establish the structure for a close-knit small town that fosters local sustainability.

5. Accommodate a full spectrum of ages, cultures and incomes.

6. Prioritize transit, walking and cycling opportunities

TOWN OF CALEDON

2009 PRINCIPLES: A WORKING DRAFT

7. Maximize conservation and innovation (water, waste, energy).

8. Ensure design coherence at all scales.

9. Support adaptive change.

TOWN OF CALEDON

NEXT STEPS

1. Review and comment period.
   - Council;
   - Senior Management Team; and
   - Workshop participants.
2. March 3, 2009 deadline for comments.
3. March 24, 2009 Council consideration.

MAYFIELD WEST SECONDARY PLAN PHASE 2

Council Information Workshop | June 22, 2009





TOWN OF CALEDON

PLANNING & DEVELOPMENT DEPARTMENT

WORKSHOP AGENDA

TOWN OF CALEDON

1. Welcome & introductions.	(Planning staff)
2. Workshop summary.	(Planning staff)
3. Feedback & direction to date.	(Planning staff)
4. Policy considerations.	(Planning staff)
5. Presentation of scenarios.	(Urban Strategies Inc.)
6. Next Steps.	(Planning staff)

WORKSHOP SUMMARY

TOWN OF CALEDON

Planning staff will provide a brief review of the feedback and direction provided by Council to date.

Planning staff will provide a brief review of certain policy direction that has been considered in the preparation of the scenarios.

In response to the feedback and direction provided by Council to date, Urban Strategies Inc. has prepared 3 new alternative land use scenarios. The scenarios will be the focus of today's workshop.

TOWN OF CALEDON

WORKSHOP SUMMARY cont…

All 3 scenarios show the lands required to accommodate the land use needs out to 2031.

Scenario C reflects the June 9 Council delegation by Glen Schnarr & Associates on behalf of Mayfield Station Developers Group.

Planning staff will use one of the scenarios to conceptually illustrate the potential build-out capacity of the Mayfield West study area beyond 2031.

COUNCIL FEEDBACK

TOWN OF CALEDON

To date, Planning staff and Urban Strategies Inc. has heard the following key messages:

- An east-west road should be planned for west of Highway 10 and north of the Etobicoke Creek to provide a key transportation connection between Phase 1 and Phase 2.
- Must give due consideration to the planned role and function of Mayfield Road – need to limit the number of new access points on to Mayfield Road in order to maintain its arterial road function.
- Locate compatible land uses adjacent to the rail line – where possible, limit the need for large setbacks.

TOWN OF CALEDON

COUNCIL FEEDBACK cont…

- With respect to the location of new employment lands:
  - as a first priority, maximize the opportunities north of and adjacent to the Phase 1 employment lands.
  - consider the lands west of Highway 10 and north of the Etobicoke Creek.
  - consider locating employment lands adjacent to the remaining agricultural lands.
- Provide convenient and safe access to community facilities in Valleywood e.g. library and fire hall.
- Need to understand how the remaining lands within the Mayfield West study area may potentially develop beyond 2031.

COUNCIL DIRECTION

TOWN OF CALEDON

June 9 delegation by Glen Schnarr & Associates – a recap:

Seeking a secondary plan that includes all of the lands owned by Mayfield Station Developers Group.

- All population allocated to MW Phase 2 (i.e. 13,700) should be located west of Highway 10 and south of the Etobicoke Creek.
- A regional commercial shopping centre should be planned for on lands west of Highway 410/10 adjacent to the new interchange.
- A mixed residential-commercial neighbourhood node should be planned along McLaughlin Road.
- There are no appropriate opportunities to locate new employment lands west of Highway 10, south of the Etobicoke Creek.

TOWN OF CALEDON

PROVINCIAL POLICY DIRECTION

Under provincial policy, settlement area boundary expansions may only occur as part of a **municipal comprehensive review** which is defined as:

> “an official plan review, or an official plan amendment, initiated by a municipality that comprehensively applies the policies and schedules of this Plan”

(Places to Grow: The Growth Plan for the Greater Golden Horseshoe, 2006)

PLACES TO GROW, 2006

TOWN OF CALEDON

Section 2.2.8. (2) of Places to Grow, 2006 prescribes provincial policy direction applicable to settlement area boundary expansions.

"A settlement area boundary expansion may only occur as part of a municipal comprehensive review where it has been demonstrated that –

a) sufficient opportunities to accommodate forecasted growth contained in Schedule 3, through intensification and in designated greenfield areas, using the intensification target and density targets, are not available;

i. within the regional market area, as determined by the upper- or single-tier municipality;

ii. within the applicable lower-tier municipality to accommodate the growth allocated to the municipality pursuant to this plan."

TOWN OF CALEDON

REGIONAL OFFICIAL PLAN AMENDMENT NO. 17

Chapter 5, Regional Structure, Section 5.4.3 is amended by adding the following new policy section 5.4.3.2.9:

"5.4.3.2.9 The boundary shown on Schedule "D" and designated in the legend "Study Area Boundary" is the area within which additional growth for Mayfield West beyond the 2021 population target is anticipated to occur. If additional growth to meet future population targets is allocated to the Mayfield West study area Council will direct it west of Highway 10 within the study area boundary….

Studies to confirm the exact land requirements and to **confirm compliance with requirements at that time** including such things as the Provincial Policy Statement, the Places to Grow Plan and the provisions of Section 7.9.2.8 of this plan, will be completed prior to adoption of any Official Plan Amendment to designate said lands in the Rural Service Centre of Mayfield West."

TOWN OF CALEDON

PRESENTATION OF LAND USE SCENARIOS

COMMUNITY DEVELOPMENT SCENARIOS

The Community Development Scenarios described on the following panels illustrate three refined options for Mayfield West Phase 2 (MW2). Each of these scenarios represents a distinct "high-level" idea about where new development might go and how it might relate to existing places, the natural heritage system and existing and planned infrastructure. The refined scenarios express a broad range of approaches to creating an expanded Mayfield West community and are intended to provoke discussion and feedback. Although each of these scenarios illustrates a distinct idea, they are not mutually exclusive. The final community plan will likely be a combination of many of the ideas put forward here, and the new ideas we learn from you.

The Scenarios use the MW2 Guiding Principles as a departure point and were prepared by Urban Strategies in collaboration with the Town's multidisciplinary consulting team. Scenarios A and B accommodates approximately 11,600 new residents and approximately 5,000 new jobs by 2031 within an expanded urban boundary. Scenario C accommodates growth of approximately 13,700 new residents, all west of Highway 10, and approximately 5,000 new jobs by 2031 within an expanded urban boundary.

A concept underlying Scenarios A and B is that approximately 2,100 new residents will be accommodated within the existing urban boundary of Mayfield West Phase 1.

The refined scenarios continue the discussion initiated at the May 26 Council Workshop, exploring:

- The location of the urban edge and the interface of development with the surrounding environmental and agricultural lands;
- The conservation and potential expansion of the natural heritage system with a number of new north-south connections;
- The relationship of new development to existing infrastructure including the rail line, arterial roads and Highway 410;
- The creation of nodes or centres – from small scale local commercial and amenity hubs to larger regional commercial centres;
- The protection of agricultural lands and resources of cultural value;
- Physical connections to Mayfield West Phase 1; and,
- The structuring and integration of land uses.

Scenarios A, B and C illustrate a land budget ranging from approximately 320 to 400 gross hectares, which ensures the scenarios achieve a minimum density target that is not less than 50 residents and jobs combined per hectare. The required land budget and corresponding density will be refined once a preferred land use scenario is identified.

MW2: Scenario A

Villages Nestled Around Mayfield West – Phase 1 in an Agricultural Setting

This scenario positions new neighbourhoods around Mayfield West – Phase 1, while conserving the best agricultural lands in the western portion of the study area for agricultural uses. Each neighbourhood has a mixed-use node at its heart with both commercial and amenity uses. Scenario A is the most integrated with Phase One, and conversely, the most distinct from Brampton.

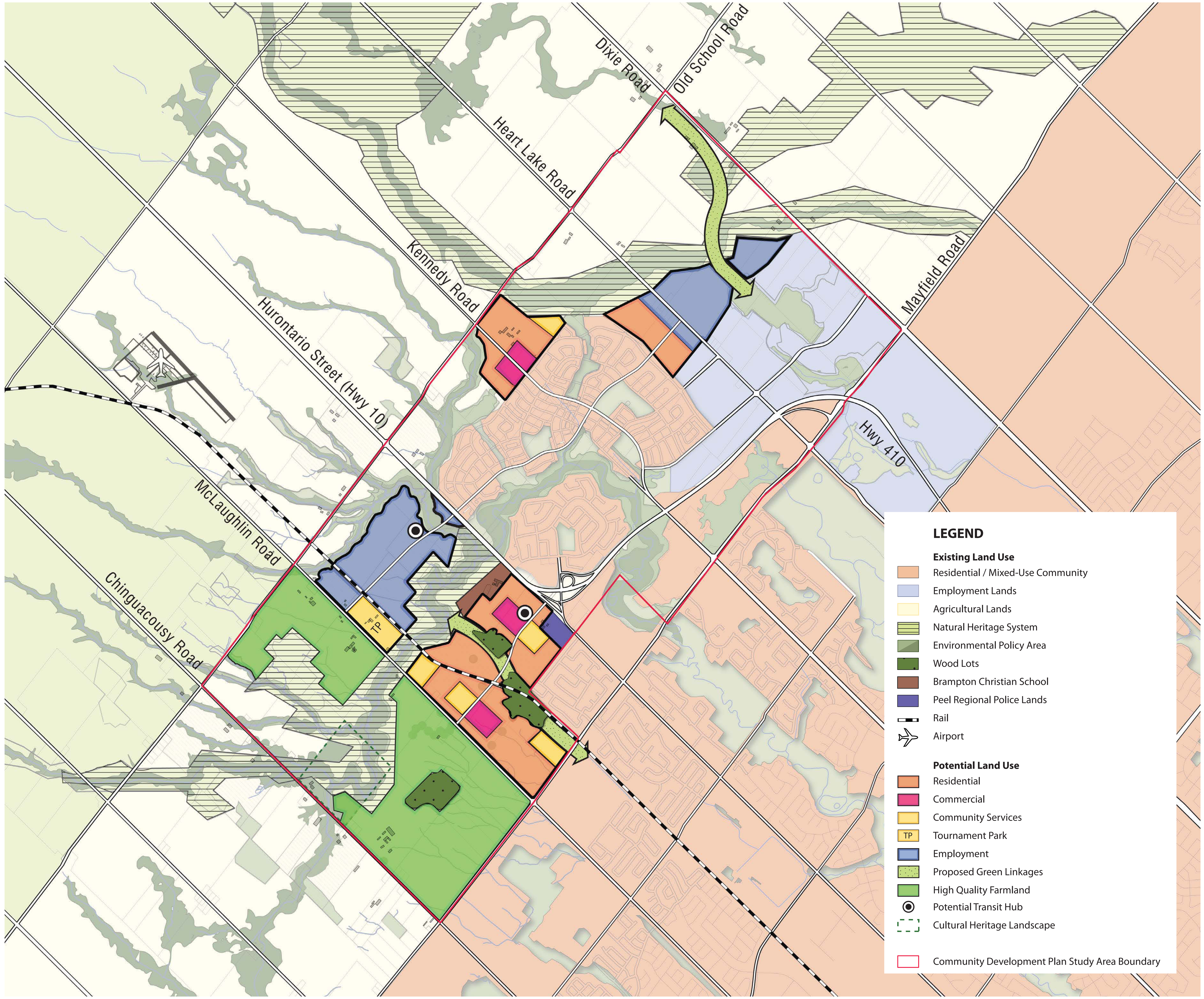
Proposed new development is planned around Mayfield West Phase 1 and Valleywood, and linked together by new east-west and north-south road connections. As development and commercial uses are evenly dispersed, improved access to Highway 410 is not proposed.

The Scenario also proposes two north-south green linkages, connecting existing woodlots and natural areas in Brampton to the Greenbelt to ensure their vitality as natural habitat.

The Scenario proposes two new centres of employment. The first, along the Heart Lake Road spine and north of existing designated employment lands. The second, located west of Highway 10 and north of the Etobicoke Creek, ringed on three sides by an exceptional natural setting and with good visibility from Highway 10, is envisioned as a prestige employment centre.

A tournament park is located along McLaughlin Road and tucked into the prestige office campus where sound and light can be insulated from residential neighbourhoods.

This scenario accommodates approximately 11,600 new residents and approximately 5,000 new jobs by 2031 within an expanded urban boundary.



SCENARIO A

MW2: Scenario B

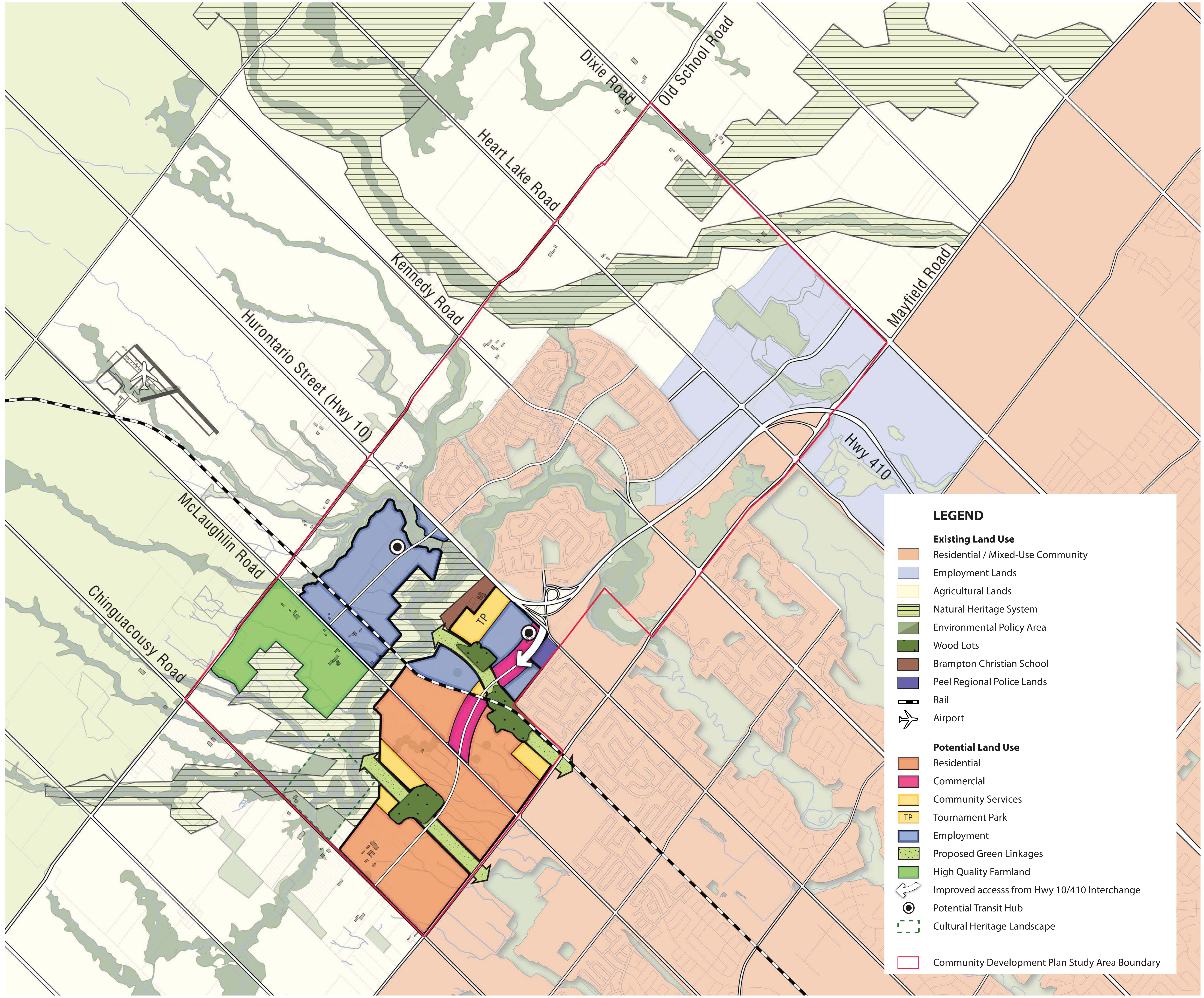
New Residential Neighbourhood Built Around a Main Street-type Commercial Corridor and a Substantive New Employment Area

This scenario locates a new residential neighbourhood as well as new employment uses, and new commercial uses west of Highway 10/410. A main street-type commercial corridor extending from Highway 10 to McLaughlin Road anchors MW2. Improved east-west connections at the 410/Valleywood interchange are included to ensure sufficient access. The Peel Region Police lands have been reconfigured to accommodate this access.

The scenario proposes two green linkages, both west of Highway 10, that connect existing woodlots and natural areas in Brampton to the Greenbelt, and provide valuable ecological services. New community assets, are proposed along the green linkages, including new park space and schools, as well as a tournament park south of the Brampton Christian School.

Significant employment lands are proposed west of and along Highway 10, including both north and south of the Etobicoke Creek, supporting MW1 to develop as a complete mixed-use community. New employment lands are envisioned as prestige employment to attract a higher density and higher quality of jobs appropriate for an integrated community.

This scenario accommodates approximately 11,600 new residents and approximately 5,000 new jobs by 2031 within an expanded urban boundary.



SCENARIO B

MW2: Scenario C

Regional Commercial Centre and Local Neighbourhood Centre along McLaughlin Road

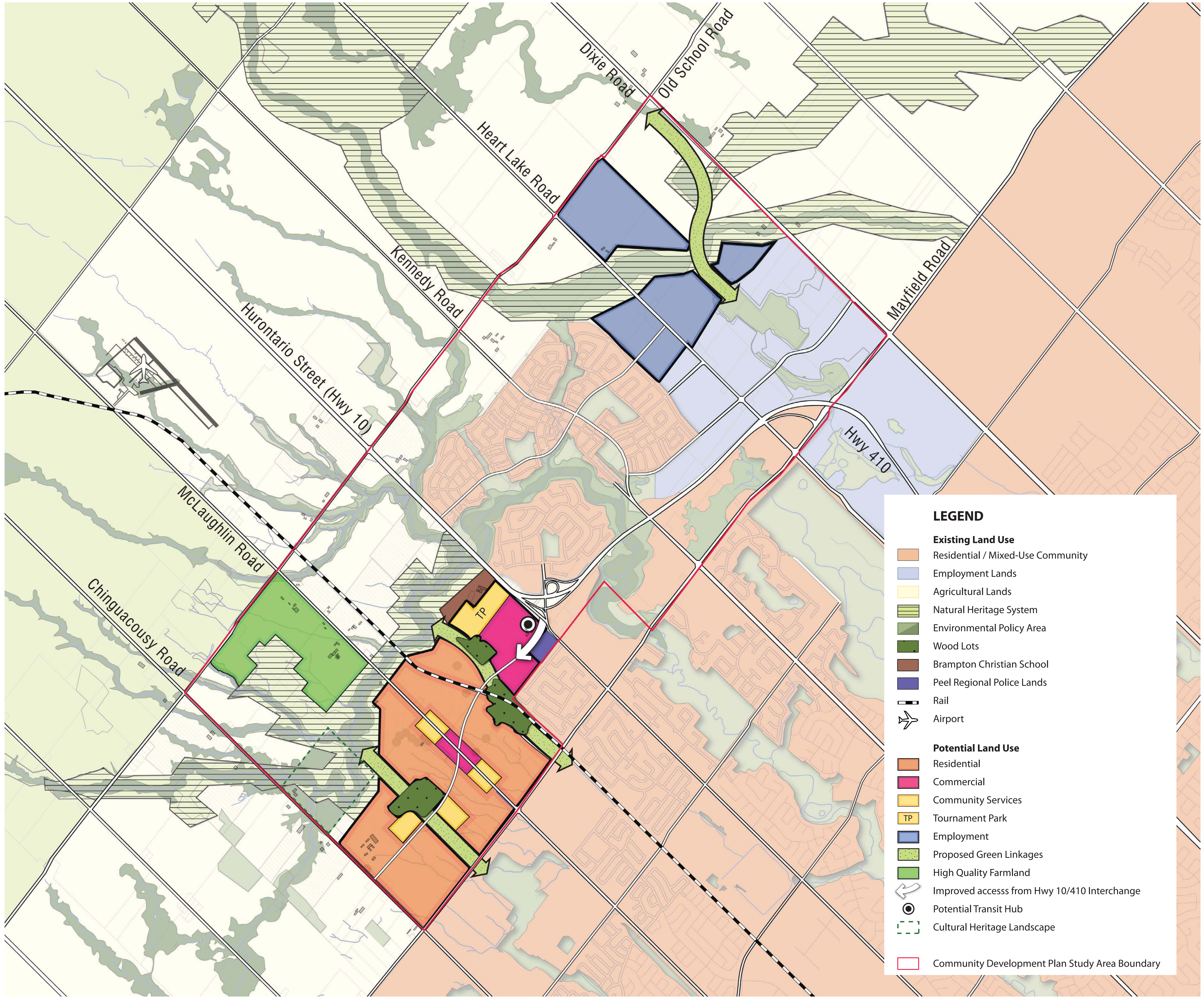
This scenario is anchored by a regional commercial centre along Highway 10. Improved east-west connections at the 410/Valleywood interchange are required to support the commercial centre, and the Peel Region Police lands have been reconfigured to accommodate this access. This scenario most segregates residential, commercial and employment uses in Mayfield West.

West of the regional commercial centre is a residential neighbourhood centred on a mixed residential-commercial neighbourhood node along McLaughlin Road. The full allocation of new residents to 2031 is located in this residential neighbourhood. Embedded within the residential neighbourhood are new community amenities as well as two green linkages that connect existing woodlots to the Greenbelt, and that make important connections to the ecosystems north and south of the study area.

The scenario also proposes a new tournament park east of a green linkage, north of the regional commercial centre and south of the Brampton Christian School.

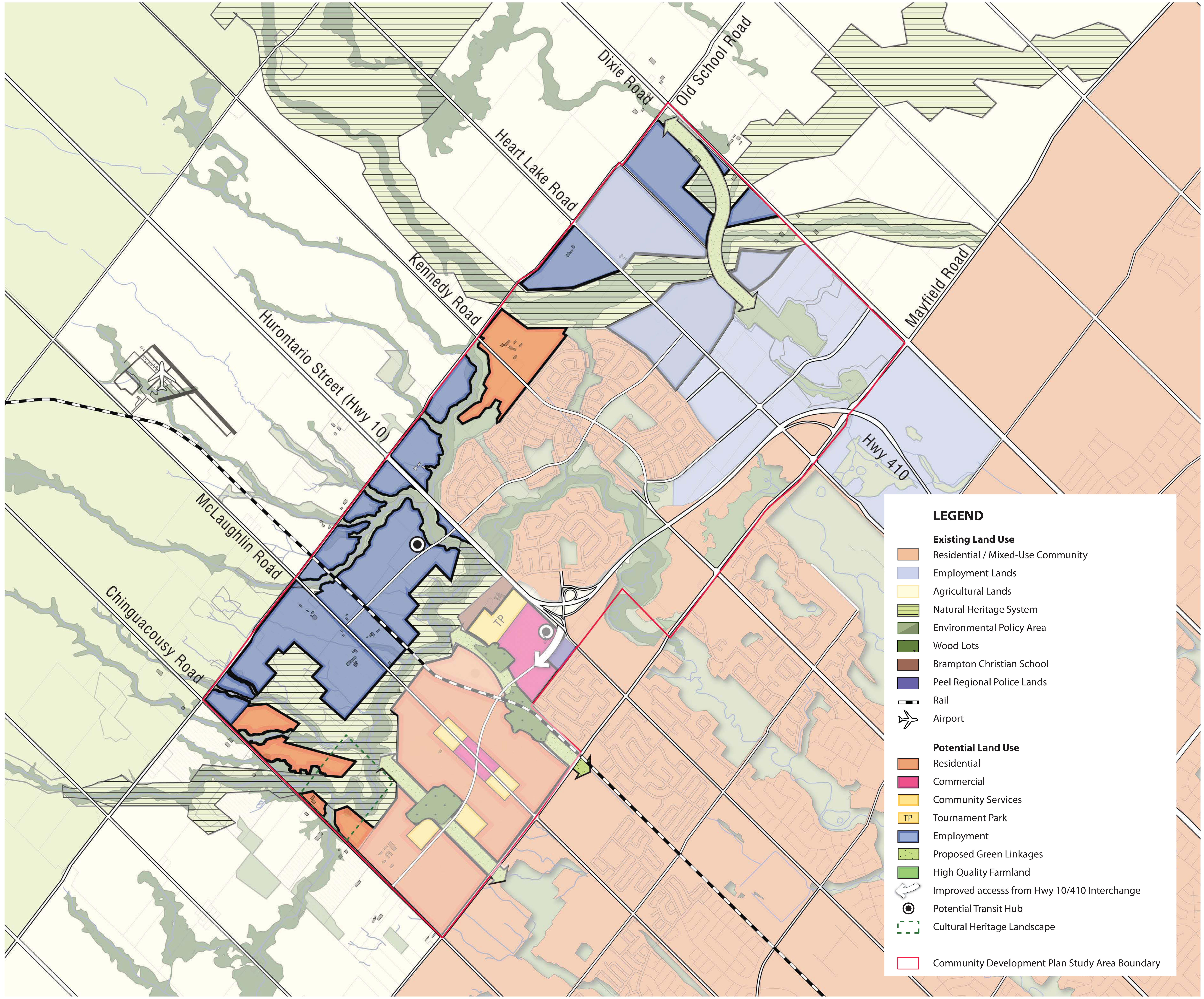
New employment lands are located north of the currently designated Phase 1 employment lands, further utilizing the access from Highway 410 and Mayfield Road/Heart Lake Road, which would become the spine around which most of the additional employment lands would be built.

This scenario accommodates approximately 13,700 new residents – the full allocation of new residents to 2031, as well as approximately 5,000 new jobs by 2031 within an expanded urban boundary.



SCENARIO C

URBAN STRATEGIES INC



Mayfield West Phase 2 - Town Of Caledon

MW2 SECONDARY PLAN

SCENARIO POST-2031

URBAN STRATEGIES INC.

NEXT STEPS

TOWN OF CALEDON

Review and comment period.

- Council Information Workshops (May 26 & June 22)
- Public Open House (June 25)

In an effort to maintain the currently approved project timelines, it is proposed to continue with the June 25 Open House as planned, using the scenarios presented today.

- Stakeholder Advisory Group (July 2009)
- Town Departments & Technical Advisory Teams

Preferred Land Use Plan.

- Council Information Workshop (September 8)
- Public Open House (September 24)

Council Information Workshop – February 16, 2010
MW2 Draft Preferred Land Use Plan
Council Comments

Whitehead
The constant attempt to conform to Places to Grow is ridiculous; Caledon has already taken the position that we can't achieve 50 persons and jobs per ha.; we wont attract employers at 50 jobs per ha.; a residential density target of 67 persons per ha. is too high for Caledon, does not work; need to get it down to 50 persons per ha.; planning dept. should be showing a plan that reflects Council's position; do we want Council to plan south Caledon to be a higher density urban appendage to Brampton? We are negotiating with the province [re: density targets] and I think we will be successful.

Need significant population in place to make commercial centre viable; population/commercial ratio is way too low – look at the example of Bolton; there is not enough population in place today nor being planned for to make the commercial centre viable; need to remember MW is next to Brampton – trading market is not as big as you think; commercial node at Highway 410/10 is not big enough; you need to have a major big box retail focal point at Highway 410/10 or the other smaller "main street" retail wont come; 50,000 to 75,000 trading area is highly optimistic; without the Highway 410/10 reconfigured the MW1 and MW2 population will not support the commercial area being planned; Highway 410/10 interchange reconfiguration is "required".

A tournament park at 40 acres is too low; not going to work; need twin-pad ice arena; need 80-90 acres as a minimum; look at the Johnson plan.

Need to know what Metrolinx's intentions are; are they expecting it to capture rural populations? If so, do we really want the hub in the middle of our commercial centre?

Morrison
A tournament park at 40 acres is too low.

Entire Cook farm needs to be brought in to the urban boundary; use phasing special area policies.

Want to see a "buffer" along Mayfield Road – rolling hills.

Securing the transit hub is important to Mayfield West and Caledon.

Town must work with all partners on securing Highway 410/10 interchange reconfiguration.

Do not like the commercial corridor idea; not sure I would shop from one end to another; has to be convenient for people; doesn't think they'll get out of their cars and walk along the east-west spine road; hope we can work with Fieldgate on the right model; MW1's downtown is anchored by a stormwater management pond and school – what will anchor MW2's downtown? Should plan the larger commercial centre for the regional draw and smaller downtown centre for the local draw.

De boer
Highway 410/10 interchange reconfiguration is "required".

There will be a significant draw to the commercial area using the east-west spine road.

A tournament park at 40 acres is too low; move it north and out of the study area in to the Greenbelt area, more central to Caledon users.

Entire Cook farm needs to be brought in to the urban boundary.

Need to know what Metrolinx's intentions are; need to meet with them now.

Agree with the idea of de-linking residential and jobs density targets; should plan the residential areas to a maximum density of 50 / ha. but agrees employment areas should be higher density.

Paterak
De-linking the residential and employment lands density targets is important; not entirely in agreement with Whitehead that density of 67 persons per ha. is too high; Caledon should not be afraid of change; want to see examples of the proposed density.

MTO should assist in paying for the Highway 410/10 interchange reconfiguration.

Tournament park should be closer to the transit hub; transit hub should be closer to office/business park around rail line.

Need discussion on the type of condo' development – do not want gated community with bells and whistles.

How many shoppers will be attracted to the commercial centre? A sub-regional market area of approx. 50,000 to 75,000 people [Morgan].

Groves
Like the idea of hard-surfaced walking and cycling trails in green linkages.

Want seniors housing in MW2.

Need residential area in first to support viable commercial area.

Beffort
How is this new, creative, innovative, different? How are we drawing on new approaches?

Council needs to provide staff with the density numbers to work in to the Plan.

Want seniors housing in MW2.

Need to work with Metrolinx to get better ways to implement transit to/in MW2.

Need to address the results of the Town's ongoing visioning exercise.

Is there a need to match employee types with new employment types e.g. high tech' green industries?

Thompson
Extend the commercial centre at Highway 410/10 north in to the employment centre; commercial centre will be economically driven; needs to assist with paying for the interchange improvements which are absolutely needed; want staff to meet with Fieldgate to learn of their intentions.

Not sure we will see the uptake in the office/business park along the rail line – Milton having problems with this; how do we keep the commercial area viable if the employment area is vacant? Consider locating all the employment land east of Highway 10.

A residential density target of 67 / ha. is too high for Caledon; not enough parkland provided for this level of density; should plan the residential areas to a maximum density of 50 / ha.; where is the next phase of residential development planned for?

A tournament park at 40 acres is too low; not going to work; need 80-100 acres as a minimum; move it north.

Entire Cook farm needs to be brought in to the urban boundary.

Like the idea of natural swales; do not like stormwater management ponds – long term maintenance issues – LID provides opportunities.

The transit hub is critical – supports it.

Transcript of notes taken by Tim Manley and Todd Salter

TOWN OF CALEDON

Council Meeting
Tuesday, February 7, 2012
9:30 a.m.
Council Chambers, Town Hall

Acting Mayor – Councillor Mezzapelli

AGENDA

1. CALL TO ORDER – Council Chambers.

2. PRAYER AND O CANADA

3. SUMMARY OF ADDENDUM ITEMS

4. APPROVAL OF AGENDA

- Identify any Urgent Business

5. DISCLOSURE OF PECUNIARY INTEREST

6. COUNCIL WORKSHOP

1. Headwaters Community Well-Being Report – Sylvia Cheuy. (1 hour)
2. Mayfield West Phase 2 Secondary Plan: Update – Tim Manley. (2 hours)

7. PUBLIC QUESTION PERIOD

8. BY-LAWS

2012-xxx To confirm the proceedings of the February 7, 2012 Council Meeting.

9. ADJOURNMENT

*The next Council Meeting will be held on **Tuesday, February 14, 2012 at 1:00 p.m.** in the Council Chambers, Town Hall, 6311 Old Church Road, Caledon East.*

*The next Council Meeting will be held on **Wednesday, February 22, 2012 at 3:00 p.m.** in the Council Chambers, Town Hall, 6311 Old Church Road, Caledon East.*

*The next Council Meeting will be held on **Tuesday, March 6, 2012 at 9:30 a.m.** in the Council Chambers, Town Hall, 6311 Old Church Road, Caledon East.*

ALL TIMES NOTED HEREIN ARE APPROXIMATE.

!

SEGEMENT 1 NOTES

Mayfield Road
- major truck route
- may only get 1 access
- traffic circulation is key - in/out of new phase.

SWM ponds should be:
- incorporated into overall land use plan

Green linkages ↳ like what I see.
- provide wider corridor vs one two smaller ones; they are key

PARKING LOT

- adequate parking provision is key
- need to figure out what to do w providing efficient parking; current standards not working.

Brampton T's can become only r/in r/out - we are the ones creating the need for signals.

2.

SEGEMENT 1 NOTES

Do we learn from the planning efforts to the south?

Caledon has appealed Brampton plan on the issue of new connections to Mayfield Road.

Design of intersections can help introduce efficient transit service.

Mayfield Road - ~~consider~~ should be no new connections to be consistent w/ Town's position vis-a-vis Brampton appeal.

PARKING LOT

Where are the ped' connections to Mayfield Rd?

Council previously has wanted to eliminate rear yds on arterial roads.

Have we considered underpasses?
→ innovative.

3.

SEGMENT 1 NOTES

have we given thought to commuter rail link in MWZ?

Segment 2

parking - need to be innovative
↳ underground parking must be considered.

have we considered existing and proposed commercial centres and the impact on our plans?

PARKING LOT

have you seen the "villages" in Floside
↳ 'out of box' design and is a success.

you are on the right track w ideas and opinions of rec' centre.

Green linkages: -q's
· ownership - not private
· enforcement - how?
· funding - who?
· maintenance - who?

4.

SEGEMENT 2 NOTES

PARKING LOT

TRCA do not like commercial centres next to N.H.S. / green linkages.
∟ should be public ownership.
- residents get involved / take "ownership".
↳ need a plan to outline answers to q's.

commercial centre
- consider 'caledon' opportunities which are unique e.g. Garden Foods.

parking - community res' can walk and not use their cars - eliminates need for parking.

would like to see the rec' park and sec' school together; the best interest of the residents is priorit

5.

SEGMENT 2 NOTES

PARKING LOT

should consult w seniors and accessibility committee on planning the community and specifically the village centre. Add these committees to the stakeholder advisory group?

segment 3

huge demand for picnic locations

· higher density - smaller backyards - need more access to greenspace and 'tot lots'.

'tot lots' - w/in 10 mins work well - they have been a success. 1/500 homes

park programming needs to separate tots and bigger kids. consider mum and dad in shade areas.

· need creativity in park planning

country hills
coventry hills — example of tot lot planning. calgary.

6.

SEGEMENT 3 NOTES

cons to 'tot lots':
close to homes - become hangouts.

- like providing two green corridors
- trail network should complement existing and planned trail network outside of the plan.
- in some cases the smaller parks are not well used
  ↳ bigger parks more so.

PARKING LOT

7.

SEGEMENT 4 NOTES

- we should be requiring sidewalks on both sides of street; must consider parking.
- setbacks on res' lots must allow for adequate parking.
- underground parking
- cycling on spine-road/or boulevard?
- maintenance e.g. snowploughs
  ↳ give consideration to when desiging streetscapes and rights-of-way.

PARKING LOT

- cisterns! H_2O cons'.
- run 'tiles' as part of the management of storm water.
  ↳ permeable pavers
  ↳ low impact development.
- architectural theme could replicate existing farm house character.
- we should think in terms of neighbourhoods
  - build multi-res' first along spine ro[ad]

eliminates rejection by low density res

SEGMENT 4 NOTES

smaller commercial sites
- need to address conflicting uses w̄ adjoining land uses.

- how does the location of the transit hub serve the rest of the plan?
  ↳ transit service needs to service 'village centre' and res' neighbourhoods.

- strongly encourage res' above commercial - provides affordability; provides more density

PARKING LOT

design, layout + plan of homes should allow for mum/dad living w̄ children.

9.

SEGEMENT 5 NOTES

- important to know how/ where the trail network will be located w/in the Etobicoke Creek.

- have we engaged the OBRY?

- do we know anything more about the potential use of the rail line?

- we are not providing a new fire hall in the new phase.

PARKING LOT

- trail plan must be planned as part of the secondary plan.

MAYFIELD WEST PHASE 2 SECONDARY PLAN

Town of Caledon

COUNCIL INFORMATION WORKSHOP 2

February 5, 2013

TOWN OF CALEDON | Development Approval and Planning Policy

nak design strategies

WORKSHOP AGENDA

Part 1 (Town Staff)

(a) Welcome and Introductions

(b) Project Update Since February 2012

(c) Council, Agency & Public Feedback

(d) Revised Planning Considerations

Part 2 (NAK Design Strategies)

(a) Draft Preferred Framework Plan

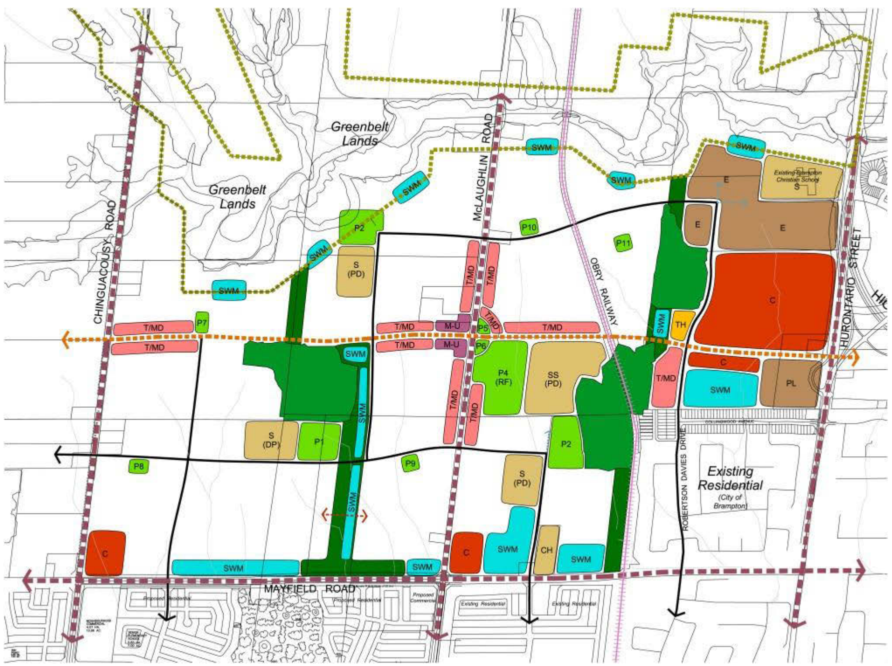
Part 3 (Town Staff)

(a) Moving Forward & Next Steps

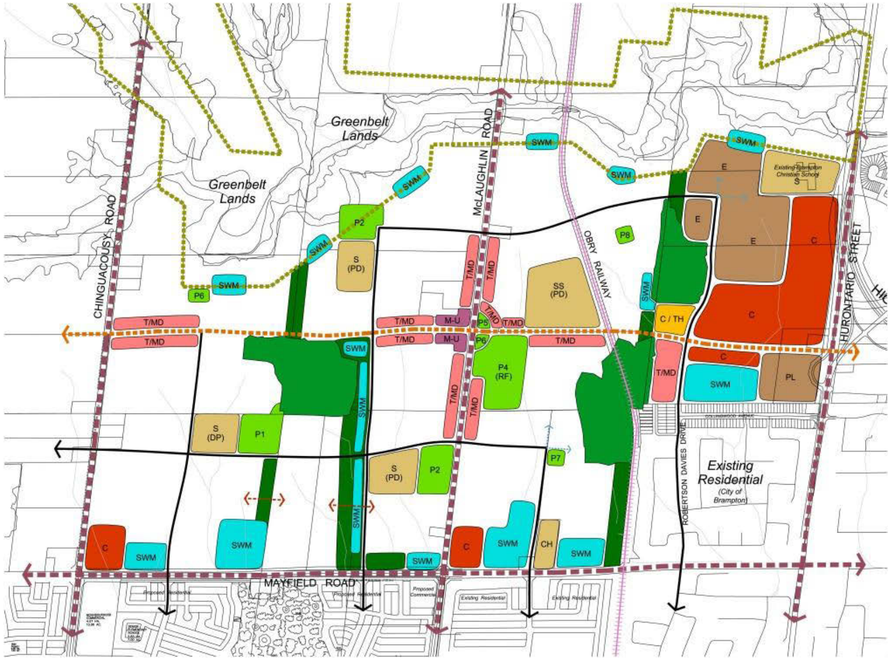
Project Update Since February 2012

Presentation of 2 Framework Plan Options

1. Council Workshop: February 2012
2. Stakeholder Advisory Group: March 2012
3. Public Open House: May 2012



CONCEPTUAL FRAMEWORK PLAN – OPTION A



CONCEPTUAL FRAMEWORK PLAN – OPTION B

Council Feedback

In developing the draft preferred framework plan we have considered the following feedback provided by Council during the course of the project to date.

- The community must strive to be innovative, unique and successful.
- Design a community that considers the eventual inclusion of all lands south of Etobicoke Creek between Highway 10 and Chinguacousy Rd.
- Need fresh thinking for edge of the community at Mayfield Road.
- Design a community that provides opportunities for future transit services.
- Ensure existing and planned adjoining land uses are compatible.
- The provision of housing for older adults must be a priority.
- Think in terms of neighbourhoods.
  - School and community park blocks.
  - More access to green space due to higher density development.

Agency Feedback

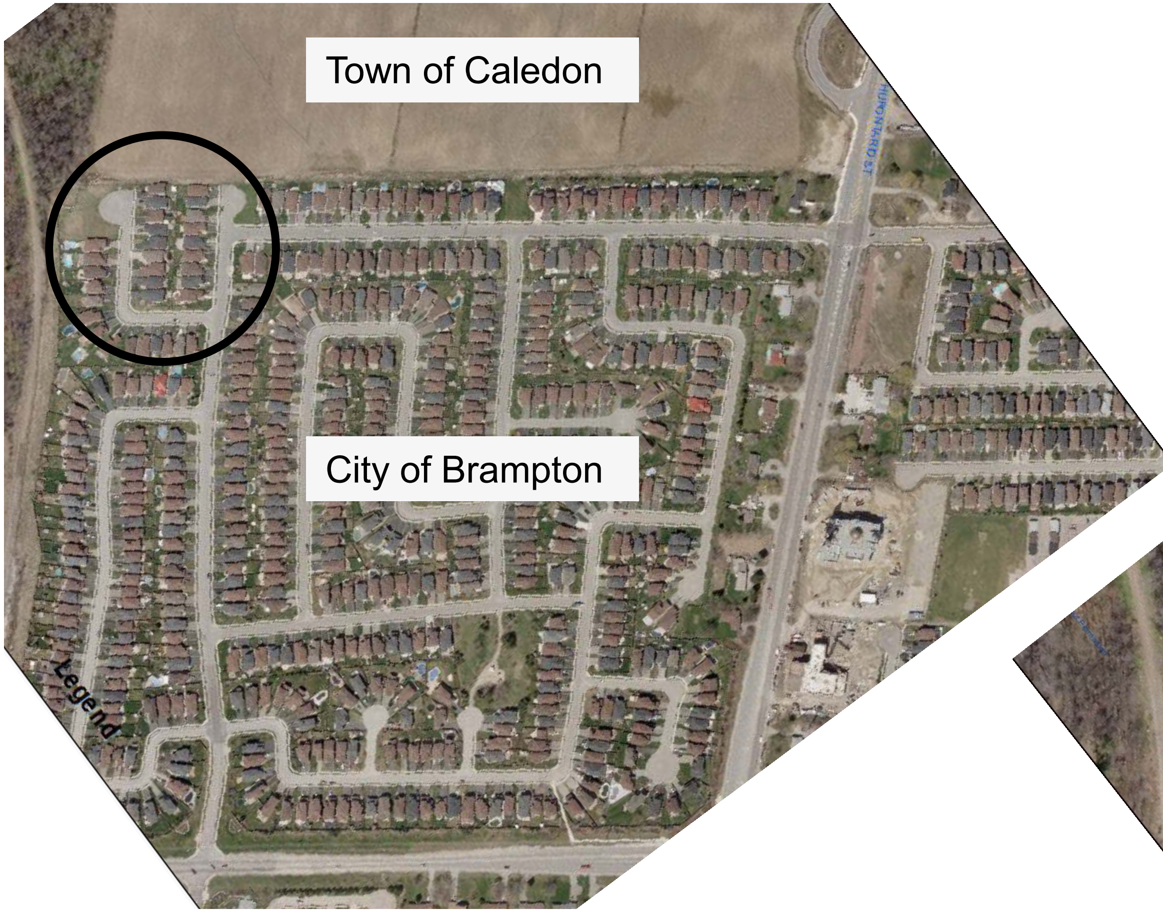
- Ontario Ministry of Transportation
- Metrolinx / GO Transit
- Region of Peel: Peel Public Health
- City of Brampton: Brampton Transit
- City of Brampton: Planning, Design & Development
- Credit Valley Conservation

Over 116 residents signed-in at the May 2012 Public Open House

8 written submissions received from residents of Caledon.

Summary of comments:

- Safe and convenient access between MW2 and Valleywood.
- Pedestrian / cycling overpass.
- Adult lifestyle housing.



8 written submissions from residents on Virginia Court, Brampton.

Summary of comments:

- ❖ Appropriate transition from existing residential form.
- ❖ Volume and speed of traffic on Robertson Davies Drive.

Landowner Feedback

- **Participating Landowners**

  Mayfield Station Landowners Group

"proposed residential unit mix within this plan is not representative of this area, does not represent good planning and is not what Caledon truly envisions for this community"

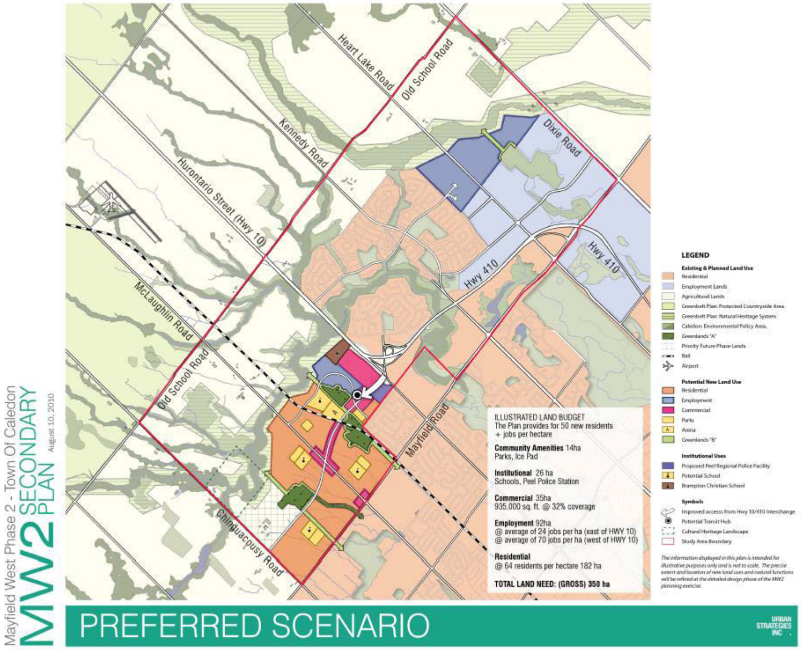
January 28, 2013

- **Non-Participating Landowners**

  2034120 Ontario Limited (Alan Furbacher)

"we do not support a plan with school and/or recreational uses on our lands"

June 8, 2012

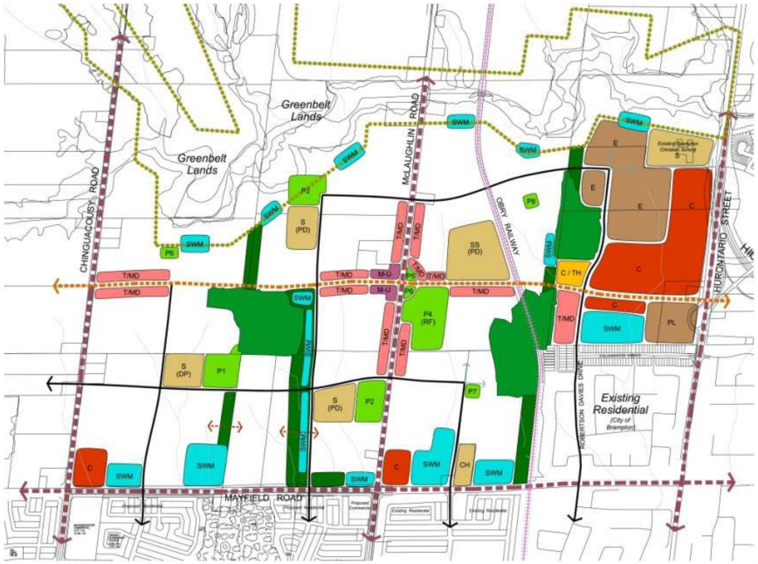


MW2 was initiated in 2008 on the basis of planning considerations endorsed by Council in 2006 and again in 2007.

Population (1)	11,638
Non-employment land jobs	2,907
Employment land jobs	2,988
Total:	**17,533**
Land area (hectares)	350
Density	50.1

(1) Population total excluding Census undercount.

CONCEPTUAL FRAMEWORK PLAN – OPTION A



CONCEPTUAL FRAMEWORK PLAN – OPTION B

Revised Planning Considerations for MW2

As a result of Council approved modifications to Official Plan Amendment Number 226 on September 11, 2012, the planning considerations for MW2 were revised as shown below.

Mayfield West Phase 2 Secondary Plan		
Population, Employment, Land Area and Density		
	Proposed OPA 203 (endorsed in Aug 2006 & Nov 2007)	**Proposed OPA 226** (as modified in Sept 2012)
Population (1)	11,638	9,913
Non-employment land jobs	2,907	2,635
Employment land jobs	2,988	1,164
Total:	**17,533**	**13,712**
Land area (hectares)	350	206
Density	50.1	66.6
	Aug 2010 Preferred Scenario & Feb 2012 Framework Plan Options	Feb 2013 Draft Preferred Framework Plan

(1) Population total excluding Census undercount.

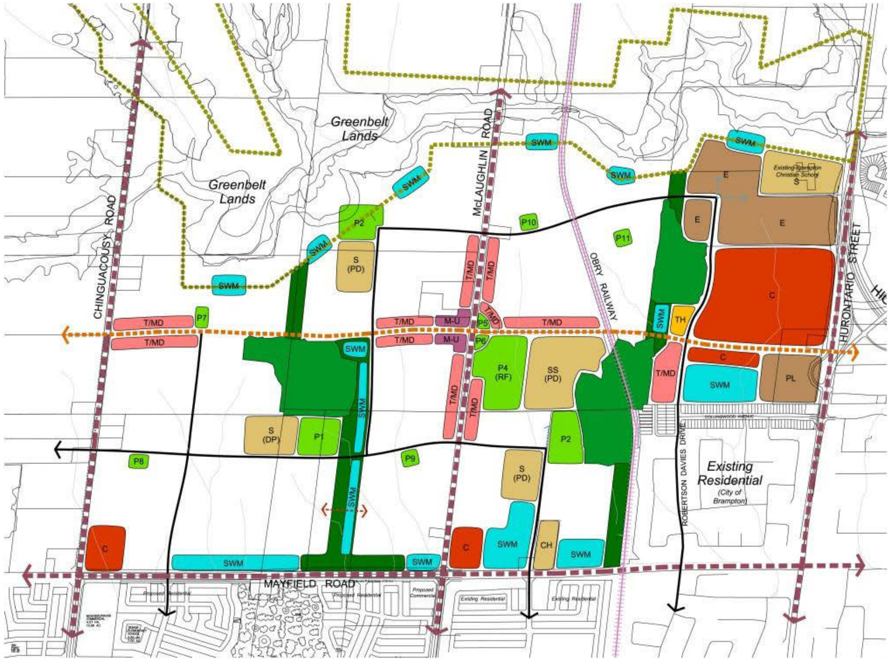
Part 2 (NAK Design Strategies)

Draft Preferred Framework Plan

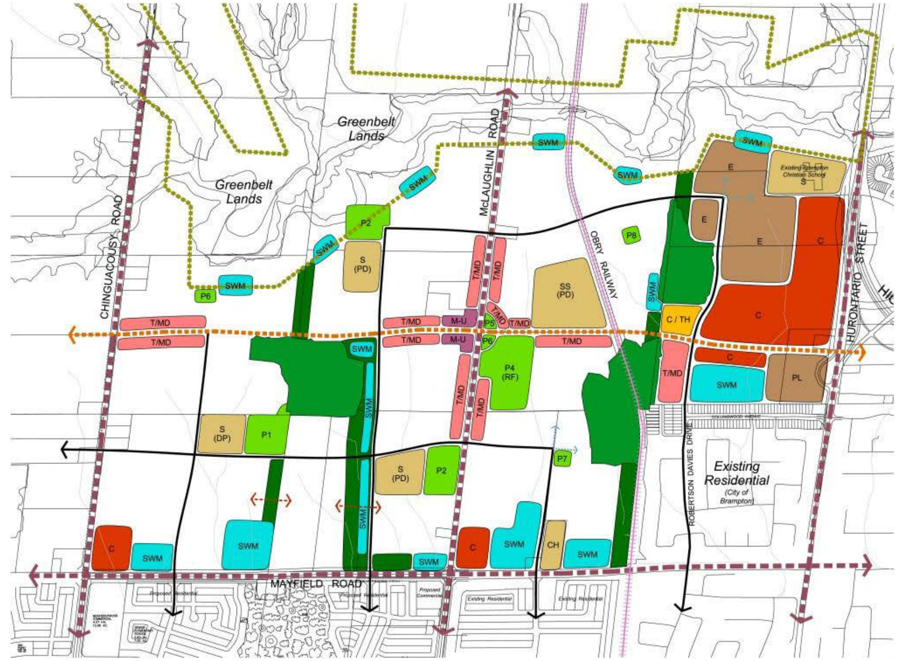
INNOVATIVE - UNIQUE - SUCCESSFUL

GUIDING PRINCIPLES

- Achieve net ecological gain, when practical, possible and advisable
- Adopt an integrated design process
- Foster a local identity rooted in the spirit of the Town of Caledon
- Establish the structure for a close knit small town that fosters self sufficiency
- Achieve a range and mix of housing
- Promote walking, cycling and transit opportunities
- Maximize conservation and innovation (water, waste, energy
- Ensure community connectivity and integration at all scales
- Support adaptive change



CONCEPTUAL FRAMEWORK PLAN - OPTION A

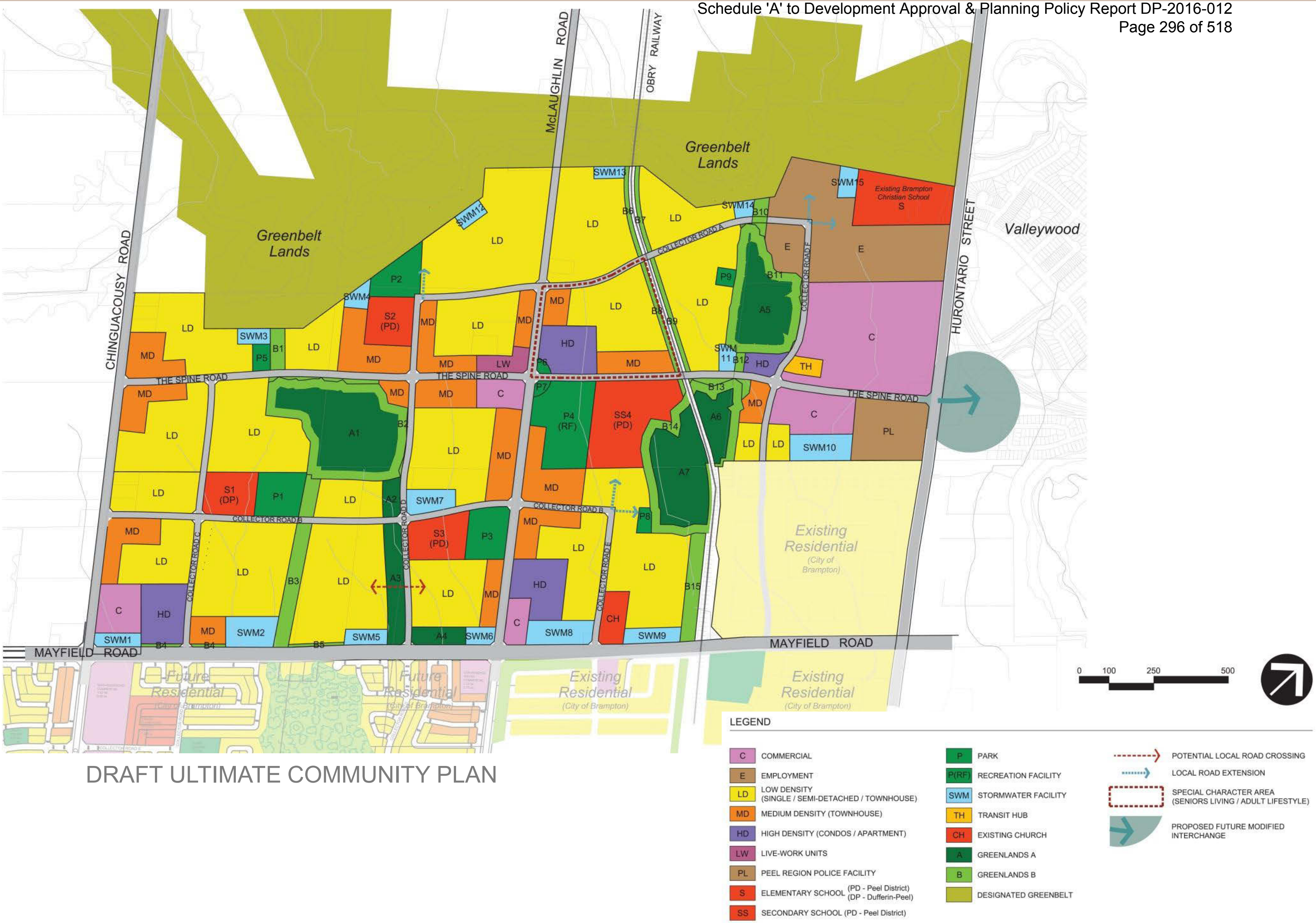


CONCEPTUAL FRAMEWORK PLAN - OPTION B

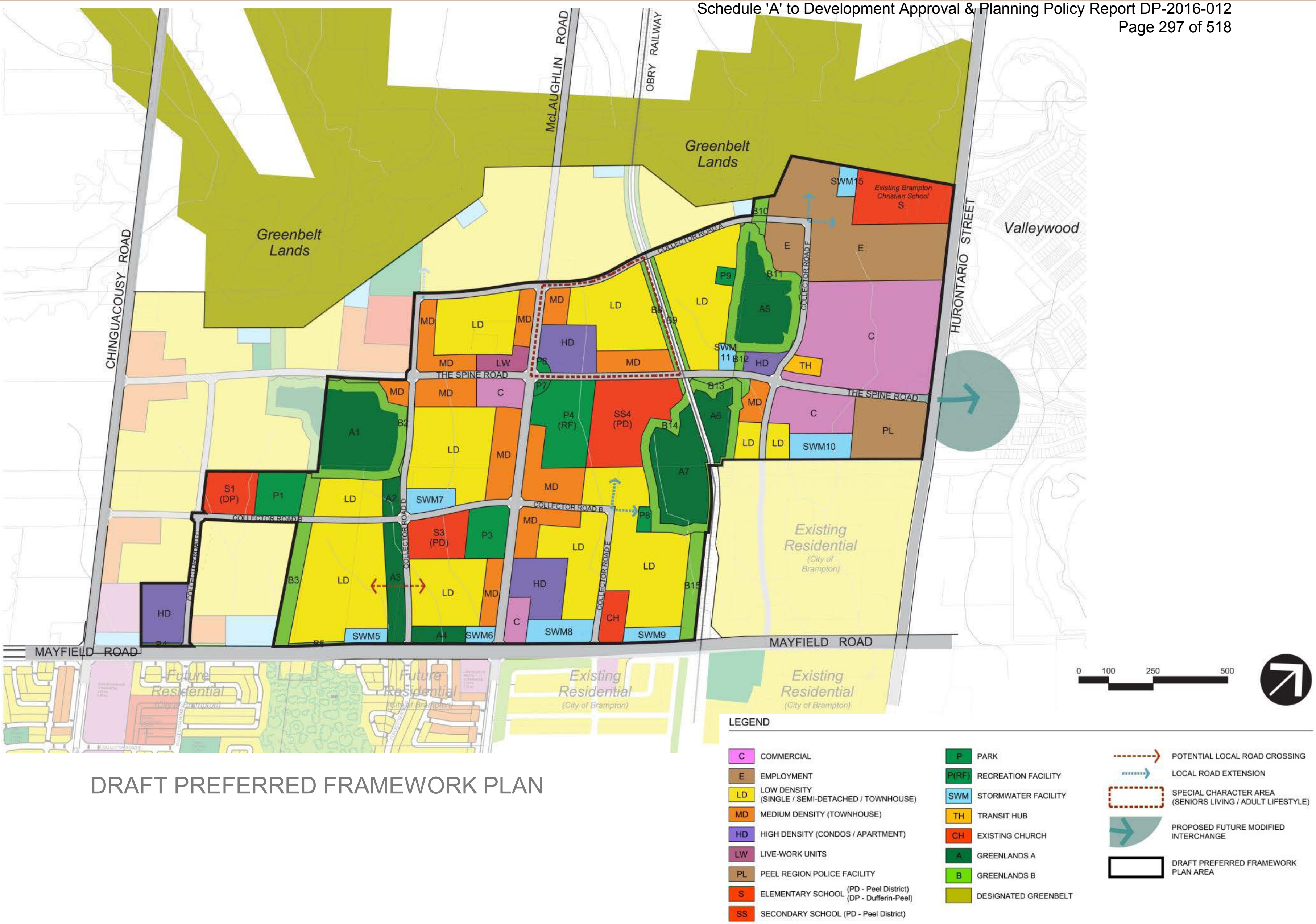
LEGEND

C	COMMERCIAL
M-U	MIXED-USE
E	EMPLOYMENT
T/MD	TOWNHOUSE / MEDIUM DENSITY
PL	PEEL REGION POLICE LANDS
S	ELEMENTARY SCHOOL (DP - Dufferin Peel) (PD - Peel District)
SS	SECONDARY SCHOOL (PD - Peel District)
P	PARK
RF	RECREATION FACILITY
SWM	STORMWATER FACILITY
TH	TRANSIT HUB
CH	EXISTING CHURCH
	EXISTING WOODLAND
	NHS CORRIDOR
	DESIGNATED GREENBELT
	EXISTING ARTERIAL ROADS
	PROPOSED SPINE ROAD
	PROPOSED COLLECTOR ROADS
	OBRY RAILWAY LINE
	POTENTIAL LOCAL ROAD CROSSING
	LOCAL ROAD EXTENSION

NOTE:
PLAN IS PRELIMINARY AND IS NOT TO BE USED TO DEFINE THE ULTIMATE LOCATION , EXTENT AND SIZING OF TRANSPORTATION AND SERVICING INFRASTRUCTURE, LAND USES, LIMITS TO THE NATURAL HERITAGE SYSTEM, STORMWATER MANAGEMENT FACILITIES AND POTENTIAL NATURAL LINKAGES. THESE COMPONENTS ARE TO BE DEFINED THROUGH APPROPRIATE DETAILED TECHNICAL STUDIES.

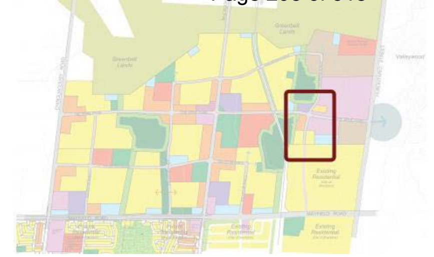


DRAFT ULTIMATE COMMUNITY PLAN



DRAFT PREFERRED FRAMEWORK PLAN

CONCEPTUAL VIGNETTE – TRANSITION FROM EXISTING NEIGHBOURHOOD



KEY PLAN

PROPOSED RESIDENTIAL ALONG THE SOUTHERN BOUNDARY WILL COMPRISE SINGLE DETACHED LOTS TO APPROPRIATELY TRANSITION WITH EXISTING RESIDENTIAL TO THE SOUTH.

SWM POND AS A DESIRABLE AMENITY FEATURE ADJACENT TO RESIDENTIAL REAR LOTTING.

CONCEPTUAL VIGNETTE – MAYFIELD ROAD CHARACTER (EAST OF CHINGUACOUSY ROAD)

NATURAL FEATURES (BUFFER BLOCKS / SWM PONDS) CAN HELP SOFTEN THE IMPACT OF MAJOR ARTERIALS AND PROVIDE AN APPROPRIATE BUFFER FOR RESIDENTIAL NEIGHBOURHOODS.

CONCEPTUAL VIGNETTE – URBAN VILLAGE

THE URBAN VILLAGE SHOULD FUNCTION AS THE PRIMARY GATHERING SPACE FOR THE COMMUNITY, WITH FLEXIBILITY FOR VARIOUS PROGRAMMING.

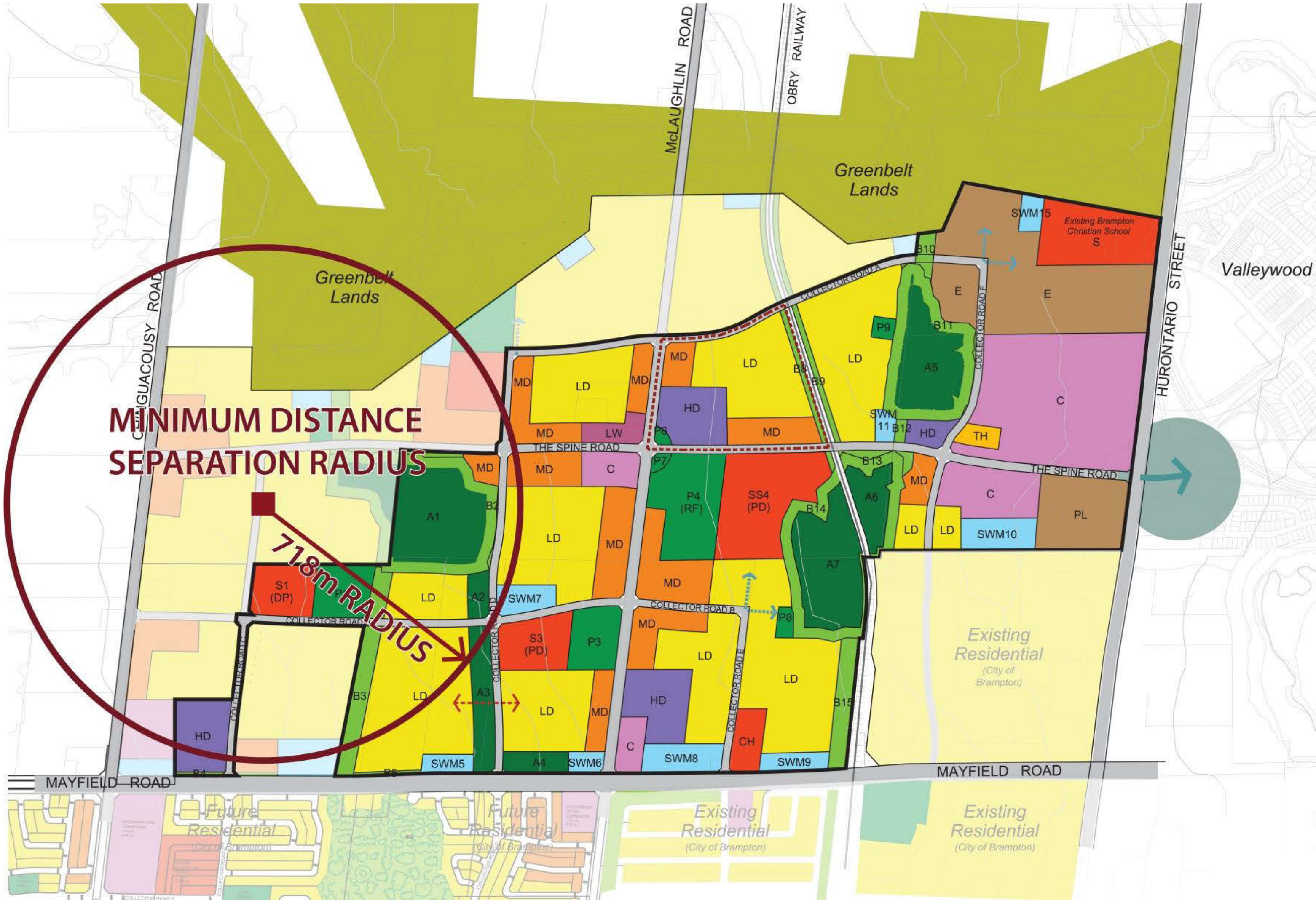
THE RIVER'S EDGE CONDOMINIUM IN BOLTON IS A RECENT EXAMPLE OF A HIGH DENSITY, ADULT LIFESTYLE DEVELOPMENT THAT IS INTEGRATED INTO THE MAIN STREET FABRIC (ARMOUR HEIGHTS DEVELOPMENT INC.)

MIXED-USE BUILDINGS, SUCH AS LIVE/WORK UNITS, WILL COMBINE RETAIL WITH HIGHER DENSITY RESIDENTIAL.

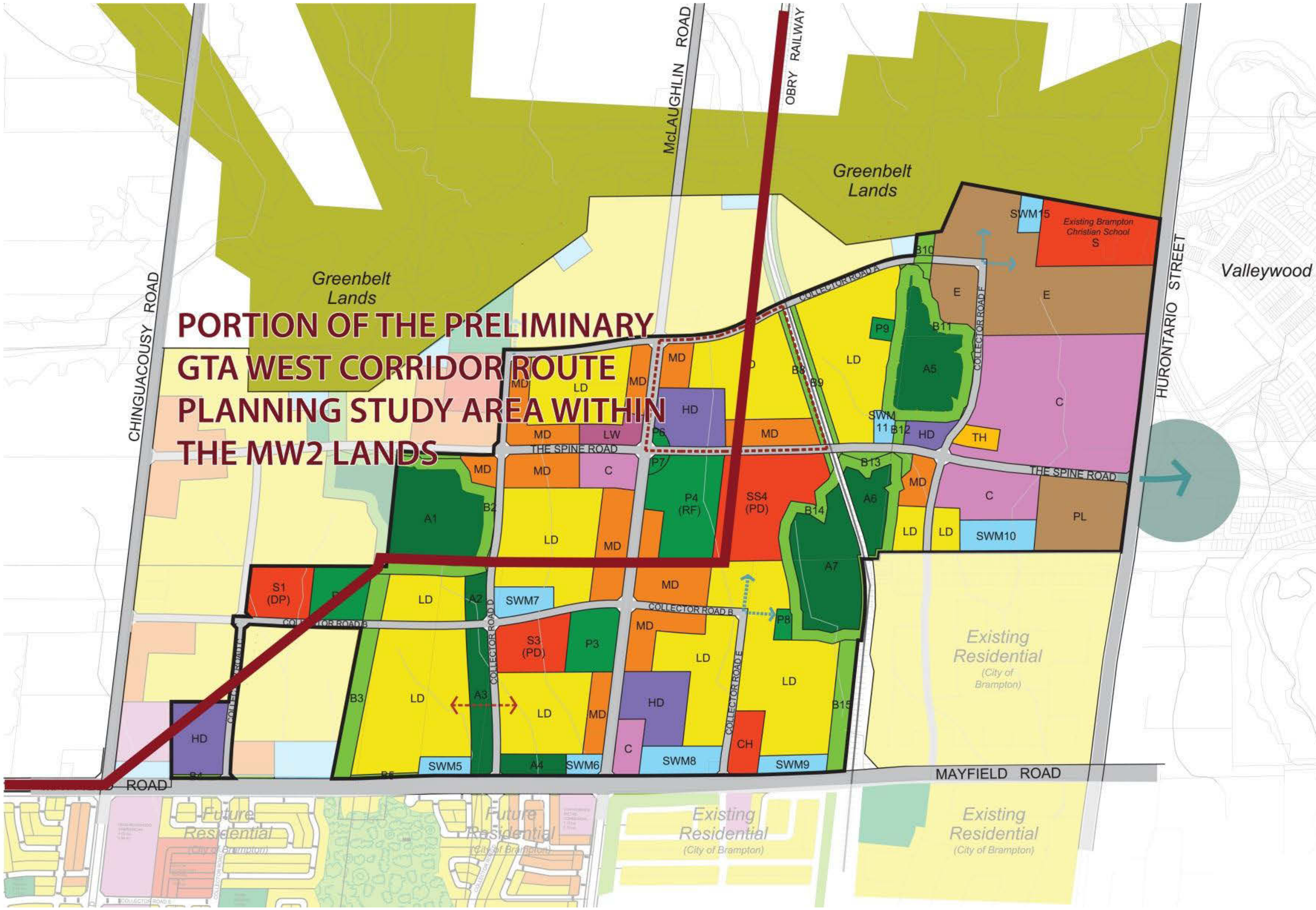
STREET ORIENTED COMMUNITY BUILDINGS WITH QUALITY ARCHITECTURAL DESIGN AND MATERIALS WILL BE KEY TO ESTABLISHING THE CHARACTER OF THE VILLAGE CENTRE.

Part 3 (Town Staff)

Moving Forward & Next Steps



MINIMUM DISTANCE SEPARATION FROM COOK FARM



GTA WEST CORRIDOR ROUTE PLANNING STUDY AREA

Moving Forward

NAK Design Strategies continue to make refinements to the draft preferred framework plan as new information is provided by the other MW2 study components (e.g. environment, servicing and transportation).

Staff and the Town's consultant team continue to work towards finding the right balance among the interests, needs and priorities of the Town, residents, landowners and agencies.

Next Steps

At a Council Meeting in April 2013 Council will consider a recommended preferred framework plan for MW2.

TOWN OF CALEDON

Council Meeting
Tuesday, June 17, 2014
9:30 a.m.
Council Chamber, Town Hall

Acting Mayor – Councillor Thompson

AGENDA

1. **CALL TO ORDER** – Council Chamber.

2. **PRAYER AND O CANADA**

3. **SUMMARY OF ADDENDUM ITEMS**

4. **APPROVAL OF AGENDA**

5. **DISCLOSURE OF PECUNIARY INTEREST**

6. **COUNCIL WORKSHOP**

   1. Mayfield West Phase 2 Secondary Plan – Tim Manley, Senior Policy Planner.

7. **PUBLIC QUESTION PERIOD**

   15 minutes is allocated for public question period. An individual who wishes to ask question(s) regarding a matter on the agenda is provided 2 minutes.

8. **BY-LAWS**

   BL-2014-XXX-015 — To confirm the proceedings of the Council for The Corporation of the Town of Caledon at its Council Meeting held on the 17th day of June, 2014.

9. **ADJOURNMENT**

http://www.caledon.ca/en/Calendar/Meetings/Default.aspx

Accessibility Accommodations

Assistive listening devices for use in the Council Chamber are available upon request from the Staff in the Town's Legislative Services Section. American Sign Language (ASL) Interpreters are also available upon request.

Please provide advance notice if you require an accessibility accommodation to attend or participate in Council Meetings or to access information in an alternate format please contact Legislative Services by phone at 905-584-2272 x. 2366 or via email to accessibility@caledon.ca.

TOWN OF CALEDON

Mayfield West Phase 2 Secondary Plan

Council Information Workshop

June 17, 2014

TOWN OF CALEDON
nak design strategies
Paradigm
www.ptsl.com

Today's Agenda

Part 1 – Town Staff

(a) Welcome & Introductions

(b) Project Background

Part 2 – NAK Design Strategies

This is how MW2 will be unique; innovative & successful

Part 3 – Town Staff

(a) Moving Forward & Next Steps

Part 1 – Town Staff

(a) Welcome & Introductions

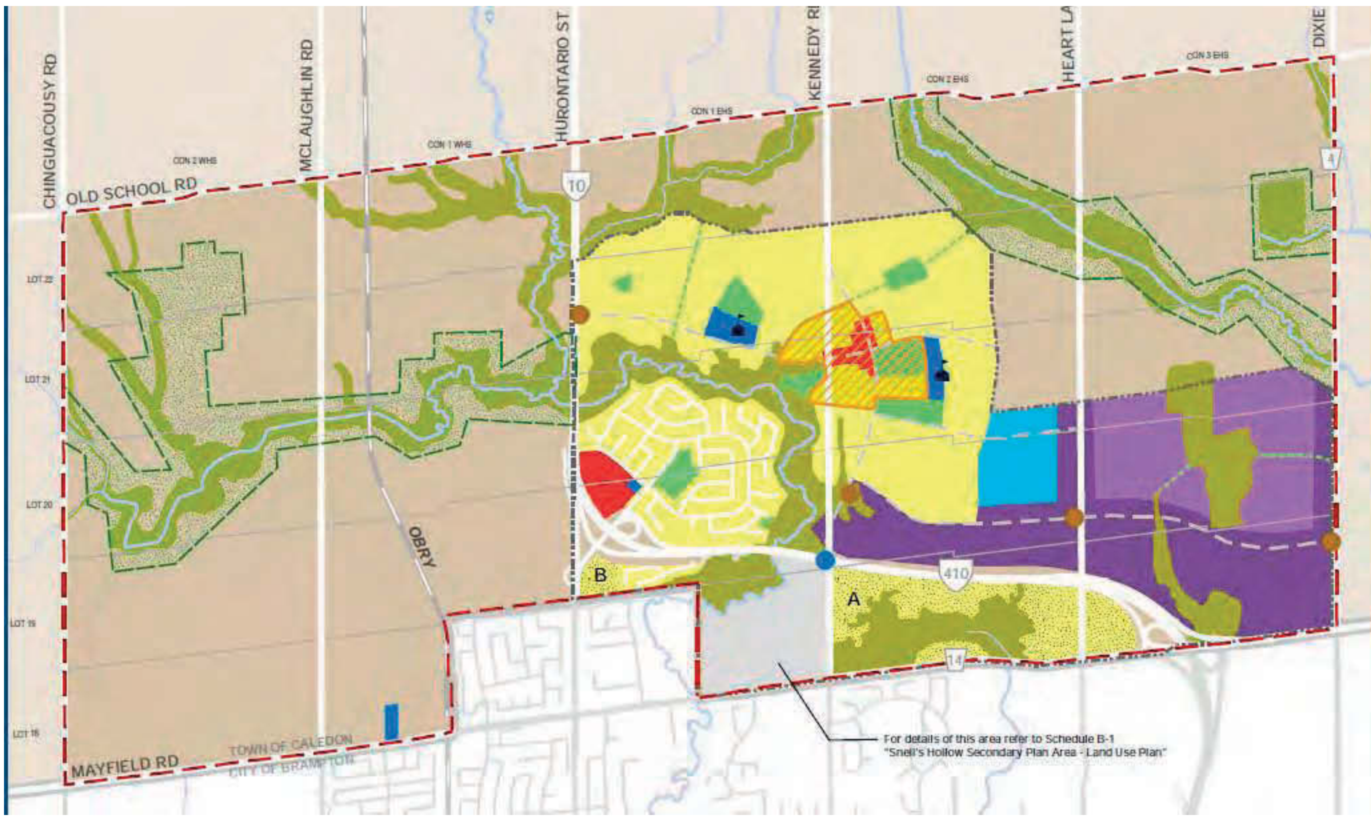
(b) Project Background

Presented by: Tim Manley

Project Background

MW2 was initiated by Caledon in 2008 to determine the appropriate location and form for population & employment growth allocated to Mayfield West by Council.

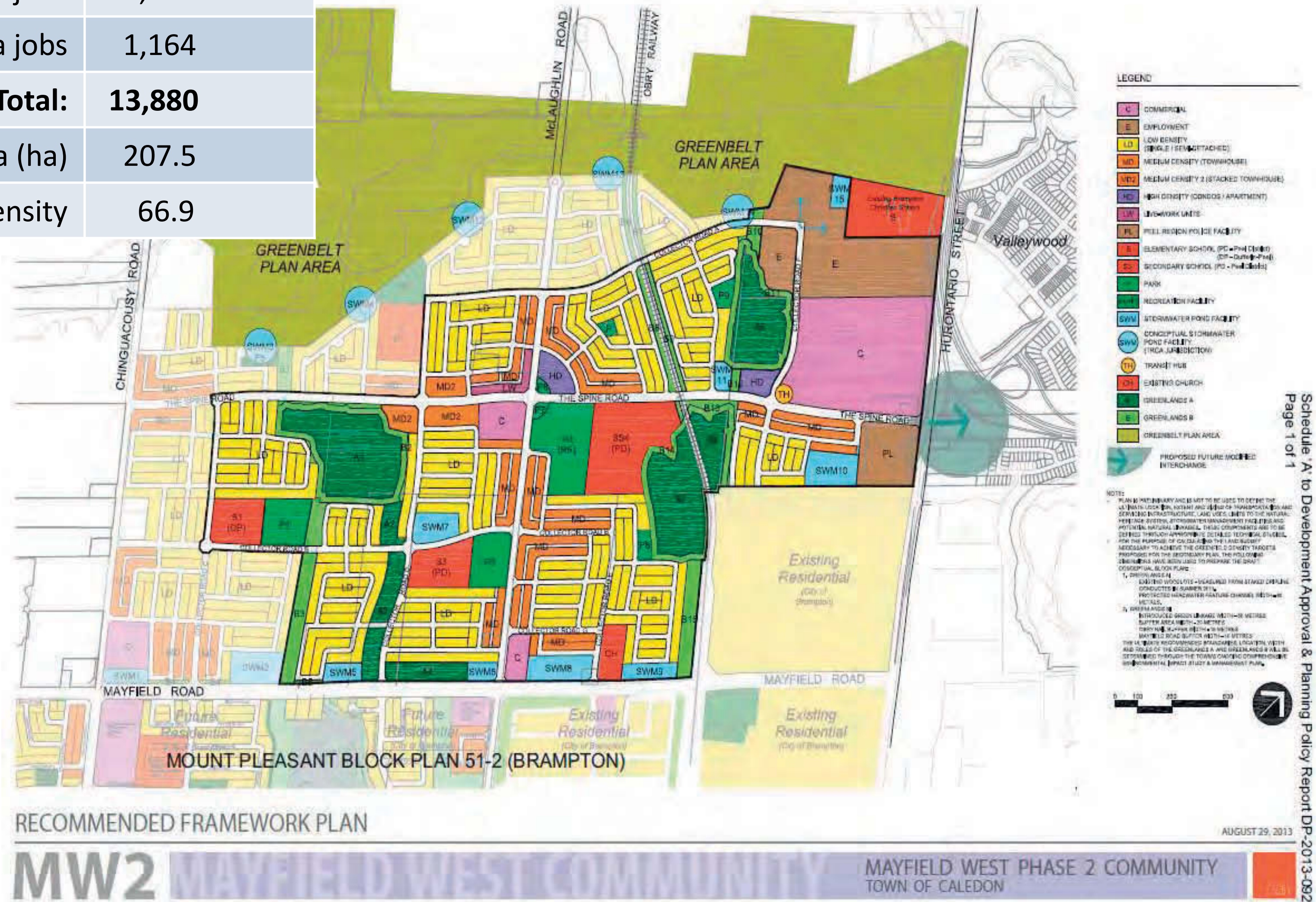
Caledon assembled a multi-disciplined team to complete the required studies & analysis.



MW2: Planning Considerations (2013)

Population	10,081
Population-related jobs	2,635
Employment Area jobs	1,164
Total:	**13,880**
Land Area (ha)	207.5
Density	66.9

Council Endorsed Framework Plan 2013



This is why MW2 needs to be different

"When you design your city around cars…you get more cars.
When you design your city around people…you get more people."

Fred Kent, Project for Public Spaces

"How we live and move impacts our health. Over a period of decades, we have removed physical activity from people's lives including designing communities that require the use of cars."

A call to action:

"We need to build physical activity back into people's lives by making the healthy choice the easy choice."

Improving Health by Design in the Greater Toronto-Hamilton Area
A Report of Medical Officers of Health in the GTHA, May 2014

Putting physical activity back into people's lives…

A healthy community is

- pedestrian friendly;
- transit-supportive; and
- enables & encourages physical activity through active transportation.

"Active transportation" is a means of getting around that is powered by human energy, primarily walking and bicycling – www.partnership4at.org

The following interconnected elements of MW2 greatly influence the success of active transportation:

- density;
- walkability; and
- public transit.

Community Design Plan (CDP) & Transportation Master Plan (TMP)

Collectively, the CDP & TMP will provide Council, residents, landowners and stakeholders with a clear idea about the intended design of the overall community, including, among other things:

Density

- distribution & type of housing
- proximity to facilities & services
- land use mix

Walkability

- road network
- cycling & trail routes
- street connectivity & design

Public Transit

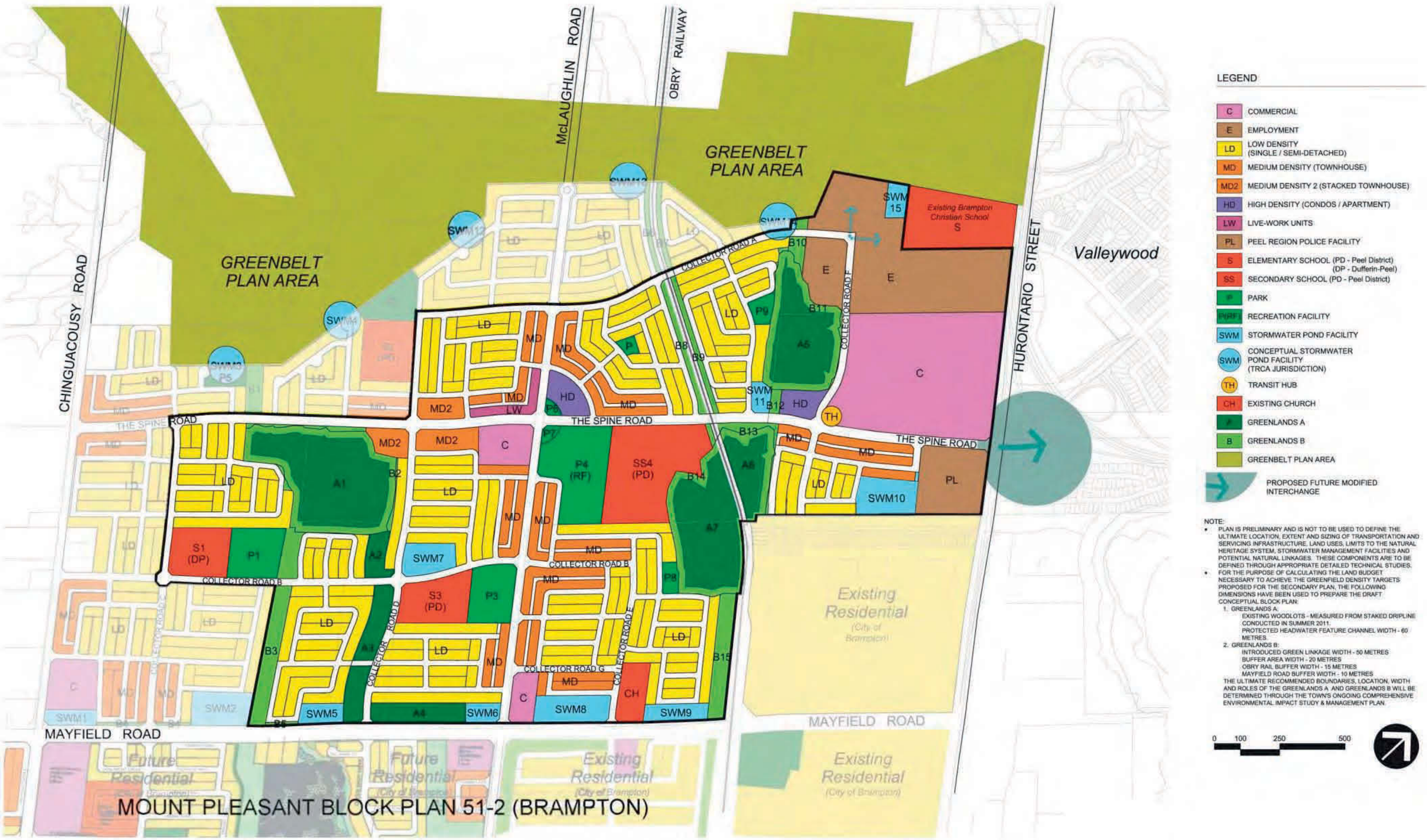
- public transit plan

Part 2 – NAK Design Strategies

(a) This is how MW2 will be unique; innovative; & successful

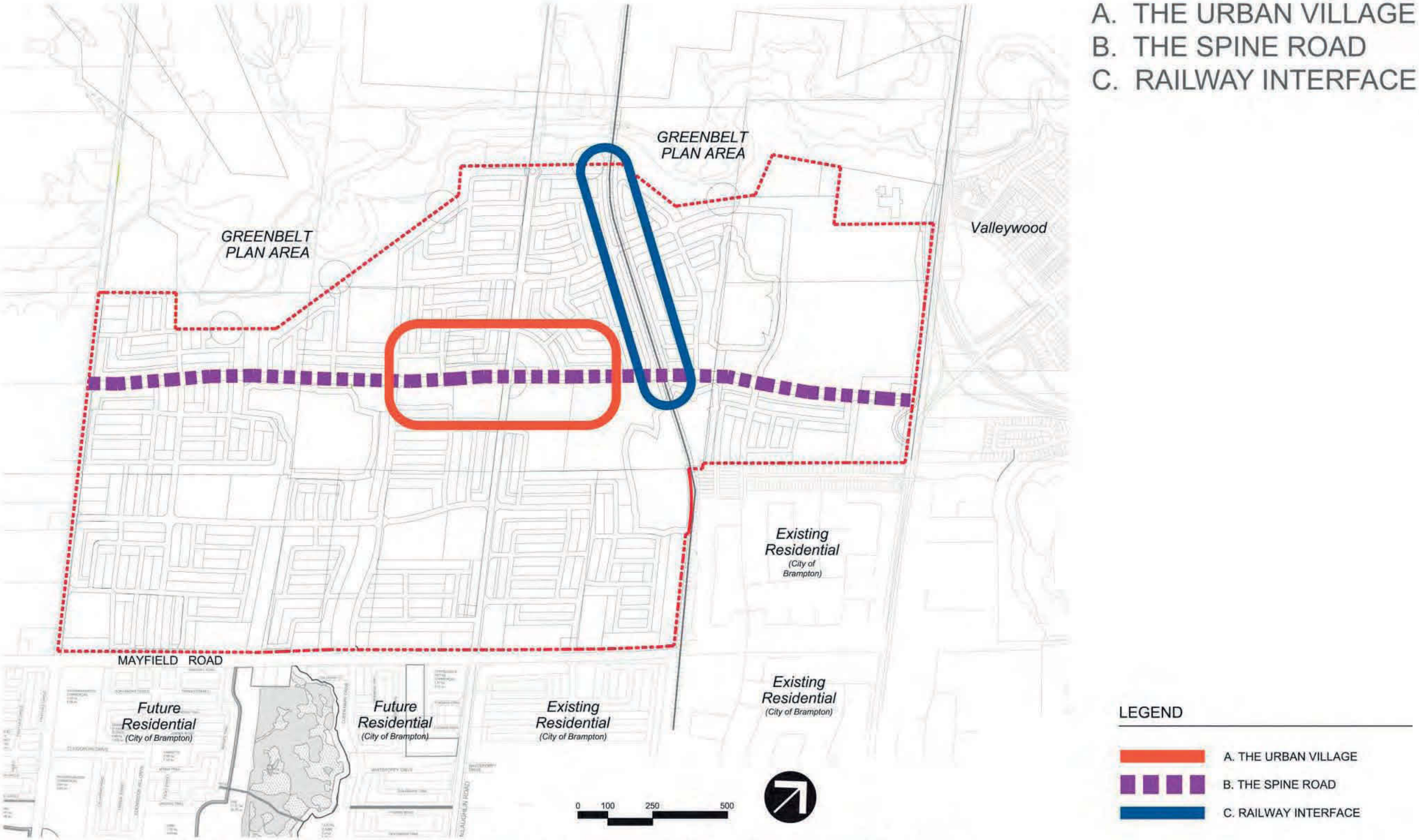
Presented by: John Richard (NAK)

ENDORSED FRAMEWORK PLAN



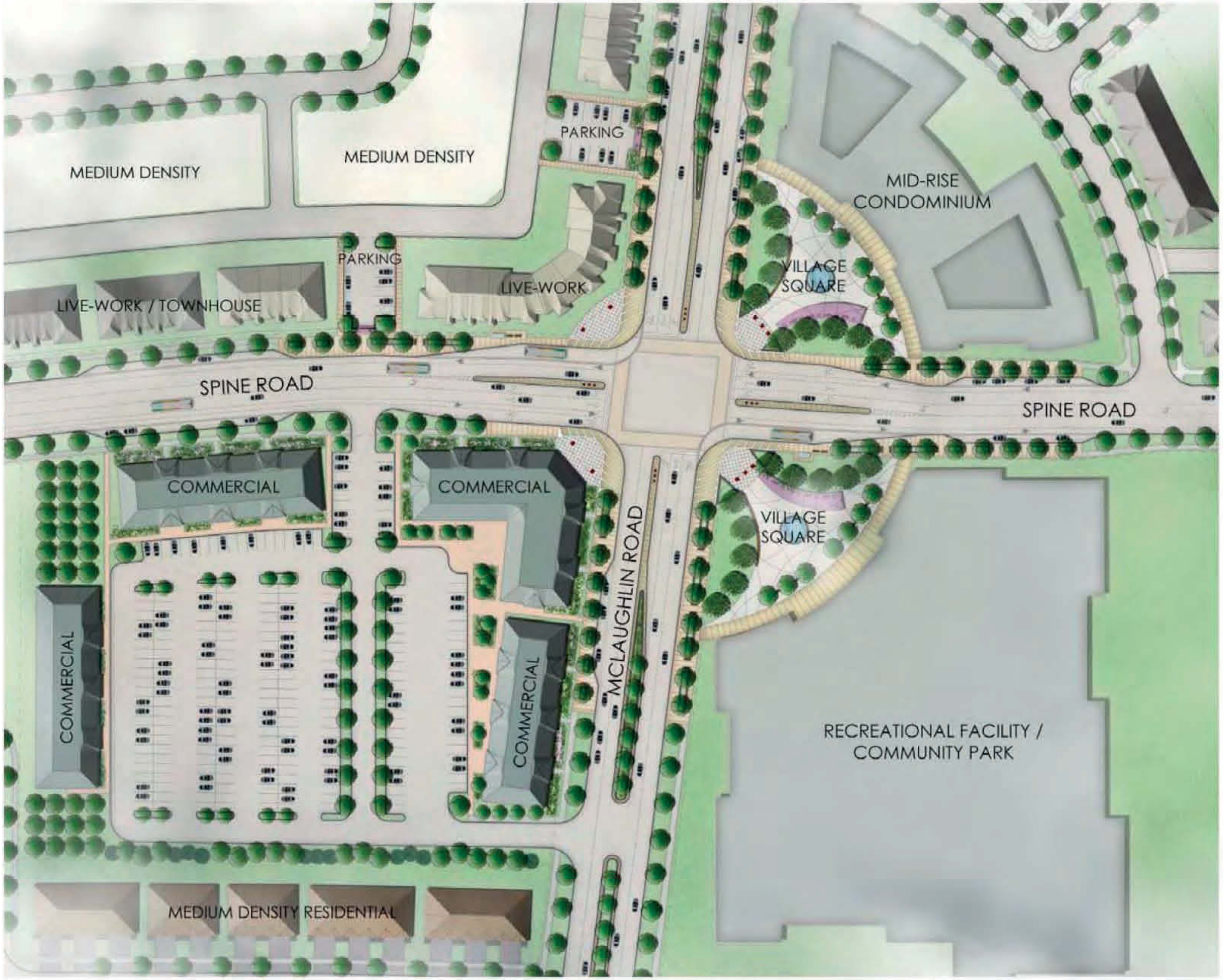
SPECIAL CHARACTER AREAS AND ELEMENTS

A. THE URBAN VILLAGE
B. THE SPINE ROAD
C. RAILWAY INTERFACE



FRAMEWORK PLAN INDICATING THE SPECIAL CHARACTER AREAS WITHIN MAYFIELD WEST PHASE 2.

A. The Urban Village



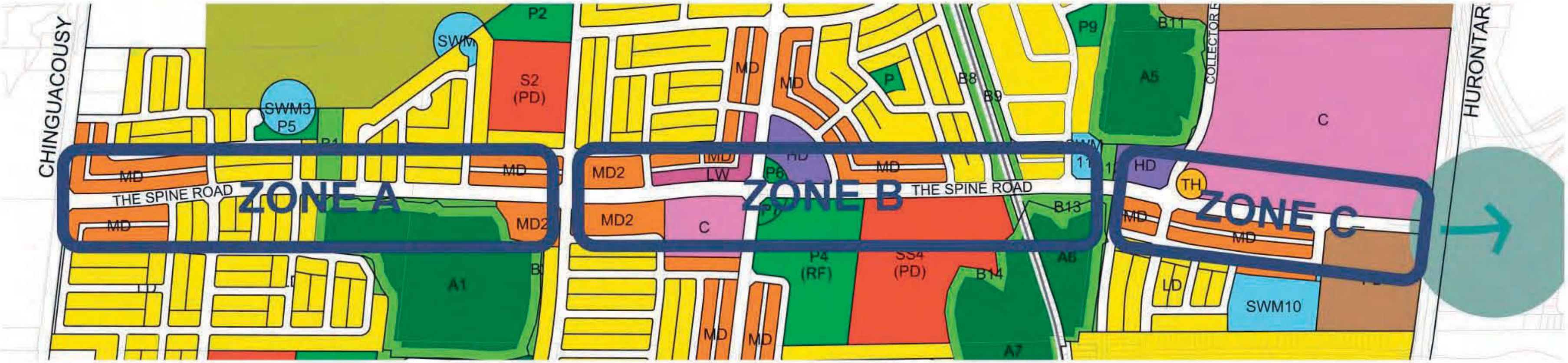
CONCEPTUAL PLAN VIGNETTE OF THE URBAN VILLAGE CENTRED ON THE INTERSECTION OF THE SPINE ROAD AND MCLAUGHLIN ROAD.

CONCEPTUAL PERSPECTIVE OF THE URBAN VILLAGE CENTRED ON THE INTERSECTION OF THE SPINE ROAD AND MCLAUGHLIN ROAD (LOOKING EAST ALONG THE SPINE ROAD).

THE URBAN VILLAGE SHOULD FUNCTION AS THE PRIMARY GATHERING PLACE FOR THE COMMUNITY, WITH FLEXIBILITY FOR VARIOUS PROGRAMMING.

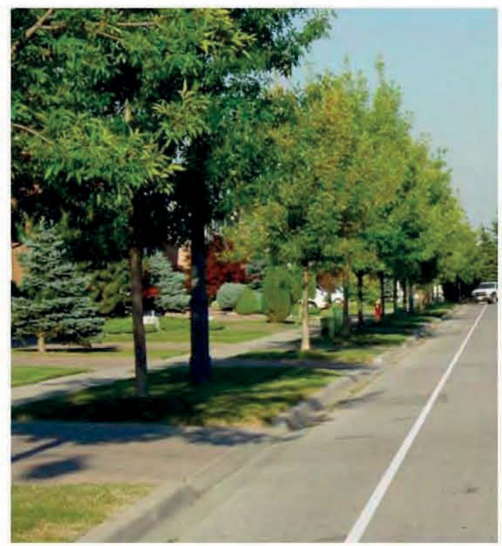
THE RIVER'S EDGE CONDOMINIUM IN BOLTON IS A RECENT EXAMPLE OF A HIGH DENSITY, ADULT LIFESTYLE DEVELOPMENT THAT IS WELL INTEGRATED INTO THE URBAN VILLAGE FABRIC (ARMOUR HEIGHTS DEVELOPMENT INC.).

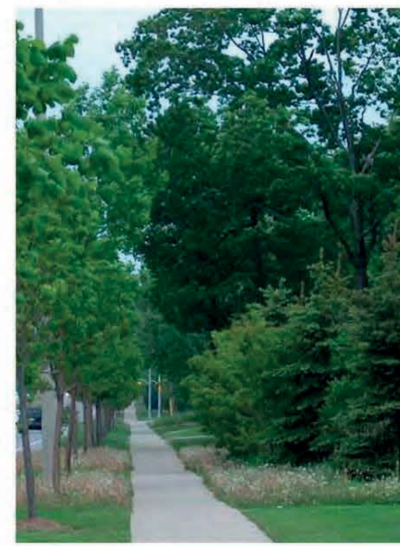
B. The Spine Road



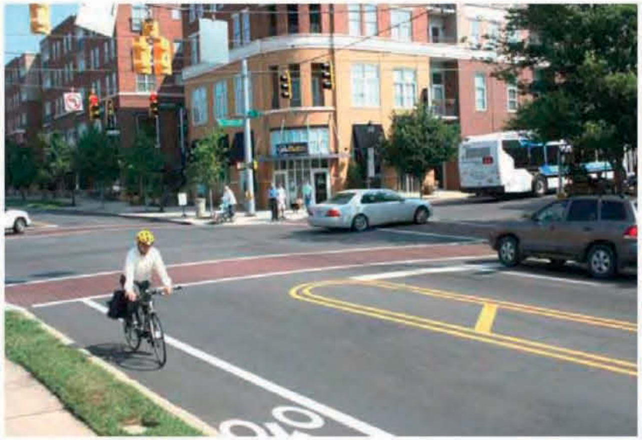
SPINE ROAD - STREETSCAPE ZONES

ZONE A

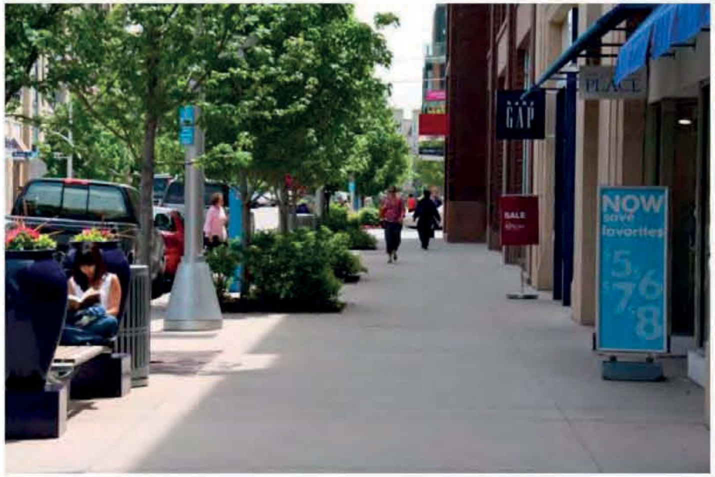


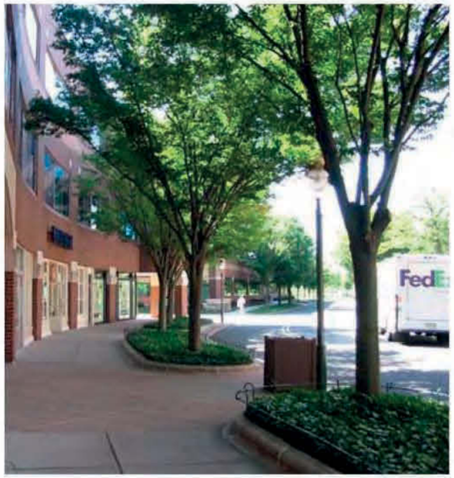


ZONE B



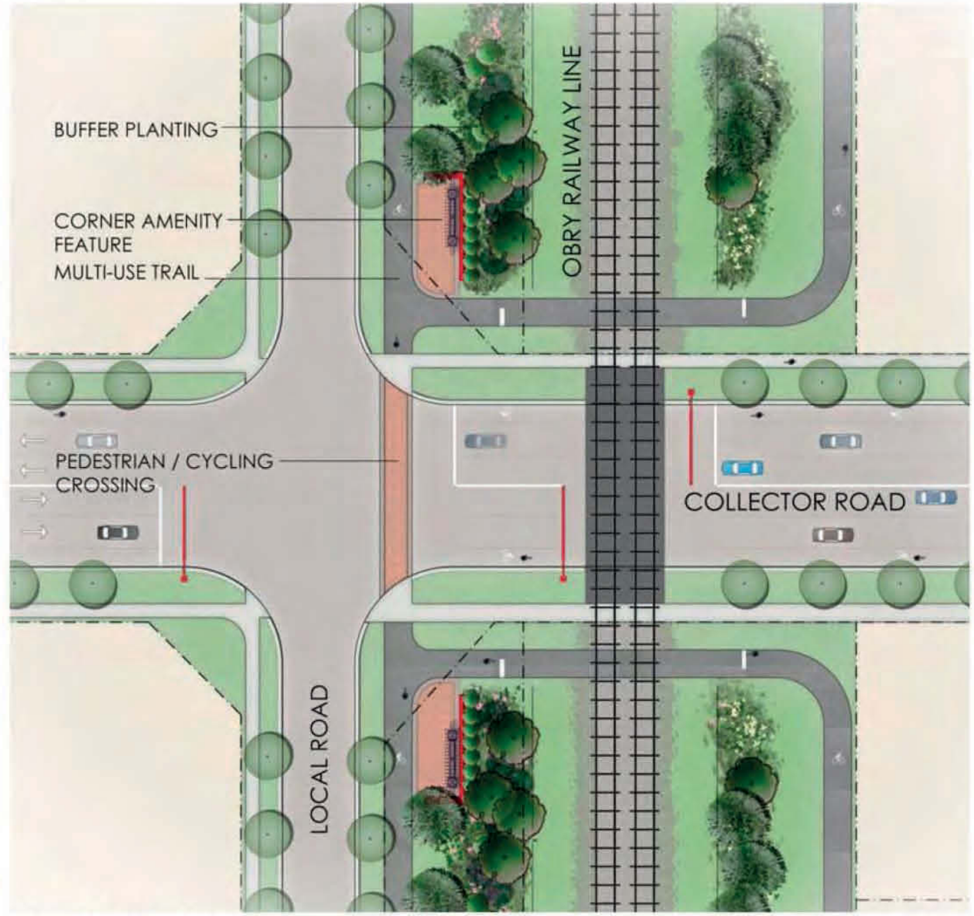
ZONE C





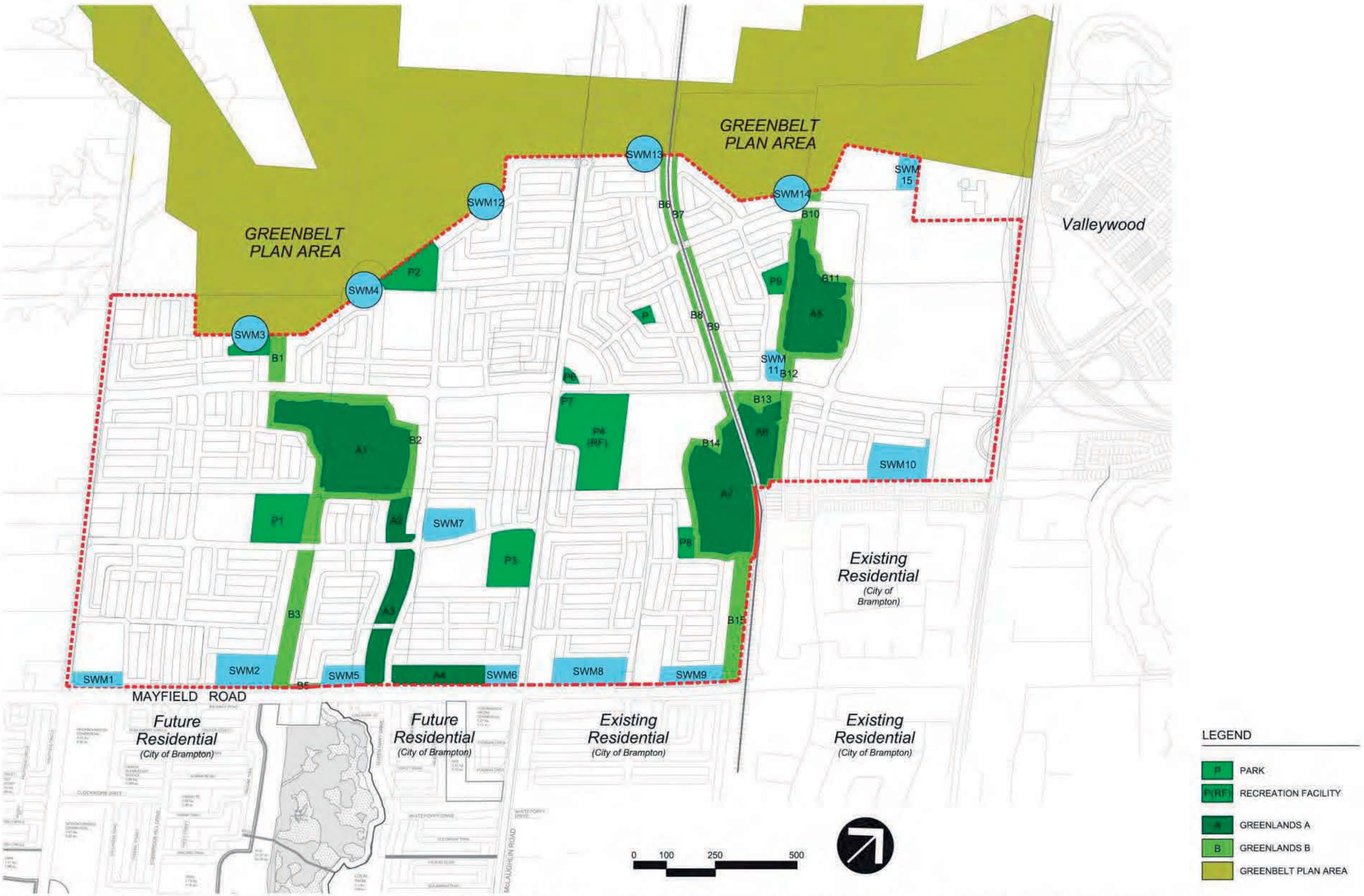
C. Railway Interface

PRELIMINARY CONCEPTUAL SKETCH OF THE PROPOSED LAND-SCAPE BUFFER TREATMENT ALONG THE RAILWAY LINE INTERFACE.



PRELIMINARY CONCEPTUAL SKETCH OF THE PROPOSED STREET CROSSING OF THE RAILWAY LINE WITH ASSOCIATED PLANTED BUFFERS AND CORNER FEATURES.

OPEN SPACE COMPONENTS



FRAMEWORK PLAN INDICATING THE LOCATIONS OF PROPOSED PARKS, AS WELL AS NATURAL HERITAGE FEATURES.

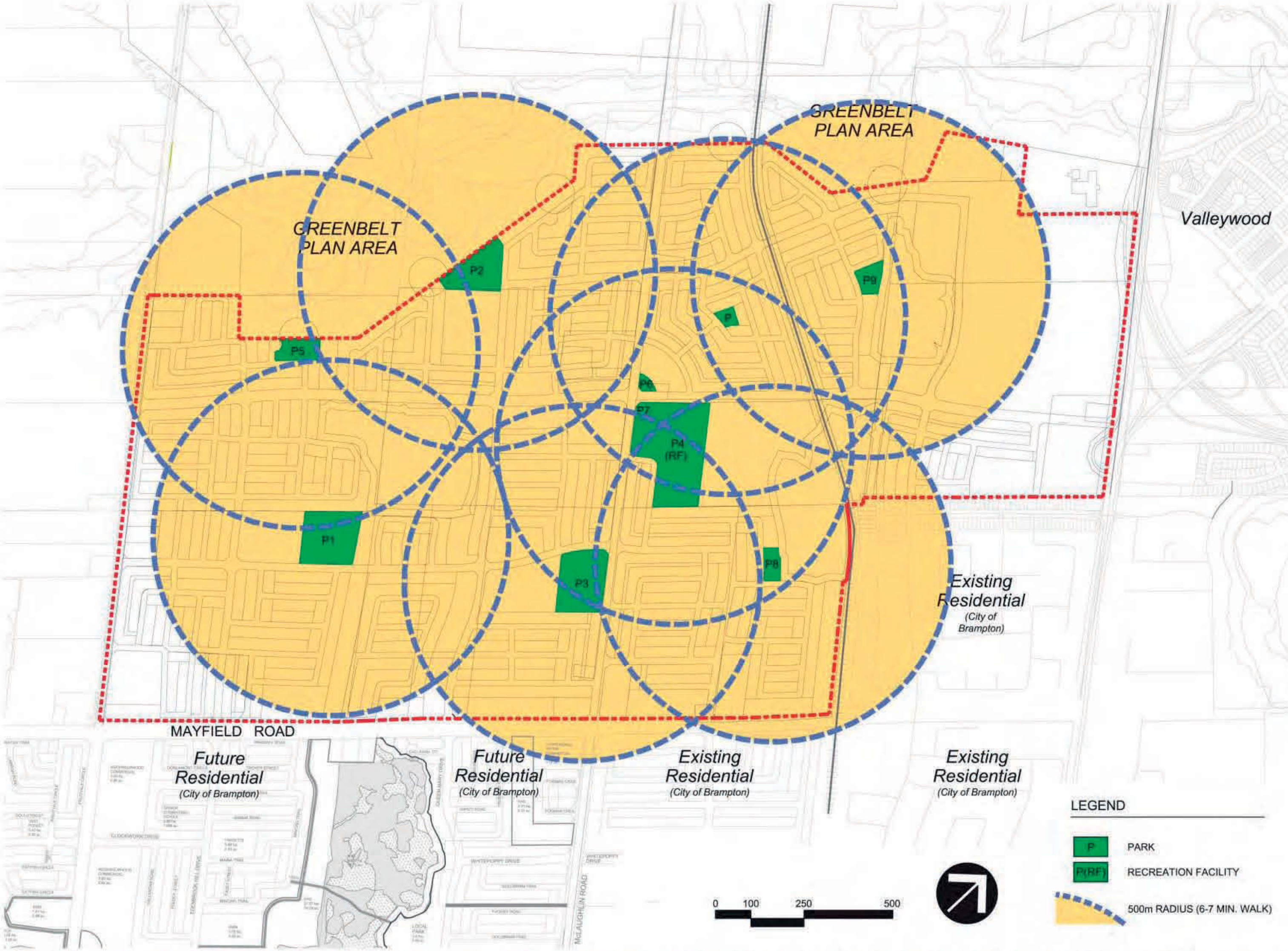
A. Greenbelt Interface

CONCEPTUAL SECTION DEMONSTRATING THE INTERFACE OF REAR RESIDENTIAL LOTTING WITH NATURAL HERITAGE FEATURES OR GREENBELT AREAS, WITH THE INTEGRATION OF A TRAIL CONNECTION.

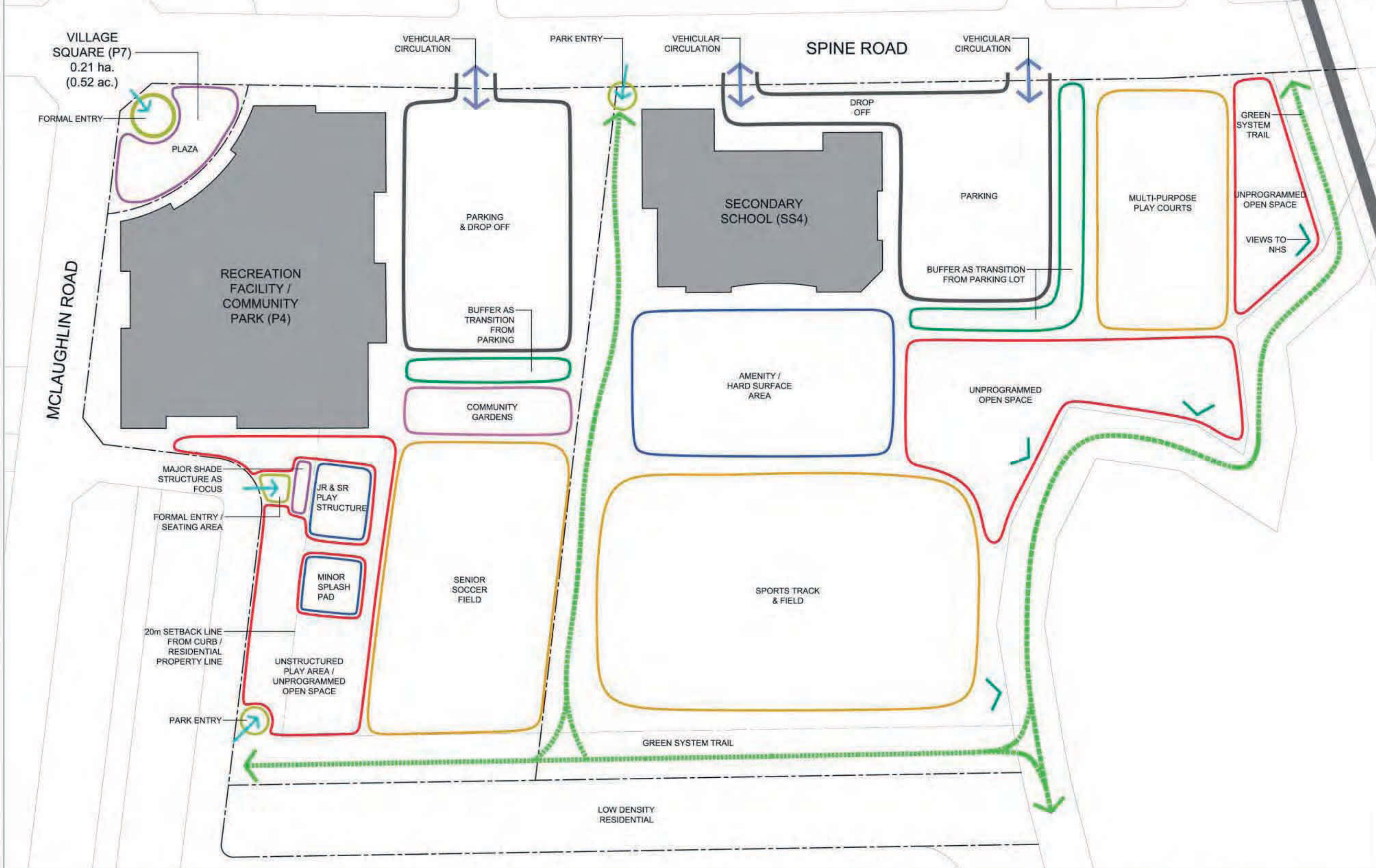
SWM PONDS ARE A COMPATIBLE USE WITH THE GREENBELT AREA AND HAVE BEEN SITUATED ALONG THIS NORTH INTERFACE.

THE GREENBELT INTERFACE WITH THE COMMUNITY MAY INTEGRATE TRAIL LINKAGE OPPORTUNITIES AS A COMPONENT OF THE OVERALL NETWORK.

B. Parks



FRAMEWORK PLAN INDICATING THE PARK LOCATIONS AND CORRESPONDING 6-7 MINUTE WALKING DISTANCE (500m RADIUS CIRCLE).



PRELIMINARY CONCEPTUAL FACILITY FIT PLAN PROPOSED FOR THE COMMUNITY PARK (P4) WITH RECREATION CENTRE AND SECONDARY SCHOOL (SS4).

A UNIQUE AND INNOVATIVE APPROACH TO PARK PROGRAMMING AND PLAY ELEMENTS SHALL BE EMPHASIZED TO COMPLEMENT MORE TRADITIONAL PARK DESIGN AND FACILITIES.

COMMUNITY GARDENS ARE A GREAT OPPORTUNITY TO INVOLVE WIDER COMMUNITY PARTICIPATION AND SENSE OF OWNERSHIP IN THE PARKS.

PARK SPACES WITHIN THE URBAN VILLAGE SHOULD REFLECT A MORE URBAN SQUARE INFLUENCE THAT CAN SERVE AS A MULTI-PROGRAMMED COMMUNITY GATHERING SPACE.

WHERE APPLICABLE, EXISTING HERITAGE RESOURCES MAY BE INTEGRATED INTO THE PARK DESIGN EITHER FUNCTIONALLY OR AS A FORM OF COMMEMORATION.

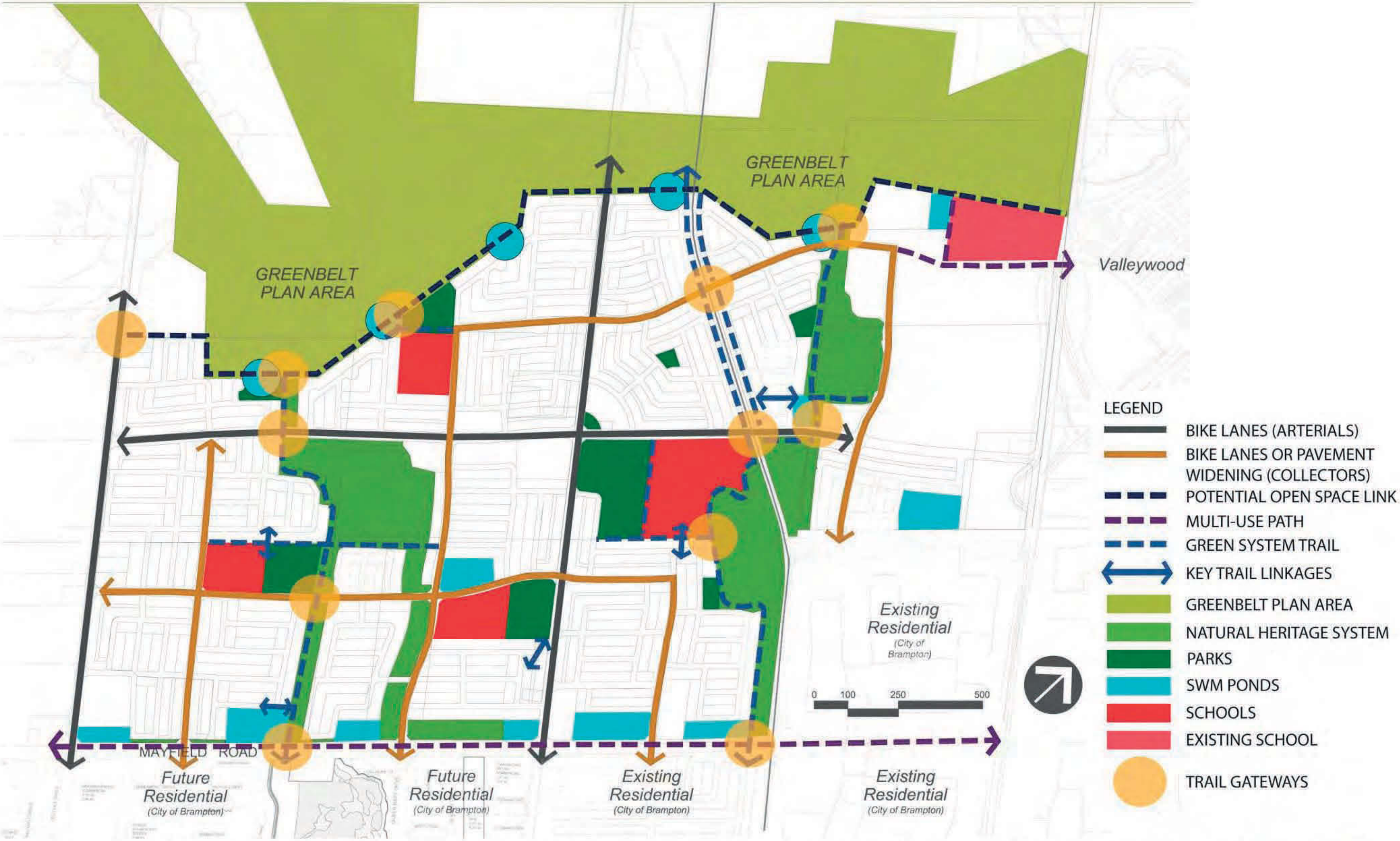
C. Stormwater Management Ponds

CONCEPTUAL RENDERING SHOWING HOW LOOKOUT AMENITY FEATURES AND TRAILS CAN BE INTEGRATED INTO THE STORMWATER MANAGEMENT POND DESIGN.

NATURALIZED SWM PONDS AND CHANNELS CAN SERVE AS VALUABLE HABITAT LINKS AS A COMPLEMENT TO THE NATURAL HERITAGE SYSTEM.

MULTI-USE TRAILS SHALL BE INTEGRATED INTO THE SWM CHANNEL DESIGN AS AN IMPORTANT COMPONENT OF THE COMMUNITY-WIDE TRAIL NETWORK.

TRAIL AND CYCLING NETWORK



THE PRELIMINARY PROPOSED TRAIL AND CYCLING NETWORK IS INTENDED TO COMBINE SEVERAL PATH TYPES, SUCH AS GREEN SYSTEM TRAILS, MULTI-USE TRAILS AND ON-STREET BIKE LANES, INTO A COMPLETE NETWORK THAT CONNECTS AT A COMMUNITY AND REGIONAL SCALE.

Cycling & Trails Plan for MW2

- Full cycling network to accommodate recreational & commuter cyclists.
- Bike lanes provided on each side of arterial and main collector roads as follows:
- Continuous network of off-road multi-use trails for recreational cyclists.
- Cycling network provides continuity with routes in Brampton & along Mayfield Rd.
- Continuous multi-use trail system utilizing green links and open spaces.
- Trails connect to Brampton & Regional trails as well as Etobicoke Creek Greenbelt Plan Area.

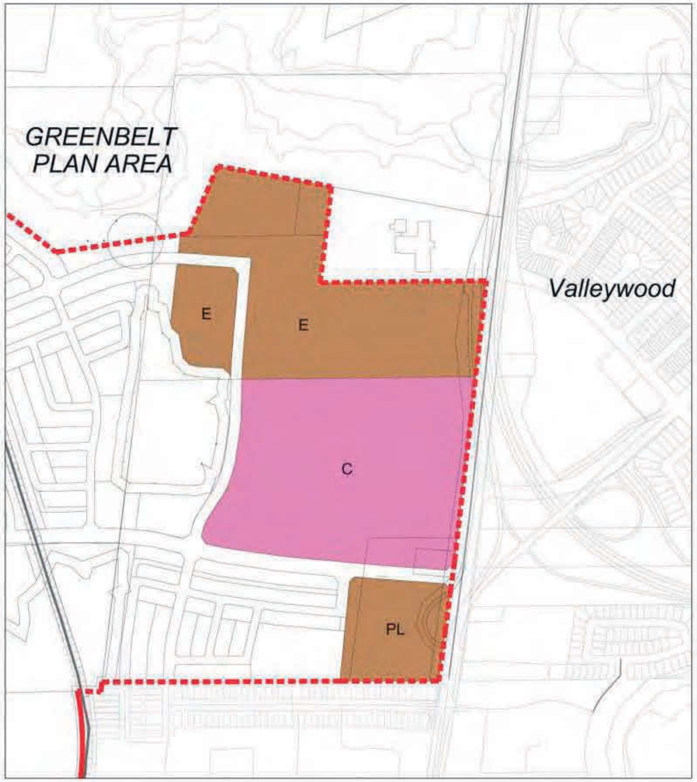
ON-STREET BIKE LANES


MULTI-USE TRAILS LOCATED WITHIN THE BOULEVARDS


PATHWAYS WITHIN SWM PONDS AND CHANNELS


GREEN SYSTEM TRAILS

REGIONAL COMMERCIAL / EMPLOYMENT



LEGEND

- C COMMERCIAL
- E EMPLOYMENT
- PL PEEL REGION POLICE FACILITY

THE COMMERCIAL LANDS ARE INTENDED TO INTEGRATE A MIXTURE OF SMALL TO LARGE FORMAT RETAIL AND SERVICE USES, ALL OF WHICH SHALL REPRESENT STRONG ARCHITECTURAL, STREET AND OPEN SPACE DESIGN.

EXAMPLE OF PRESTIGE EMPLOYMENT (OFFICE) USES WITHIN DESIGNATED EMPLOYMENT LANDS EXEMPLIFYING QUALITY ARCHITECTURE AND OPEN SPACE DESIGN WITH AN EMPHASIS ON WALKABILITY.

THE COMMERCIAL LANDS SHOULD STRIVE TO DEVELOP AN URBAN, PEDESTRIAN SCALED ENVIRONMENT THAT IS WALKABLE AND ENCOURAGES TRANSIT CONNECTIONS.

EXPANSIVE AREAS FOR PARKING SHOULD INTEGRATE CLEARLY ARTICULATE WALKING FACILITIES THAT ALLOWS FOR SAFE, COMFORTABLE AND DIRECT LINKAGES.

Public Transit Concept Plan for MW2

Public Transit service is a key component of MW2 Transportation Master Plan: service should be provided in MW2 as development proceeds.

Transit Hub

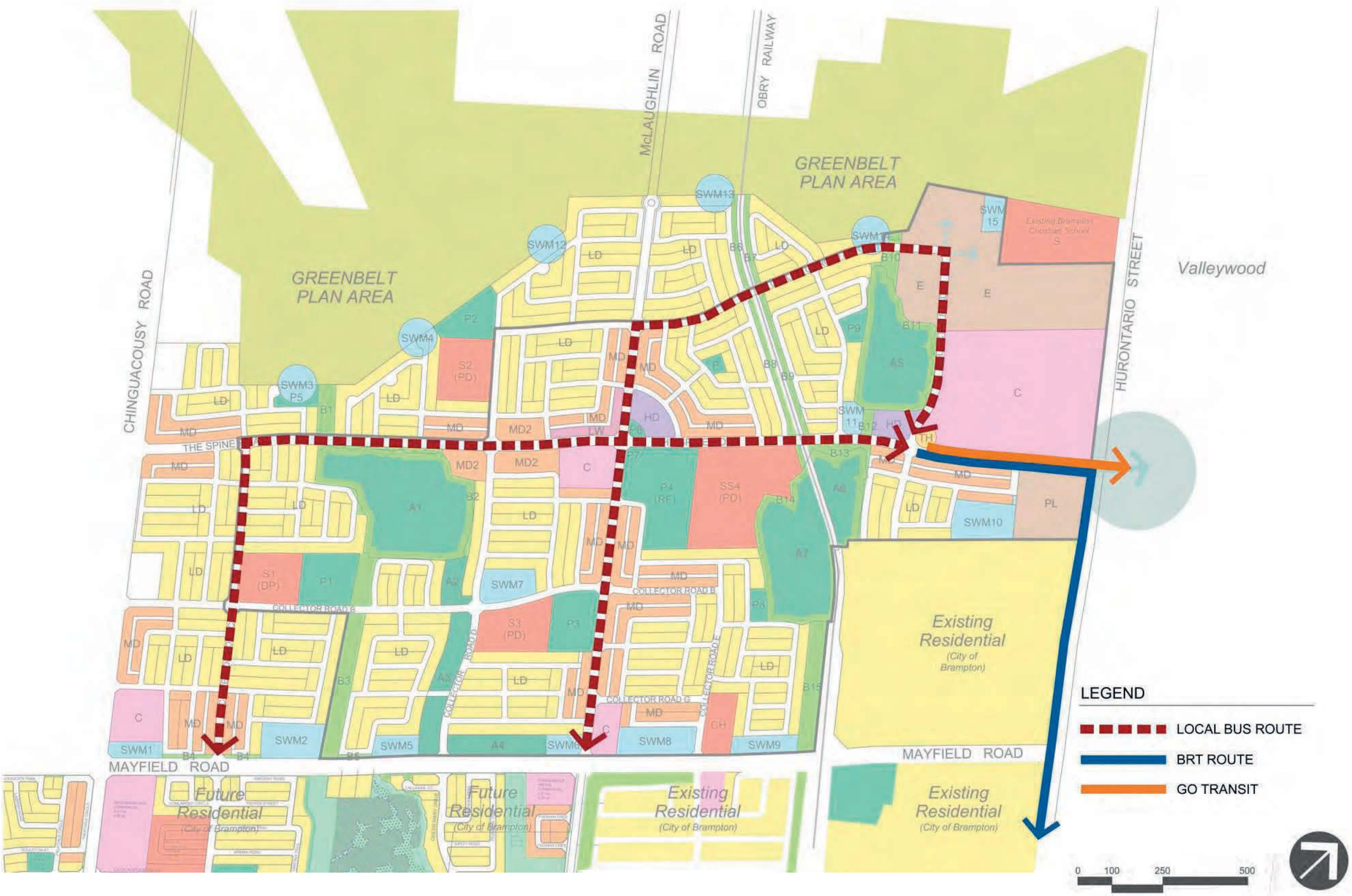
Off-street transit hub provided adjacent and in close proximity to major commercial & employment areas for local service and interconnections.

CONVENIENT TRANSIT CONNECTIONS TO AND FROM MAYFIELD WEST PHASE 2 IS A KEY COMPONENT OF THE COMMUNITY BUILDING STRATEGY.

TRANSIT HUB FACILITY

THE PROPOSED TRANSIT HUB TO BE IN CLOSE PROXIMITY TO MAJOR COMMERCIAL AND EMPLOYMENT AREAS.

OVERVIEW OF TRANSIT SERVICE



Funding the Public Transit Concept Plan for MW2

Components of the Public Transit Concept Plan that must be funded include:

Transit Hub

- Land acquisition
- Construction, operation, & maintenance

Local Transit Service

- Transit stops & associated infrastructure
- Provision of Local Transit Service

Funding mechanism needs to be confirmed during the secondary planning process.

MW2 Fiscal & Economic Impact Study (FIS)

The FIS provides an examination of the anticipated Regional & Caledon development charge & property tax implications, as well as an assessment of the potential economic benefit to Caledon, of MW2.

The FIS identifies <u>what</u> needs to be funded, <u>when</u> it needs to be funded, & <u>how</u> it will be funded.

Part 3 – Town Staff

(a) Moving Forward & Next Steps

Presented by: Tim Manley

Moving Forward & Next Steps

Regional Official Plan Amendment (ROPA)

Jan 2014 – Caledon submitted an application to Peel Region to amend the Regional Official Plan to establish the MW2 settlement area boundary expansion.

Statutory Public Meeting held May 22, 2014.

Regional Council consideration of ROPA anticipated September 2014.

Local Official Plan Amendment (LOPA)

MW2 will be implemented through an amendment to Caledon's Official Plan.

MW2 Stakeholder Group meeting in July 2014.

Draft Community Design Plan & Transportation Master Plan released for review & comments in July 2014.

Caledon Council consideration of the LOPA by the end of 2014.

Appendix A2

Follow-up Consultation

Comments Received on Draft Report

From: Tim Manley [tim.manley@caledon.ca]
Sent: Tuesday, September 09, 2014 9:59 AM
To: David Hurst; Paula Strachan; Janet Sperling; Victoria Cox; Brandon Ward; Rob Hughes; Trevor Horman; Kant Chawla; Ryan Grodecki; Lucius Maitre; Brian Baird; Norm Lingard; Mark Wallace; Mike Beattie; Glenn Blakely
Cc: Haiqing Xu; Kathie Kurtz; 'Kristene Scott'; David Loveridge; Leo Butko; Mary Hall; Bill O'Brien
Subject: Please provide your comments on the Draft MW2 Transportation Master Plan

Importance: High

Further to our mee ng yesterday on the MW2 Community Design Plan, I am resending this email which contains the link to the MW2 Transporta on Master Plan; this email was f rst sent by me on July 22, 2014. Comments were due to me by September 5th.

I can extend that deadline for comments by 2 weeks – please submit your comments to me by **September 19, 2014.**

If you have provided me with your comments already, thanks.

Thanks. Tim.

____

Hello everyone:
Please use the link below to obtain your copy of the Draft MW2 Transporta on Master Plan (TMP).
Within the drop box folder you will see 2 f les – TMP Appendices & TMP Report.

Please review the TMP as is relates to your area of exper se & submit your comments to me by **September 5th**.

Thanks
Tim.

Link to MW2 Transporta on Master Plan
h ps://www.dropbox.com/sh/9fgujm87qtgqs09/AADhA5oa42KSLOqdQ_j7mi5xa

Tim Manley, MCIP, RPP
Senior Policy Planner
Development Approval & Planning Policy Department

Town of Caledon
6311 Old Church Road
Caledon, ON L7C 1J6

905.584.2272 x.4285
www.caledon.ca

Bill O'Brien

From: Tim Manley [tim.manley@caledon.ca]
Sent: Tuesday, August 26, 2014 12:01 PM
To: Bill O'Brien; Kaylan Edgcumbe (Paradigm)
Subject: FW: Mayfield West Draft TMP - Brampton Transit Comments

Hi Bill & Kaylan: Please see comments from Brampton Transit (David Stowe) below. Please address accordingly. Let me know if you have any questions.

Thanks
Tim.

Tim Manley, MCIP, RPP
Senior Policy Planner
Development Approval & Planning Policy Department

Town of Caledon
6311 Old Church Road
Caledon, ON L7C 1J6

905.584.2272 x.4285
www.caledon.ca

cid:image001.jpg@01CFA29A.8110AA10

Official Host Town for the TORONTO2015 Pan American Games – Equestrian

From: Stowe, David [mailto:David.Stowe@brampton.ca]
Sent: Tuesday, August 26, 2014 11:50 AM
To: Tim Manley
Cc: Rieger, Doug
Subject: Mayfield West Draft TMP - Brampton Transit Comments

Hi Tim:

Brampton Transit staff have reviewed the Mayfield West Phase 2 Secondary Plan – Draft Transportation Master Plan, and have the following comments:

7.0 Road Network Plan
Roads planned to serve as transit routes should include accommodations for bus stops and passenger amenities (benches, shelters) at key locations/intersections.

7.5.3 Traffic Calming
Traffic calming measures, particularly horizontal and/or vertical deflections, should be avoided on those roads

planned as future transit routes

8.0 Transit Plan & Figure 8.1 Transit Plan

- Additional service coverage is possible, dependant on the service levels and route coverage objectives agreed to. While most services to the area are likely to be extensions of Brampton Transit routes to the south, a separate local/community service is also an option, subject to the necessary service agreements.
- An east-west service along Mayfield Road is also planned.

8.1 Transit Hub

Under key components of the proposed design, add:

- Accommodation for real-time passenger information systems
- Accommodation for operator comfort facilities

8.2.1 Local Transit

3rd paragraph, last sentence:

"While the final determination of preferred routes for transit service is a separate initiative to be undertaken by Brampton Transt" add **"in consultation with the Town of Caledon"**

Please let me know if you have any questions or require anything further.

Thanks,

- Dave

David Stowe
Supervisor of Planning
Brampton Transit
david.stowe@brampton.ca
905-874-2750 ext. 62378
Cell: 416-919-7255

Bill O'Brien

From: Detaramani, Tina [Tina.Detaramani@peelregion.ca]
Sent: Tuesday, September 02, 2014 1:35 PM
To: Maestre, Jennifer
Cc: Chung, Margie; Chan, Wayne
Subject: Mayfield West Phase 2 - Draft Transportation Master Plan Comments

Hi Jen

As discussed, please see comments re Active Transportation below. Margie has requested this entire set of comments be forwarded to Caledon, and that they contact her with any questions. Please note that the comments below do not form part of the package of Transportation comments previously submitted to you.

Thanks,
Tina

From: Chung, Margie
Sent: August 25, 2014 6:17 PM
To: Detaramani, Tina
Cc: Chan, Wayne
Subject: RE: REMINDER - Mayfield West Phase 2 - Draft Transportation Master Plan Comments

Hi Tina,

Please see my comments below:

Road Network Plan:

> "… A key east-west arterial roadway extending from Hurontario Street to Chinguacousy Road which serves as the internal spine road, providing direct access to the various development areas within the Secondary Plan area. The Spine Road is pivotal in providing east-west capacity required to support the development, as well as accommodating transit service and linking the community with the proposed Transit Hub. The Spine Road serves as a key pedestrian and cycling corridor, linking the Village Centre, public facilities and recreational destinations by way of an interconnected system of on and off-street cycling and pedestrian facilities…"

- Appendix D, Typical cross section of the spine road from Hurontario Street to Commercial Entrance does not include design for cycling facility. A gap is created in this section. The need to review access to the Commercial development by cycling. How would this be connected with phase 1 development?

- Enhanced pedestrian intersections – page 64 discusses a number of intersections have been identified as "enhanced pedestrian crossings" in table 7.7, this table appears to be missing.

Active Transportation Section:

> "……Mayfield Road is planned to be widened to 4 travel lanes with provision of a 3.0m multi-use boulevard trail located on the south side of the roadway and a paved shoulder on the north side. However, it is noted that the recently completed Peel Region's Active Transportation Plan recommends consideration of on-road bike lanes versus off-road multi-use boulevard trails."

- The Peel Active Transportation Plan recommends providing a multi-use trail and a sidewalk on Mayfield Road, and where feasible, opportunity will be review for both sides multi-use trails. An Environmental Assessment (EA) study is currently underway to review the feasibility of both sides multi-use trail in the 6 lanes ultimate condition. Based on the 2014 capital program, the timing for the 6 lanes is likely to be in 2029 from Hurontario to Chinguacousy Road. Depending on the timeline of development and the land uses being propose along Mayfield Road in this area, interim measures to accommodate pedestrians and cyclists may be required. The timing of required AT facilities should be discussed along Mayfield Road.

- Guiding Principles, 9.2 – to include employment in the guiding principles for developing bicycle routes

- Sidewalks and Crosswalks – emphasize requirements for accessibility – accessibility standard for design of public spaces

- Staff from the Region, Waterfront Regeneration Trust, and Caledon are working on a N/S connection to connect from the Waterfront trail to the Caledon Trailway (Greenbelt Cycling Route), please emphasize how connection will be plan via the existing Etobicoke Creek trail connecting with the Greenbelt Cycling Route through this development and giving priority in development of this N/S connection.

- Table 9.2- Two way cycle track – discuss conflicts between turning vehicles – appears to increase potential conflicts points for two-way streets, would two way cycle track be more suitable for one-way street?

- Table 9.2- cycling facilities design to be coherent, consistent as per OTM Book 18-bicycle facilities

- Table 9.3- prefer trail crossing located at location of signals along Regional roads

- Table 9.3- Multi-use trails design to be consistent with OTM Book 18-bicycle facilities

- 9.4.1-cycling plan, " in the east section of the spine road (east of the proposed secondary school), a natural barrier is created…" any mitigating measure to overcome this barrier?

- Section 9.4.2 Trails Plan, suggest to label the trails outlined in this section onto figure 9.1

- Signs and Pavement Markings – may want to update current status of Bill 173 due to the recent Provincial election

- Table 10.4 Bicycle parking demands – to include transit stations in the table

- To emphasize the importance of providing Pedestrian and bicycle friendly site design and street enhancements such as landscaping to create the pedestrian and bicycle friendly environment for pedestrians and cyclists.

- Would the transit hub proposed in this development be serving both Phase 1 and Phase 2 of the Mayfield West development? If the transit hub is to serve both Phase 1 and 2, network connectivity (through transit/active transportation/ road) will need to be review to connect with Phase 1. This may include, under the scenario that require modifications to the ramps at Hwy 410 and Valleywood Blvd, provision of active transportation facilities will need to be consider to provide connectivity.

Transportation Demand Management Section:

- Plans for a transit hub (Brampton transit and GO) is propose along Hurontario for a commercial plaza, would there be opportunity to provide parking spaces for transit users and carpool users. This can be part of the TDM strategy
- TDM is the use of policies, programs, services, and products to influence personal travel choices, opportunities to consider participation in Transportation Demand Association (TMA), School Travel Planning Program, STEPS, bicycle parking pilot program, providing pedestrian and cycling information (e.g. trails maps, walk and roll peel website) to new housing development, new schools are designed to support walking and cycling, free transit passes for new housing development.

  School Travel planning program, STEPS and bicycle parking pilot program are currently offer to schools by Peel Health and Transportation.

If you have any questions on the above comments, please do not hesitate to contact me.

Thanks,
Margie

Bill O'Brien

From: Maestre, Jennifer [Jennifer.Maestre@peelregion.ca]
Sent: Tuesday, September 02, 2014 3:22 PM
To: Tim Manley
Subject: FW: Transportation Division Comments on MW2 Draft TMP
Attachments: Mayfield West Phase 2 - Draft Transportation Master Plan Comments

Hi Tim,

Please see below traffic's comments on the MW2 draft master transportation plan. Attached are also comments from the region's active transportation section.

Jennifer

From: Detaramani, Tina
Sent: September 2, 2014 1:27 PM
To: Maestre, Jennifer
Subject: Transportation Division Comments on MW2 Draft TMP

Hi Jen

Transportation Division staff have reviewed the above noted study and are pleased to provide the following comments:

<u>Specific Comments</u>

- P. 22 Further to the 4th bullet in Section 4.1 "..direct access to and from Mayfield Road will be restricted and will require a supporting street network within the new development." Access to Regional Roads is governed by the Region's Controlled Access By-Law 62-2013, and Road Characterization Study (RCS); upon review of the endorsed framework plan (Fig 2.2) no direct access to Mayfield Road will be permitted for the commercial property located at the northeast corner of Mayfield and McLaughlin Road extension.

- p. 30 The report states that: "… Analysis of future background traffic conditions was undertaken as part of the analyses and concluded that the Highway 410 / Valleywood interchange would not be able to support traffic increases associated with the development of the lands located west of Highway 10 without requiring significant geometric improvements and/or reconstruction of the interchange which would be subject to a future EA Study…." Both this statement and the analysis demonstrate that the geometric improvement / reconstruction of the Hwy 410 interchange is imperative to the Mayfield West II development. One of the worst case scenarios is the delay/cancellation of improvements. Unless MTO can provide certainty, an analysis should be able to evaluate this scenario and inform how the development (number and/or schedule) and the road network deficiency (i.e. Mayfield road widening and its construction schedule) would be impacted.

- P. 31-33 The 'existing' traffic volumes in in Fig 6.1, 6.2, and 6.3 are based on 2008 volumes which are now six years old; can these volumes be updated to more recent counts?

- p. 36 The report states that: "… Although the Transportation Development Strategy Report identifies that the transportation corridor traverses through the Mayfield West Phase 2 Study Area, the MTO has no commitments to have this corridor in place by 2031. As such, a traffic assessment scenario inclusive of the GTA-West corridor has not been undertaken as part of the TMP study…."
  Need and justification of the GTA West facility has been confirmed as part of Stage 1 of the EA and is planned to be in place by 2031 to accommodate growth. Therefore, a scenario of the [GTA West Corridor by 2031] should be analysed with appropriate planning assumptions for the highway corridor (e.g. possible interchange location, change of car travel pattern).

- P. 46 Further to Table 6.7, Please review exclusive right turn lane requirements for the intersections of proposed collectors and Mayfield Road.

- P. 46 Further to Section 7.3.1, please provide projected signal warrants for all proposed roads intersecting with Mayfield Road, specifically identifying for each intersection the year in which signals are projected to become warranted.

- Please include Table 7.7, as is missing from the document.

- p. 49 The report states that: "… A key east-west arterial roadway extending from Hurontario Street to Chinguacousy Road which serves as the internal spine road, providing direct access to the various development areas within the Secondary Plan area. The Spine Road is pivotal in providing east-west capacity required to support the development, as well as accommodating transit service and linking the community with the proposed Transit Hub. The Spine Road serves as a key pedestrian and cycling corridor, linking the Village Centre, public facilities and recreational destinations by way of an interconnected system of on and off-street cycling and pedestrian facilities…"
  Part of the worst-case scenario on the Hwy 410 interchange mentioned above should review the direct impact on this Spine Road, which can have a significant impact to the role/function for the Spine Road and to the type of land use designation along.

<u>General comments:</u>

- It is our understanding that the road connectivity with MWI is limited due to the physical separation Hwy 410 and Hwy 10, and that bike lanes are proposed to connect to the Valleywood Community as mentioned in Section 9.5.1. Are there any other options (specific to roads) that would connect MWII and MWI/Valleywood, to support various services e.g. transit vehicles, emergency vehicles, community facilities/parks/businesses/etc… Would the Highway 410 / Valleywood interchange reconfiguration be an opportunity?
- Please add to the report a discussion of goods movement traffic (origin/destination/through traffic)
- Please add descriptions of the master plans/major studies done in the area e.g. Peel's Long Range Transportation Plan Update 2012, Road Characterization Study, Strategic Goods Movement Network Study, Caledon Transportation Needs Study Update 2009, MW I transportation study, and Hurontario/Main LRT project.
- Please note the following completed/ongoing EAs: Mayfield Road, from Chinguacousy to Heart Lake, and Mayfield Road, Chinguacousy to Winston Churchill. Please contact Neal Smith (905-791-7800 x7866) for further details.

- Active Transportation requirements/comments will follow separately.

Future requirements (note that this is not an exhaustive list)

- Detailed functional layout of Mayfield Road and Dixie Road illustrating property fabrics will be required at the proposed intersections for our review. Please be advised that additional property over and above that identified in the **Regional Official Plan - Schedule F** will be required as a result of the design requirements. In accordance with Regional policy, within 245 metres (in both directions, from the centreline of the intersection), we will require an additional 5.5 metres for a single left turn lane configurations, and an additional 9 metres, within 245 metres (in both directions, from the centreline of the intersection) for dual left turn configurations. Please be advised that the **ESR for Mayfield Road, from Heart Lake to Chinguacousy** identified the need for dual left turn lanes at the intersection of Chinguacousy and Mayfield Road. Please contact Brampton Transit for any additional transit related requirements and provide supporting documentation for our files and review;
    - The developer will be required to submit Letters of Credit in the 100% of the total cost of the installation of future traffic control signals at the future road intersections along Mayfield Road. Traffic control signals will only be installed when warranted as per the **Ontario Traffic Manual Book 12** or otherwise directed by Regional council. The developer will also be required to enter into and register on title a full moves access maintenance agreement for the maintenance of future traffic control signals.

Thanks,

Tina Detaramani, MCIP, RPP
Principal Planner, Transportation Division
Public Works
905-791-7800 ext 4554

Bill O'Brien

From: Rouskov, Natalie (MTO) [Natalie.Rouskov@ontario.ca]
Sent: Wednesday, September 10, 2014 2:05 PM
To: Tim Manley
Subject: FW: Please provide your comments on the Draft MW2 Transportation Master Plan

Good Day Tim,

I have undertaken a review of the Draft TMP for Mayfield West Phase 2 as it relates to the GTA West EA Study. Please note that these comments relate to the GTA West EA Study. Other relevant planning, engineering and corridor management functions may have additional comments. I recommend that you confirm that the Draft TMP has been circulated to MTO Corridor Management Office. Please let me know if you require contact information. The comments are as follows:

- Please confirm the comment on Page 23 under section 4.3 regarding spare capacity to accommodate travel needs on the 410 with specific references and data, as this comment can be seen as misleading.
- Under section 6.3.3 GTA West Corridor EA Study – please revise/edit/remove the first paragraph as it is outdated at this point in time. The need for an East-West corridor was identified in Stage 1.
- Under the same section, the statement “the MTO has no commitments to have this corridor in place by 2031” is inaccurate. Instead, it should read that funding for the GTA West is not on the current five year program.
- Figure 7.1 – the coloured lines indicating arterials/collectors etc obscure the name of the road on the figure making it difficult to identify each specific road.
- Figure 7.1 should indicate that the connection to 10 is pending the findings from the GTA West EA study and future Valleywood/410 EA studies.
- The Transit Plan is dependent on the connection to the Hwy 10/Valleywood IC – but configuration of this IC, depending on the GTA West EA may preclude a Spine Road connection – has an alternate location for the transit hub been considered?
- Figure 9.1 implies a crossing of Hwy 10 for the multi-use trail. The ministry does not allow at-grade crossings of our facilities. Is Caledon proposing to undertake a grade-separated crossing?
- Similarly, pedestrian/cyclist connections across Hwy 10 at Valleywood may be precluded by the GTA West EA.
- Section 11.3 – the secondary plan is subject to the findings of the GTA West EA because it falls within the study area boundary. It should be noted that the phasing of development and roads is subject to the GTA West EA and should not preclude any potential route locations. A similar paragraph to the one in section 11.1.1 should be noted here.

Happy to discuss further.

Regards,
Natalie

Bill O'Brien

From: John Richard [John@nak-design.com]
Sent: Monday, September 22, 2014 3:09 PM
To: Bill O'Brien (billobrien@cogeco.ca)
Cc: Tim Manley; Jennifer Mahoney
Subject: MW2 - Preliminary Street Sections
Attachments: MW2-preliminary street sections-Arterial-sep22-14.pdf; MW2-preliminary street sections-Collector-sep22-14.pdf; MW2-preliminary street sections-Local-Window-Lane-sep22-14.pdf; MW2-preliminary street sections-Spine Road A-sep22-14.pdf; MW2-preliminary street sections-Spine Road B-sep22-14.pdf; MW2-preliminary street sections-Spine Road C-sep22-14.pdf; MW2-preliminary street sections-Spine Road D-sep22-14.pdf; MW2-preliminary street sections-Spine Road E-sep22-14.pdf

Hi Bill,
Following recent meetings to discuss comments related to the CDP draft with the MW2 landowner group and Town staff, we have reviewed our representation of the various street sections, particularly those related to the Spine Road, and made some adjustments. The bulk of these adjustments were undertaken to provide a clearer picture of where these sections are located, beyond the A-E streetscape zones indicated in the Spine Road section of the CDP (for instance, in most cases the island median is only associated with the intersection). We have attached the revised for your review and comments and ask that you also consider the following potential deviations from your sections –

1. We are proposing a consistent sidewalk offset of 0.5m from the property line throughout in order to maximize the boulevard width for street tree growth.
2. We have tried to establish a sidewalk width that has some consistency and responds to the scale of the roadway and anticipated pedestrian levels.
3. Both the landowner group and City engineering staff had commented that they don't agree with having sidewalks on both sides of the street for Local Roads. Our position is that sidewalks on both sides are consistent with a pedestrian-oriented mandate and will contribute to walkability and transit use because of more convenient connections. As well, this community will, undoubtedly, have a significant percentage of young families and retirement aged residents who will benefit from a more responsive walking environment.
4. We have some concerns about where the joint use utility trench is shown on your sections and how these locations will significantly impact the availability of soil and long term growth potential of street trees. I believe the Town's landscape architecture and urban design staff will indicate a similar concern. We anticipate that these current locations will be defended by some engineering staff, but it is something we intend to bring up for discussion. We have had luck in convincing other municipalities to locate the trench below the sidewalk and we think MW2 will benefit significantly from a similar condition.

We look forward to your thoughts.

Thanks,

JOHN RICHARD, OALA, CSLA
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Bill O'Brien

From: Lagakos, Ted (MTO) [Ted.Lagakos@ontario.ca]
Sent: Wednesday, September 24, 2014 9:13 AM
To: Tim Manley
Cc: Marinelli, Mike (MTO); Rouskov, Natalie (MTO); Hussain, Kashif (MTO)
Subject: RE: Please provide your comments on the Draft MW2 Transportation Master Plan

Good morning Tim,

We completed our review of the subject Master Plan and we offer the following comments. Please note that these comments are in addition to those submitted by our GTA West Group to the Town on September 10, 2014:

As per the report, the analysis, findings and recommendations contained in Mayfield Phase 2 Traffic impact studies A and B are used for preparation of this transportation master plan. The Traffic Impact Reports for Part A (existing conditions) and Part B (Future Conditions) were prepared in 2009 and 2010 on the basis of 2007 & 2008 volumes and data. Since 2010, many changes are occurred within the study area and volumes are changed significantly. The Ministry has previously submitted comments related to those studies. Please incorporate those comments in the TIS's and update this report accordingly.

Please carryout analysis of Highway 410 interchange off-ramp terminals at Valleywood and present the results within the report.

Please also include Highway 410 interchange at Mayfield Drive within the study area and present the analysis results in the report.

More detailed analysis including Micro-simulation modeling (Vissim modeling) is required to assess the proposed Valleywood Interchange modification option and the impact of additional traffic to be generated by the Mayfield West Phase 2 on the adjacent ministry highway network.

Please explain in detail method for future forecasting and how growth factors are calculated to establish future background traffic estimates.

Increased peak hour traffic may have significant impacts on Highway 401 traffic flow. Please conduct detailed analysis to identify impacts on travel times and speeds, and recommend if

' improvement is required on the highway.

For the year 2031 PM total traffic scenario, the proposed Spine Road and Hurontario Street intersection will operate at v/c ratio equals to 0.92 with WBT move approaching at capacity (v/c = 0.99). The WB traffic at the intersection will most probably backs up to the North Bound off-ramp terminal. Therefore, it is recommended to carryout Sim Traffic analysis and the result of 95th percentile queue lengths are to be presented in the report.

2008 volume counts used in the study are too old to demonstrate the current traffic conditions/ patterns within the area. Moreover, it will give erroneous results if used to forecast future horizon year volumes. Therefore, it is recommended to please carryout latest Turning Movement Counts and revised the analysis accordingly.

Please follow MTO traffic impact guidelines for analysis of intersections/ramp terminals within and adjacent to the ministry highway network. As per the guidelines, v/c ratio of 0.75 for off-ramps and 0.85 for other moves, are deemed critical for the operations, and geometric improvements may be considered.

Traffic analysis is required to justify the report recommendation that some initial developments could occur without impacting the 410 Valleywood interchange operations.

Please submit digital Synchro files with the revised reports for review.

Please revise the plan accordingly and resubmit for our review and comments.

I apologise for the delay in our response. Please contact me at the number listed below if you have any questions.

Take care,

Ted Lagakos
Senior Project Manager, Peel Region
Central Region Corridor Management Section
Ministry of Transportation
1201 Wilson Avenue
Building D, 7th Floor
Toronto, ON M3M 1J8

Phone: (416) 235-3593

Email: ted.lagakos@ontario.ca

From: Tim Manley [mailto:tim.manley@caledon.ca]
Sent: September-09-14 10:01 AM
To: Lagakos, Ted (MTO)
Subject: RE: Please provide your comments on the Draft MW2 Transportation Master Plan

Hi Ted: September 22 works for me. If it looks like it will be longer, please let me know as soon as you can. Thanks.

Tim Manley, MCIP, RPP
Senior Policy Planner
Development Approval & Planning Policy Department

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From: Lagakos, Ted (MTO) [mailto:Ted.Lagakos@ontario.ca]
Sent: Tuesday, September 09, 2014 9:54 AM
To: Tim Manley
Subject: RE: Please provide your comments on the Draft MW2 Transportation Master Plan

Tim,

I apologise I cannot provide an exact date at this time. I am hoping to have something to you by September 22nd. Call me if you would like to discuss further.

Ted Lagakos
Senior Project Manager, Peel Region
Central Region Corridor Management Section
Ministry of Transportation
1201 Wilson Avenue
Building D, 7th Floor

Toronto, ON M3M 1J8

Phone: (416) 235-3593
Email: ted.lagakos@ontario.ca

From: Tim Manley [mailto:tim.manley@caledon.ca]
Sent: September-09-14 9:50 AM
To: Lagakos, Ted (MTO)
Subject: RE: Please provide your comments on the Draft MW2 Transportation Master Plan

Hi Ted: When you say "a few weeks", any chance you could be a little more specific? I'm trying to organize a series of events and need to know when I can expect comments from MTO. Thanks.

Tim Manley, MCIP, RPP
Senior Policy Planner
Development Approval & Planning Policy Department

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From: Lagakos, Ted (MTO) [mailto:Ted.Lagakos@ontario.ca]
Sent: Tuesday, September 09, 2014 9:24 AM
To: Tim Manley
Cc: Rouskov, Natalie (MTO); Aurini, Shawn (MTO)
Subject: FW: Please provide your comments on the Draft MW2 Transportation Master Plan
Importance: High

Good morning Tim,

The subject plan is still being reviewed by the Ministry. I am hoping to provide a response to the Town in a few weeks.

Sorry for the delay in our response. Call me if you have any questions, Comments on MW P2 and Transportation Master Plan

If the focus is to promote an active lifestyle that includes walking and cycling, the ideal scenario will ensure that any recreational facilities are close to transit, transit stops are close to office/commercial lands and that commercial lands are located in an area that will reduce the walking radius and improve access from the east and west limits of the development.

Improve links from MW P2 to existing neighbourhoods to the south and east. This should include connecting to the Etobicoke Creek Trail.

The cycling route proposed to cross Hurontario, the proposed rail crossing and any bike routes that enter a roundabout should be carefully designed.

Future site plan applications within MW P2 should be reviewed to ensure that there is appropriate and sufficient bike parking to promote and support active transportation.

Recommend a review of the bike lane widths identified on Table 9.4 Pedestrian and Cycling Infrastructure Requirements (page 83) and confirm whether the widths should be adjusted based on the proposed speed limit of each road in the development.

There are inconsistencies between Chapter 7 and Chapter 9 in terms of cycling facilities on collector roads, Chapter 7 should be adjusted to align with Chapter 9. On-road cycling facilities on collector roads should be in the form of marked bike lanes, which should be present on all internal collector roads. Wide shared lanes should only be used in transition areas and should not be identified as an alternative to marked bike lanes.

It is preferred that two stage bike boxes (‘Copenhagen Lefts’) be provided at signalized intersections. Stop bar bike boxes should not be used.

Ensure that trail signage is mapped and installed along the entire proposed network. This includes appropriate bike route vs multi-use trail signage, or directional signage that will identify connecting routes. This signage should be installed as part of the development and considered in the overall estimated costs. Part of the signage mapping should identifying locations for signage that may be required as users approach the development.

LEA Consulting Ltd.
Consulting Engineers & Planners
Suite 900, 625 Cochrane Drive, Markham, ON, L3R 9R9 CANADA
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October 8, 2014 Our Ref.: 8619/200

Mr. Tim Manley, MCIP, RPP
Senior Policy Planner
Development Approval & Planning Policy Department
Town of Caledon
6311 Old Church Road
Caledon, Ontario
L7C 1J6

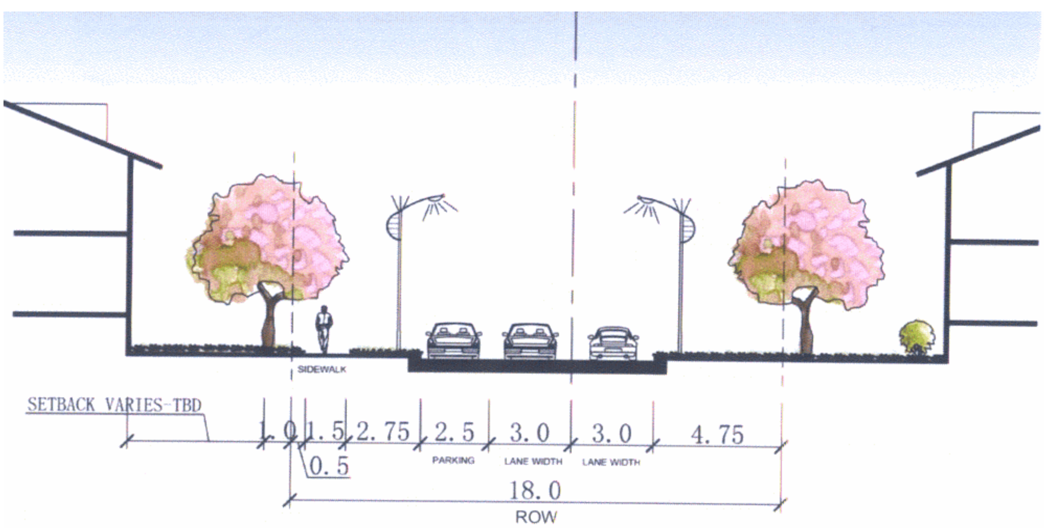
Dear Mr. Manley:

Re: Mayfield West Secondary Plan – Phase 2 Transportation Master Plan Draft Report

We have reviewed the Mayfield West Secondary Plan – Phase 2 Transportation Master Plan Draft Report, dated July 21, 2014 and have the following comments/concerns:

1. Sidewalks for local roads

Local roads at 18.0 m or 20.0 m ROW are expected to have two sidewalks. Applying the Caledon Standards 202 and 203, as indicated in the TMP, will result in the 18.0 m ROW not being able to accommodate on-street parking, due to the narrower pavement width of 7.9 m, unless the Town permits on-street parking with this pavement cross-section. From our involvement with Mayfield West Phase 1, I recall that the local street cross-section (18.0 m ROW) had a sidewalk on one side, allowed for on-street parking, and was as follows:



Further, as the on-street parking requirements for single unit, semi-detached and townhouse units are very onerous, at 1.0, 1.0 and 0.5 spaces/unit, respectively, the 18.0 m local road cross-section requirement, if it doesn't permit on-street parking, may work against the on-street parking requirements (more on this in Section 2.).

2. Residential Parking Requirements

The on-street parking requirements are very onerous for the single, semi-detached and townhouse units. Below is the requirement proposed in the TMP.

It is therefore recommended that two parking spaces be accommodated on-site (i.e. driveway and garage) and that each single-family and semi-detached residential unit, irrespective of density, be required to provide 1.0 additional on-street parking space within a close proximity to the residential lot being served. A reduced on-street parking rate of 0.5 spaces per townhouse unit is recommended which takes into consideration higher density uses and transit-supportive design. The recommended residential parking requirements are summarized in **Table 10.3** for further reference.

TABLE 10.3: RESIDENTIAL PARKING REQUIREMENTS

Dwelling Type	Minimum Parking Requirement
Single Family Detached	3.0 spaces per unit
Semi Detached	3.0 spaces per unit
Street Townhouse	2.5 spaces per unit

In particular, given the narrow lots and closely spaced driveways associated with semi-detached and townhouse units, it is unlikely that the above on-street parking requirements could be achieved.

Further to the above, such a large parking requirement seems counter-productive to achieving the objectives of increasing Active Transportation (walking, cycling) and promoting transit usage. Rather than designing streets to have a specified amount of on-street parking spaces to accommodate residential development, the amount of on-street parking would simply be a function of what the streets are capable of supplying after considering the land uses and community design for which they serve.

3. Rail Grade Crossings

We have reviewed the rail crossing analysis in the TMP and agree that grade separations would not be required for the two planned road/rail crossings.

4. Transit Bays

An eight (8) bay bus terminal in the transit hub appears to be very large for the MWP2 community. We have planned and designed bus terminals for York Region Transit and the Toronto Transit Commission, which have involved bus terminals with numerous routes and high frequency turnover, but less bus bays. Our experience would suggest that if you had one bay for GO Transit, two bays for ZUM BRT and two bays for local transit, there would be sufficient capacity for this transit hub. The ZUM and GO services could even share two bus bays, given the longer headways that would be expected.

5. EA Requirements for Roads

The Spine Road from Chinguacousy Road to Hurontario Street is shown to require a Municipal Class EA under Schedule C. Could you advise what is triggering this requirement, as most major collector/ minor arterial roads in new subdivisions are constructed without the need of a Schedule C EA.

Table 11.1 indicates that the Environmental Assessment Study for the Spine Road should be completed before any development takes place. However, we note that page 103 of the TMP report states that development beyond the area shown in Figure 11.1 should not proceed until such time as the EA for the Spine Road is complete. Page 103 appears to be in contradiction to Table 11.1.

Assuming that the Spine Road requires a Schedule C EA, does the Town intend to make the EA the responsibility of the MWP2 landowners and their consultants, or will the Town be undertaking the EA?

6. Development Phasing

The methodology applied in the TMP to determine the amount of development that can occur prior to the Highway 410 interchange improvements is very arbitrary, as is the selected "Potential Initial Development Area" boundary. Further, it assumes that all traffic from the "potential initial development area" would travel east-west along Mayfield Road. This is not a realistic assumption and does not even follow the distribution assumptions applied in the TMP for the assignment of trips. Further, in reviewing the limited traffic volume diagrams provided (background and future total traffic), it appears that MWP2 site trips have been assigned across Mayfield Road, between Chinguacousy Road and Hurontario Street, with no origin or destination in MWP2.

We would appreciate receiving all of the trip assignment diagrams so that we can understand how trips were assigned to the road network. Separate assignments for residential trips, commercial trips and employment trips would be appreciated.

Analyses previously undertaken by LEA showed that 70% to 80% of full development could take place prior to completion of the Highway 410 interchange improvements. As the Highway 410 interchange modifications are costly and subject to funding, require 3rd party approvals (MTO) and could be delayed beyond projected schedules for these or any number of other reasons, the determination of how much MWP2 development can proceed prior to completion of the Highway 410 interchange improvements should be a key consideration in the TMP. Because of the importance, it should be undertaken using a more detailed methodology than that which has been applied in the TMP, such as intersection capacity analysis along Mayfield Road and at the Highway 410 ramps on Mayfield Road.

We continue to have concerns regarding the development phasing proposed in the TMP and will have more comments in the coming days and weeks. We also continue to review the interim and permanent connections of the Spine Road to the Highway 410/Hurontario interchange, and will provide you with further comments on that.

Should you have any questions, please do not hesitate to contact me at 905-470-0015 extension 234 (twallace@lea.ca).

Yours very truly

LEA Consulting Ltd.

Terry Wallace, P.Eng.
Vice President
Transportation Engineering

:tgw

cc. Mayfield West Landowners Group
Brian Sutherland, Glen Schnarr & Associates Inc.

Bill O'Brien

From: David Hurst [David.Hurst@caledon.ca]
Sent: Friday, October 10, 2014 12:39 PM
To: Tim Manley
Subject: Mayfield West Phase 2-Draft Transportation Master Plan Report

Hi Tim,

Please be advised that I have now completed my review of the above noted report and I would ask that the following be addressed:

1. As discussed, the Master Plan report should identify and address all proposed transportation works which have been included in the latest DC Bylaw. Although typically the requirement for these works such as timing and who is responsible to construct will ultimately be addressed through a DCCA agreement with the landowners, it may be beneficial to also include some verbiage in the Master Plan report that may help assist in preparing the DC agreement. The report should also identify transportation works that will not be subject to the DC Bylaw(traffic signals, traffic calming). This should address timing requirements and who will ultimately be responsible to construct or install.
2. An overall traffic management plan recommending traffic calming measures and their locations required throughout the secondary plan should be included as part of this report and not to be determined later through the various future subdivision applications as indicated.
3. The following additional figures should be included in the report: intersection lane configuration(arrows), proposed transportation network plan that includes all traffic calming locations, all signalized intersections and stop controlled intersections, a colour coded road configuration plan showing the various right of ways width.
4. All proposed right of way cross-sections should be included in the report.
5. Paridigm should confirm why they only chose one location for a roundabout?

David Hurst, C.E.T.
Senior Development Engineering Coordinator Development Section-West Development Approval and Planning Policy

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From: Tim Manley [tim.manley@caledon.ca]
Sent: Tuesday, October 21, 2014 9:39 AM
To: Bill O'Brien
Subject: FW: Please provide your comments on the Draft MW2 Transportation Master Plan
Hi Bill: I received these comments from City of Brampton today.

Regards
Tim.

Tim Manley, MCIP, RPP
Senior Policy Planner
Development Approval & Planning Policy Department

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From: Oliveira, Andria [mailto:Andria.Oliveira@brampton.ca]
Sent: Tuesday, October 21, 2014 9:22 AM
To: Tim Manley
Subject: RE: Please provide your comments on the Draft MW2 Transportation Master Plan

Hi Tim,

My apologies for the delay in comments. Brampton Long Range Transporta on Planning staff have reviewed the draft and are happy to provide the comments below for your considera on:

- Page 8- Sec on 2.1.1/MTO – should the Highway 410 improvements, between 401 and Queen Street be included?
- Page 8-Sec on 2.1/City of Brampton:
  - Add "2009" before "Transporta on and Transit Master Plan"
  - Add reference to Brampton's Mount Pleasant Block 51-2 Collector Road EA Study (2013)
  - To add clarity, the 2009 TTMP indicates widening of Chinguacousy Rd. includes 4 lanes between Bovaird Drive West and Mayf eld Road by 2021, and 6 lanes from Bovaird Drive West to Wanless Drive by 2031.
  - City of Brampton staff also notes for the Town of Caledon's reference that the Transporta on Master Plan for Brampton's Secondary Plan Areas 52 and 53,also known as Heritage Heights is currently underway. The Heritage Heights Transporta on Master Plan is a component study for the development of the Heritage Heights Secondary Plan. It is unlikely that this informa on is required to be included in the document, but is benef cial to note for future collabora on.

- City of Brampton staff also note that the City's Transporta on Master Plan is currently undergoing an update, which is expected to be complete in Winter 2015. It is unlikely that this informa on is required to be included in the document, but is benef cial to note for future collabora on.

- Page 10-Table 2.1: "Results in the need to widen and provide localized improvements along Chinguacousy Road, McLaughlin Road and a widening of Heart Lake Road" clarify if the stated road segments are in Caledon.

If you have any ques ons or comments, please do not hesitate to contact me.

Thanks very much,

Andria

Andria Oliveira
Policy Planner, Transportation & Infrastructure
Long Range Transportation Planning
Planning & Infrastructure Services

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From: Tim Manley [mailto:tim.manley@caledon.ca]
Sent: 2014/07/21 4:18 PM
To: Andrew Brown (LEA); Oliveira, Andria; Anthony Caruso (Metrolinx); Bill O'Brien (Paradigm); Hale, Brad; Brian Sutherland (Glen Schnarr & Assoc); Damian Jamroz (Region of Peel: Traffic Development); David Hurst; Stowe, David; Rieger, Doug; Emanuel Nicolescu (LEA); Eric Chan (Region of Peel: Transportation Planning); Gayle Gorman (Peel Real Estate); Zbogar, Henrik; Jason White (MTO: Highway Engineering); Jennifer Maestre (Region of Peel: Development Services); Jennifer Mahoney (NAK Design); Jin Wang (MTO: Planning & Policy); John Richard (NAK Design); John Van der Mark (Paradigm); Kant Chawla; Kaylan Edgcumbe (Paradigm); Marcus Bowman (Metrolinx); Margie Chung (Region of Peel: Transportation Planning); Nancy Tuckett (Town of Orangeville: OBRY Railway; Natalie Rouskov (MTO: GTA-West Team); Rose Hercia (Peel Real Estate); Ryan Grodecki; Sherwin Gumbs (GO Transit: Senior Planning Officer); Tim Manley; Tina Detaramani (Region of Peel: Transportation Planning)
Subject: Please provide your comments on the Draft MW2 Transportation Master Plan

Re: Mayf eld West Phase 2 Secondary Plan (MW2)
Draft Transporta on Master Plan

Hello everyone:
Please use the link below to obtain your copy of the Draft MW2 Transporta on Master Plan (TMP).
Within the drop box folder you will see 2 f les – TMP Appendices & TMP Report.

Please review the TMP as is relates to your area of exper se and/or interest & submit your comments to me by **September 5th**.

Thanks
Tim.

Link to MW2 Transporta on Master Plan
h ps://www.dropbox.com/sh/9fgujm87qtgqs09/AADhA5oa42KSLOqdQ_j7mi5xa

Tim Manley, MCIP, RPP

From: Tim Manley [tim.manley@caledon.ca]
Sent: Tuesday, January 20, 2015 4:24 PM
To: John Richard (NAK Design); Bill O'Brien; John Van der Mark (Paradigm)
Subject: FW: Mayfield West Phase II Comments

Importance: High

Hi John / Bill / John: I received these comments from the Town's Public Work's team today – please see below; they pertain to both the community design plan and the transporta on master plan. I'll update the comments and response table, as needed, that I circulated yesterday.

Regards,
Tim.

Tim Manley, MCIP, RPP
Senior Policy Planner
Development Approval & Planning Policy Department

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cid:image001.jpg@01CFA29A.8110AA10

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From: Lucius Maitre
Sent: Tuesday, January 20, 2015 11:03 AM
To: Tim Manley
Cc: David Loveridge; Ryan Grodecki; Mike Beattie
Subject: Mayfield West Phase II Comments
Importance: High

Tim;

Please f nd a list of items we thought needs to be keep top of mind through the Phase II process. If you have any ques ons or comments please let us know.

- Minimize the number of storm ponds – where possible u lize regional ponds
- Minimize number of cul de sacs – causes opera onal problems
- Minimize number of phases and/ or develop in a logical geographical sequence
- Require comprehensive vibra on study for future houses near railway or busy roadways
- External works i.e. widening of McLaughlin Rd., Chingacuosey Rd. should occur earlier in the development process than later

- Minimize length and heights of noise walls (would require lots further away from Mayf eld Road i.e. place storm ponds adjacent to Mayf eld)
- For storm water Large 100 year storm sewers should be examined.
- Spine Road and east west road to the south should be constructed to Chinguacousy Road.
- Live work Units as being proposed are not well received in other municipali es, what is so different about Caledon?

- Traffic on the spine road will be a detriment to live work units. The Urban Village should be located away from the Spine Road. Live work units should allow commercial establishments such as sandwich bars, dry cleaners etc.

- This whole concept of the Spine Road is dependent on MTO agreeing to the interchange at Hurontario Street (HWY 10) and Valleywood Boulevard. In Phase 1 of Mayf eld West, the Secondary Plan shows a Gateway Feature at Dougall and Highway 10 that was never approved by MTO, and as was recently communicated to us by MTO. Is there a Plan "B" for this Spine Road.

- A "Plan B" for Phase 1 could have included a Service road connec ng Dougall to Old School Road. A similar service road could link the Spine road to Old School Road.

- Is there a conceptual design for the interchange improvements at Valleywood and Hwy 10. Also the road network for the intersec on improvements will extend into Brampton

Some Comments provided during review of the TMP. We include them here for completeness.

	Sec on	Page	Ac on	Discussion
1	7.1	50	Rephrase "Collector roads to accommodate cycling facili es (i.e. on-road bike lanes or shared lanes) will have 1.5 metre bike lanes or a 1.5 metre widening;" to "Collector roads to accommodate cycling facili es in the form of 1.5 metre bike lanes;"	Wide shared lanes increase vehicle speeds and decrease cyclist comfort.
2	Table 7.2	54	Under **Collector Roads No Parking** remove "or widening" with respect to cycling facili es.	See 1
3	Table 7.2	54	Remove row **Collector Roads One Sided Parking**	Disrup ng cycling facili es in favour of parking nega vely impacts the func onality of the cycling network and undermines the TMP objec ve statement
4	Table 7.6	64	Replace Traffic Circle and Mini Roundabout with Full Roundabout	Traffic circles and mini roundabouts are not appropriate devices for a gateway feature or collector-arterial transi on. A full roundabout with a landscaped non-traversable centre island would be appropriate for this loca on.
5	Table 7.4, Table 7.5	62, 63	Add Full Roundabout under Horizontal Def ec on	

6	9.4.1, Figure 9.1, Table 9.4	79, 82, 83	Remove men on of "wide curb lanes" and "shared lanes" on collector roads	See 1
7	Chapter 9	-	Add a sec on on cycling treatments at signalized intersec ons recommending the use of dedicated left turn bike lanes or two stage left turn queue boxes	Accommoda ng cyclists at signalized intersec ons improves LOS for cyclists, reduces automobile-cyclist conf icts and promotes compliance by cyclists for traffic control devices.

Regards,

Lucius Maitre, M.Eng, MASc., P.Eng, PMP
Manager, Engineering
Public Works Department

Town of Caledon
6311 Old Church Road
Caledon, Ontario L7C 1J6

T: 905.584.2272 x.4061
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From: Tim Manley [tim.manley@caledon.ca]
Sent: Thursday, April 23, 2015 4:26 PM
To: Kant Chawla; Ryan Grodecki; Bill O'Brien; Jason Afonso (jasona@gsai.ca)
Cc: Haiqing Xu
Subject: FW: Please provide your comments on the Draft MW2 Transportation Master Plan

Below for your review and f le are comments that I have received from City of Brampton with respect to the dra MW2 Transporta on Master Plan.

Regards,
Tim.

Tim Manley, MCIP, RPP
Senior Policy Planner
Development Approval & Planning Policy Department

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From: Oliveira, Andria [mailto:Andria.Oliveira@brampton.ca]
Sent: Tuesday, April 14, 2015 5:37 PM
To: Tim Manley
Cc: Cooper, Pam; Hale, Brad; Zbogar, Henrik
Subject: RE: Please provide your comments on the Draft MW2 Transportation Master Plan

Hi Tim,

To follow up on the City of Brampton's previous comments, staff have reviewed the Draft Transporta on Master Plan for MW2 and have some addi onal comments for your considera on:

- The MW2 Transporta on Master Plan states that Collector Road F is proposed to align with Robertson Davies Drive, providing a connec on south of Mayf eld Road via Cresthaven Road which provides access to Wanless Drive. On Schedule B in Brampton's Official Plan, Robertson Davies Drive is a local road, not a collector, and the OP states that "Through traffic will be discouraged from using such local roadways." It is staff's concern that with the connec on of proposed Collector F to Robertson Davies Drive, that traffic from the proposed regional commercial centre will use Collector Road F/Robertson Davies Drive rather than using the Spine Road to connect to Hurontario Street. Brampton staff would like to know if it is possible to study the traffic impacts of the Regional Retail site on the local transporta on network, in order to advise on any traffic calming or movement mi ga on measures that may be needed when connec ng to Robertson Davies Drive.

- On page 30, the MW2 Transporta on Master Plan also states that "Analysis of future background traffic condi ons was undertaken as part of the analyses and concluded that the Highway 410 / Valleywood interchange would not be able to support traffic increases associated with the development of the lands located west of Highway 10 without requiring signif cant geometric improvements and/or reconstruc on of the interchange which would be subject to a future EA Study." It is staff's concern that the draft OPA states, "The need to connect the new east west spine road to the provincial highway system has been iden f ed as necessary to support the full build-out of MW2. The Town is commi ed to a solu on which will result in the crea on of a Highway 410 / Hurontario Street and spine road connec on to support the full build-out of the Plan Area." Does anyone know what this "solu on" will be? Has the Town of Caledon worked with the Ministry of Transporta on to determine how this connec on will take place?
- Figure 7.1 Recommended Road Network Plan, should be revised to show the exis ng residen al area at the north west corner of Hurontario Street and Mayf eld Road, where Collector Road F is supposed to connect to Robertson Davies. This residen al area has been completely covered with the legend, which is inappropriate as road connec ons between MW2 and Brampton should be shown.
- Figure 8.1Transit Plan should be revised to show the exis ng residen al area at the north west corner of Hurontario Street and Mayf eld Road and also the exis ng bus route (Brampton Transit Route 24). Brampton Transit currently runs along Robertson Davies/Collingwood, and will most likely con nue north along Collector Road F to the transit hub (as shown in Figure 8.2).
- Sec on 8.2.1 Local Transit speaks to many exis ng Brampton transit routes that could be extended into Caledon, it may be useful to highlight Route 24 which is an exis ng route in this sec on.

If you have any ques ons, please do not hesitate to contact me.

Thanks very much and my sincerest apologies for these delayed comments.

Andria

Andria Oliveira
Policy Planner, Transportation & Infrastructure
Long Range Transportation Planning
Planning & Infrastructure Services

City of Brampton
2 Wellington Street West
Brampton, ON L6Y 4RT
Tel: (905) 874-2410
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From: Tim Manley [mailto:tim.manley@caledon.ca]
Sent: 2014/10/21 9:40 AM
To: Oliveira, Andria
Subject: RE: Please provide your comments on the Draft MW2 Transportation Master Plan

Thanks Andria. I have passed along your comments to the consultant team. If we have any ques ons we'll be in touch.

Regards
Tim.

Tim Manley, MCIP, RPP
Senior Policy Planner
Development Approval & Planning Policy Department

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From: Oliveira, Andria [mailto:Andria.Oliveira@brampton.ca]
Sent: Tuesday, October 21, 2014 9:22 AM
To: Tim Manley
Subject: RE: Please provide your comments on the Draft MW2 Transportation Master Plan

Hi Tim,

My apologies for the delay in comments. Brampton Long Range Transporta on Planning staff have reviewed the draft and are happy to provide the comments below for your considera on:

- Page 8- Sec on 2.1.1/MTO – should the Highway 410 improvements, between 401 and Queen Street be included?
- Page 8-Sec on 2.1/City of Brampton:
  - Add “2009” before “Transporta on and Transit Master Plan”
  - Add reference to Brampton’s Mount Pleasant Block 51-2 Collector Road EA Study (2013)
  - To add clarity, the 2009 TTMP indicates widening of Chinguacousy Rd. includes 4 lanes between Bovaird Drive West and Mayf eld Road by 2021, and 6 lanes from Bovaird Drive West to Wanless Drive by 2031.
  - City of Brampton staff also notes for the Town of Caledon’s reference that the Transporta on Master Plan for Brampton’s Secondary Plan Areas 52 and 53,also known as Heritage Heights is currently underway. The Heritage Heights Transporta on Master Plan is a component study for the development of the Heritage Heights Secondary Plan. It is unlikely that this informa on is required to be included in the document, but is benef cial to note for future collabora on.
  - City of Brampton staff also note that the City’s Transporta on Master Plan is currently undergoing an update, which is expected to be complete in Winter 2015. It is unlikely that this informa on is required to be included in the document, but is benef cial to note for future collabora on.

- Page 10-Table 2.1: “Results in the need to widen and provide localized improvements along Chinguacousy Road, McLaughlin Road and a widening of Heart Lake Road” clarify if the stated road segments are in Caledon.

If you have any ques ons or comments, please do not hesitate to contact me.

Thanks very much,

Andria

Follow-up Meetings Notes & Minutes

Meeting Notes

PROJECT: MAYFIELD WEST PHASE 2 TRANSPORTATION PLAN
PROJECT NUMBER: 101380

Paradigm Transportation Solutions Limited

DATE: August 15, 2014

LOCATION: CALEDON TOWN HALL

ATTENDEES:

NAME	AGENCY	NAME	AGENCY
JOHN RICHARD	NAK DESIGN	TIM MANLEY	CALEDON
PETER GORSKI	OBRAG	BILL O'BRIEN	PARADIGM
STEVE GALLAGHER	CANDO	NANCY TUCKETT	ORANGEVILLE
TONY DULISSE	ORANGEVILLE		

PURPOSE: DISCUSSION OF ORANGEVILLE BRAMPTON RAILWAY LINE IN MAYFIELD WEST PHASE 2 (MW2) SECONDARY PLAN AREA

Item	Discussion	Action By
1	Tim Manley reviewed the background to the MW2 Secondary Plan, the planning activities that have been conducted over the past several years and the stakeholder consultation activities. He noted that the Town of Orangeville has been circulated on the notices of stakeholder consultation activities.	
2	John Richard reviewed several exhibits that illustrated the conceptual treatment of the areas adjacent to the OBRY rail line, including the two road crossings.	
3	Bill O'Brien reviewed the transportation network within the MW2 area, including the road network, the pedestrian and cycling provisions and the transit concept plans.	
4	The interface with the rail line was discussed with the key points noted as follows:	

- The need for two road crossings was discussed and it was noted that Collector Road A crossing is important to help east – west traffic by-pass the planned village centre.
- The trail crossings of the rail line on Collector Road A were

noted as a concern by OBRY representatives. It was agreed that the trails crossings could be removed on Collector Road A but would be important to retain these on each side of the Spine Road.

- Steve suggested that gate protection on Collector Road A may be required if the intersection is within 30 m of the nearest rail. This may require a plan adjustment to avoid triggering the need for gates.

- Steve and Peter noted that pedestrian crossings should be within 11 feet of the crossing protection mast to avoid being a separate crossing.

- It was noted that a fence would be required along each side of the rail line and that OBRY would not be responsible for the maintenance of the fence.

- Steve noted that a major concern with the OBRY rail crossings is the increased potential for trespass on the rail line.

Tim Manley agreed to send Nancy Tuckett copies of the relevant reports completed to date, including the draft transportation study report. Tony advised that the Town would need external assistance to review the reports.

5 Meeting adjourned at 11:30 AM

PARADIGM TRANSPORTATION SOLUTIONS LIMITED

W. B. O'Brien

W. B. O'Brien
M.A.Sc., P. Eng.
Senior Transportation Consultant

Meeting Notes

PROJECT: MAYFIELD WEST PHASE 2 TRANSPORTATION PLAN
PROJECT NUMBER: 101380

DATE: March 30, 2015

LOCATION: **CALEDON TOWN HALL**

ATTENDEES:

NAME	AGENCY	NAME	AGENCY
RICK MANGOTICH	FIELDGATE	TIM MANLEY	CALEDON
AARON WISSON	MATTAMY	BILL O'BRIEN	PARADIGM
NORMAN GODFREY	YORKWOOD	RYAN GRODECKI	CALEDON
STEVEN SILVERBERG	LAURIER	TERRY WALLACE	LEA
FRANK FILIPPO	BROOKVALLEY	EMANUEL NICOLESCU	LEA
ADAM J CAIRNS	MELROSE	FRANCOIS TOMEO	LEA
MATT MACCHARLES	GENSTAR	JASON AFONSO	GSAI
JOHN KOKE	GENSTAR		

PURPOSE: **DISCUSSION OF LEA TRANSPORT ASSESSMENT STUDY**

Item	Discussion	Action By
1	**Review of Traffic Estimates in LEA Report** Bill O'Brien reported that Paradigm was unable to reconcile the detailed traffic estimates. The scale of the LEA simulation is much coarser then the Transportation Master Plan (TMP) (e.g., 4 versus 33 TAZ and a much coarser network). Bill agreed that the TMP estimate school trips appear high at the perimeter of MW2 (due to distribution rather than trip generation). Paradigm will further review these estimates. The LEA traffic volumes on Spine Road appear low, also around the full perimeter. Bill suggested we should deal with interpretation of studies rather than specific numbers.	

2 **Spine Road Connection to Hurontario/Highway 410 Interchange**

The LEA report identifies an at-grade connection to Hurontario as an option. It is noted that this option may be an option for short term, recognizing future improvement staging and possible GTA West plans.

The TMP suggests the Spine Road connection details will be subject to further study.

Bill O'Brien emphasized that the at-grade connection of the Spine Road to Hurontario does present some operational challenges and should be only considered as an option. He agrees it is an option to be investigated in developing the final plan.

It was agreed that it would be appropriate to forward the LEA study to MTO in response to their comments and that a meeting should be arranged to discuss the plan with MTO. Bill O'Brien suggested that the objective in meeting with MTO should be to reach agreement on the process under which the Town and MTO can move forward to develop an acceptable plan for the Spine Road connection to Hurontario and the Hwy 410/Valleywood interchange.

3 **Staging of Development without Spine Road Connection**

TMP suggests that about 35% of approved framework plan can proceed without Spine Road whereas LEA suggest 85% of plan could proceed. Without the Spine Road, any development of MW2 will be dependant on Mayfield & Hurontario intersection which is expected to reach capacity by 2031 even with improvements.

Bill emphasized that development should be limited to 35% of approved framework plan and no development east of OBRY line without Spine Road. However, additional development could be considered when 35% is reached, subject to an updated traffic study and approval by Town. Development east of Spine Road should be subject to Spine Road connection to Hurontario/Highway 410 and crossing of OBRY.

4 Next Steps

Bill O'Brien suggested the LEA study report should be attached to the final TMP report.

It was agreed that the LEA study report should be provided to MTO Corridor Mgmt and Region of Peel in response to their comments and a meeting with MTO should be requested to discuss the appropriate approach to jointly developing a plan for the Spine Road connection to Hurontario and the Hwy 410/Valleywood interchange.

Tim Manly advised that the Town would forward the report to MTO and request a meeting.

PARADIGM TRANSPORTATION SOLUTIONS LIMITED

W. B. O'Brien
M.A.Sc., P. Eng.
Senior Transportation Consultant

Meeting Notes

PROJECT: MAYFIELD WEST PHASE 2 TRANSPORTATION PLAN
PROJECT NUMBER: 101380

DATE: July 23, 2015

LOCATION: MTO DOWNSVIEW COMPLEX, BUILDING D, 4TH FLOOR BOARDROOM

ATTENDEES:

NAME	AGENCY	NAME	AGENCY
DEAN MCMILLAN	CALEDON	TIM MANLEY	CALEDON
K C PRAMOD	MTO TRAFFIC	BILL O'BRIEN	PARADIGM
KASHIF HUSSAIN	MTO TRAFFIC	KANT CHAWLA	CALEDON
ADRIAN FIRMANI	MTO RPTI	JOHN LONG	LEA
GRAHAM ROUTLEDGE	MTO CORRIDOR MGT	EMANUEL NICOLESCU	LEA
MIKE MARINELLI	MTO P&D	FRANCOIS TOMEO	LEA

PURPOSE: A) TO REVIEW THE TRANSPORTATION ASSESSMENT STUDY AUTHORED BY LEA CONSULTING GROUP, CIRCULATED BY CALEDON TO MTO IN MAY 2015; AND B) TO DISCUSS THE OPTIONS FOR CONNECTING THE FUTURE EAST WEST SPINE ROAD TO HURONTARIO STREET.

Item	Discussion	Action By

1 **Overview of Mayfield West Phase 2 Secondary Plan**

Tim Manley provided an overview of the MW2 Secondary Plan and the current status. The urban boundary expansion to incorporate MW2 has been approved through a Regional Official Plan Amendment and it is hoped that the Local Official Plan Amendment (LOPA) can be submitted to Town Council for approval in late summer or early fall of 2015. It was noted that the LOPA will include a designated area that will accommodate just over 10,000 population but the planning work provides for further development west to Chinguacousy Road and north to the Etobicoke Greek greenbelt area, for an ultimate population of about 15,650 persons.

A draft Transportation Master Plan (TMA) has been circulated to the appropriate agencies and comments received. In response to comments from MTO. LEA Consultants has conducted a further transportation assessment, addressing a larger area of impact, as requested by MTO in their comments.

2 LEA Transportation Assessment

Francois Tomeo provided an overview presentation of the LEA assessment. It was noted that recent traffic counts were used to assess the existing conditions and the Peel Region EMME2 model has been used to estimate trip generation and distribution for the study area. The Aimsum model was used in the assessment to assign peak hour trips to the study area network. An option for the Spine Road connection to Hurontario Street with a signalized intersection has been assessed and found to operate in a reasonable manner.

In the discussion it was noted by MTO staff that the intersection spacing guideline of 400 metres for an intersection adjacent to a 400 series highway is not met with the option for the Spine Road connection to Hurontario Street.

3 Discussions

There was discussion regarding the difficulty in achieving a 400 metre intersection spacing in any urban area. It was also noted that MTO has not yet determined the preferred route for the connection between Highway 410 and the GTA West corridor and this may impact the appropriate connection plan for the Spine Road to Hurontario Street and the Highway 410 Valleywood interchange.

Tim Manley noted that the second option for the Spine Road connection in the LEA presentation was the plan developed and agreed to during the planning of Highway 410 to accommodate urban development on the west side of Hurontario/Highway 10.

It was noted by MTO staff that there was general agreement with the LEA forecasts but there are concerns with the suggested at-grade connection of the Spine Road to Hurontario Street.

The need for the Spine Road connection was discussed since the development would have other connections to the surrounding roadway network. The Town representatives noted that some initial development in MW2 might occur prior to the Spine Road connection but the Spine Road connection is essential for the overall plan, not only for traffic capacity but for transit access and support of the land use plan.

Notwithstanding that the MTO spacing guideline is not met, Caledon requested a full and complete review and response from MTO on the LEA transportation assessment, including the technical feasibility of the proposed connection of the Spine

Road with Hurontario Street.

There was general discussion with regard to an overall reconfiguration of the interchange (i.e., scheme 2 from 1991). The Spine Road connection presented by LEA (i.e., a southerly signalized intersection with Hurontario Street) was discussed as one option, possibly a staging option, and potentially a long term option until the broader decision regarding the future of Highway 410 is determined through the GTA West Corridor EA Study.

4 Next Steps

Graham Routledge agreed that MTO staff would discuss this situation with senior management and respond to the Town. Graham will coordinate and circulate to Caledon a full and complete response from MTO on the LEA transportation assessment, including the technical feasibility of the proposed connection of the Spine Road to Hurontario Street. G Routledge

Tim Manley will follow up with Graham on this matter. T Manley

PARADIGM TRANSPORTATION SOLUTIONS LIMITED

W. B. O'Brien
M.A.Sc., P. Eng.
Senior Transportation Consultant

From: Tim Manley [tim.manley@caledon.ca]
Sent: Monday, June 08, 2015 2:12 PM
To: Cifuentes, Alejandro (Alejandro.Cifuentes@peelregion.ca); Andria Oliveira (City of Brampton: Policy Planner, Transportation)
Cc: Bill O'Brien; Brock Criger (Region of Peel); Cooper, Pam; Haiqing Xu
Subject: Meeting Request - Mayfield West Phase 2 Secondary PLan - Additional Transportation Assessment

Importance: High

Hi Alejandro / Andria: Could you please help me coordinate the following mee ng with the relevant Peel and Brampton staff; this mee ng will consist of Caledon, Peel and Brampton staff, as well as the Mayf eld West landowner group, and respec ve transporta on consul ng teams (i.e. Paradigm for Caledon & LEA for the landowners).

Please give me 3 dates/ mes that work for your group in June.

Mee ng Purpose
In July 2014, I circulated a draft transporta on master plan (prepared by Paradigm Transporta on Solu ons Limited) in support of the Mayf eld West Phase 2 Secondary Plan. In response, Caledon has received several submissions from agencies such as MTO (September 2014), Peel (September 2014) and Brampton (October 2014 & April 2015).

In response to these comments, the MW2 landowner group, in consulta on with the Town, has completed addi onal supplementary study in the form of a transporta on assessment study (LEA Consul ng Group is the author of the supplemental study).

At the earliest opportunity I would like to get the groups together so that the supplemental study can be presented to both Peel and Brampton.

Do not hesitate to call and/or email me if you have any ques ons. Thanks.

Regards,
Tim.

Tim Manley, MCIP, RPP
Senior Policy Planner
Development Approval & Planning Policy Department

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Andrea Warren, MES (Pl.), MCIP, RPP, PMP
Manager
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andrea.warren@peelregion.ca
www.peelregion.ca

send copy of 1992 MTO agreement.

Neil Ahmed

Region of Peel
Working for you

AGENDA

Meeting #1
Mayfield West Landowners Group meeting with GTA West Project Team

Date: Wednesday, August 5, 2015 at 10:30 AM

Location:
AECOM (formerly URS) Richmond Hill Office: 4th Floor, 30 Leek Crescent, Richmond Hill ON, L4B 4N4 / Boardroom: 4 North Boardroom

1. Update from GTA West Team — preferred route to public – late 2015. will revise FAA then. Final decision in ~~early~~ spring 2016.
   - Schedule
   - What type of detail will be provided in the study for the future requirements of the section of Highway 410 through Valleywood, if Highway 410 is extended north from Mayfield Road, or if it is not.
2. Overview of Mayfield West Phase 2 (MWP2) Secondary Plan and TMP
   - Work completed to date — Land use plan with 3rd party studies
   - Status/schedule — Region OP amendment.
3. Transportation Considerations for MWP2 Area
   - Connectivity to Hurontario and Highway 410/Valleywood interchange
4. Next Steps

- TMP Eric mid 2016 comments
- LPA, further study.

Notes
– If Hwy 410/10 is preferred route then FAA would likely be increased.
– Plan to have MOE approval by end of 2018. Submit by early 2018.

Meeting Notes

PROJECT: MAYFIELD WEST PHASE 2 TRANSPORTATION PLAN
PROJECT NUMBER: 101380

Paradigm Transportation Solutions Limited

DATE: August 13, 2015

LOCATION: CALEDON TOWN HALL COMMITTEE ROOM

ATTENDEES:

NAME	AGENCY	NAME	AGENCY
JOHN RICHARD	NAK DESIGN	TIM MANLEY	CALEDON
NANCY TUCKETT	ORDC	BILL O'BRIEN	PARADIGM
TONY DULISSE	ORDC	DEAN MCMILLAN	CALEDON
PETER GORSKI	ORANGEVILLE BRAMPTON RAIL ACCESS GROUP		

PURPOSE: DISCUSSION OF RAIL CROSSING PLANS FOR MAYFIELD WEST PHASE 2 SECONDARY PLAN

Item	Discussion	Action By

1 **Status of Mayfield West Phase 2 (MW2) Secondary Plan**

Tim Manley provided an overview of the MW2 Secondary Plan and the current status. The Town is preparing a Local Official Plan Amendment (LOPA # 222) which is intended to go forward to Town Council for approval, together with the Community Design Plan and the Transportation Master Plan, in October of 2015.

The basis of the meeting was to meet with representatives of ORDC, to discuss revisions made to the secondary plan (draft proposed OPA 222) and the community design plan with respect to the treatment of the buffer area and crossings associated with the ORDC, since the previous meeting in the fall of 2014.

Tim Manley reminded the group of the action items from August 2014. The Town, its external transportation and urban design consultant team, and representatives of ORDC met in August 2014. At ORDC's request, copies of Caledon's transportation reports, which support MW2 plans, were sent to ORDC, ORDC were to provide Caledon with an estimate of cost for an external peer review of the transportation reports – at that time Caledon did not commit to cover such costs, did commit to discuss the request to cover such costs with Caledon staff once the estimate of cost was provided by ORDC. No such costing was provided to Caledon by ORDC.

2 Overview of Transportation and Community Design plans as related to the OBRY rail crossings.

Tim Manley provided an overview of the approved framework plan for MW2. The plan includes two roadway crossings of the OBRY rail line; namely the Spine Road crossings and Collector Road A crossing. The Spine Road will have a basic 4 lane section at the crossing and Collector Road A will have a two lane section at the crossing.

Tim Manley acknowledged receipt of a letter from ORDC (March 2015) which responds to the Town's draft OPA 222; ORDC reiterated its concerns with two crossings of the OBRY rail right-of-way. Concerns included:

- At-grade crossings
- Safe operation of train traffic
- Setback; noise; and vibration

ORDC representatives questioned the need for the second Collector Road A crossing of the OBRY rail line. In the discussion, the Caledon representatives explained that the Collector Road A crossing is required for the road network capacity and efficient vehicle circulation within the planned community. Further, since the MW2 community centre is focused on the intersection of the Spine Rd and McLaughlin Rd, it is highly desireable to provide a second east-west road route that by-passes the community centre. Other aspects of the land use plan are also dependant on the second road crossing of the OBRY rail line. The second crossing is needed to support efficient local bus service within the new community and to provide some flexibility for emergency vehicles and fire services.

ORDC questioned as to whether the option of providing a second local looped road, similar to the road west of the OBRY line was considered and if it was an option that could be explored as it appeared to be an option on the west side of the OBRY line. This would result in Collector Road A linking to Spine Road to the south directly as it currently does west of the OBRY line effectively removing the grade level crossing proposed at Collector Road A.

Caledon's transportation consultant confirmed the need for the crossing of Collector Road A.

It was suggested by the ORDC reps that Old School Road could provide an alternate east-west route. However, it was noted that Old School Road is well outside the Secondary Plan area and is located over 2 km north of the Spine Road.

John Richard of NAK Design reviewed the conceptual plans for the layout of the road and rail line intersection crossings. The plans are intended to provide a high level of buffering and separation between the rail line and the planned new urban development. Also, the plans are intended to provide security of the rail line and high levels of safety at the crossing locations. It was emphasized that the plans are conceptual in nature rather than final design plans. The locations of the adjacent local streets as well as road and trail details can be further reviewed as appropriate in consultation with ORDC representatives and others. The intent is that the final design plans for the road and rail crossings will meet all regulatory standards and will represent best practices in rail and road design as well as urban design.

ORDC staff noted that the Board of Directors recently adopted the FCM-RAC Guidelines for New Development in Proximity to Railway Operations for uses adjacent to rail and it was suggested that this would be a good resource in the Town of Caledon's efforts moving forward to finalize any intersection designs adjacent to the rail corridor.

Bill O'Brien noted that the draft Transportation Master Plan (TMP) provides an assessment of the type of crossing protection required at the two road crossings of the OBRY rail line. The traffic and rail volumes cross-product at the Spine Road crossing is slightly below the suggested guideline for crossing gates but the TMP recommends that gates be provided at this location. The collector road and rail crossing can be properly protected with lights and bells.

Peter Gorski noted that despite warning devises to include gates regardless of the cross product, guidelines are used as a measure and we can't place a cost on safety. Grade crossings of the railway, encourage trespassing, are detriment to maintenance and place all users at an unnecessary risk.

Tim Manley reviewed the policies that will be included in the Secondary Plan regarding protection from possible noise and vibration impacts of the OBRY rail line.

Tim noted Caledon has made substantial modifications to the draft OPA 222 to address the following:

- Establishing noise and vibration sensitive areas with respect to the OBRY line;
- Planning applications within the above noted areas will be circulated to the ORDC for comments prior to Caledon making a decision; and
- OPA 222 now references current guidelines relating to noise and vibration issued by agencies and bodies, including ORDC.

The ORDC representatives were asked to review the plans and information provided and to provide comments to the Town of Caledon that should be incorporated in the Secondary Plan.

3 Discussion

The ORDC representatives questioned whether a grade separation structure has been considered for the Spine Road crossing of the OBRY rail line. Bill O'Brien advised that specific cost estimates have not been prepared although this could be done. ORDC representatives were interested in receiving this cost. Nonetheless, given current recognized industry guidelines, the crossing traffic levels are well below the volumes that would warrant a grade separation and the expense that would be associated with a grade separation would not be justified.

Caledon's plan, as proposed, will be brought to ORDC to seek further direction from the Board. Nancy indicated that the ORDC representatives would take the information and material provided to the next meeting of the ORDC Board of Directors which is scheduled for September 14, 2015.

4 Next Steps

Notwithstanding the concerns expressed by the representatives from ORDC at the meeting, Tim emphasized that the Town would like to receive any specific comments on how the road – rail crossings can be designed to improve or enhance the safety and security of the OBRY rail line operations. He noted that he would forward the action items from the August 2014 meeting and would keep ORDC informed regarding any changes from the current plans.

PARADIGM TRANSPORTATION SOLUTIONS LIMITED

W. B. O'Brien
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Senior Transportation Consultant

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Telephone: **(519) 941-0440**
Toll-Free: **1-866-941-0440**

September 9, 2015

Mr. Tim Manley,
Senior Policy Planner
Town of Caledon
6311 Old Church Road, Town of Caledon
Caledon, Ontario, L7C 1J6

Dear Mr. Manley:

Re: Mayfield West Phase 2 Secondary Plan

Further to a meeting held on August 13, 2015 at the Town of Caledon offices with Town of Caledon planning staff, consultants, ORDC and OBRAG representatives to review changes to the Mayfield West Phase 2 Secondary Plan, I am providing comments on the secondary plan as presented.

The basis of the meeting on August 13, 2015 was to meet to discuss revisions made to the secondary plan and the community design plan with respect to the treatment of the buffer area and crossings associated with ORDC. In reality, there were no revisions made to the plan to satisfy the concerns that were presented to the Town of Caledon by ORDC, OBRAG, and CANDO in March of this year, resulting in a meeting intended to address detailed treatment of the crossings as proposed.

During the meeting, representatives from ORDC and OBRAG re-iterated concerns with respect to the proposed two grade level crossings (Spine Road-4 lane section and Collector Road A-2 lane section, of which are approximately 500m apart) and associated trails expected to service the pedestrian connectivity. While we appreciate the comments you have provided with respect to efforts to look at community design of the rail crossings, the higher level issue of the two grade level crossings is still of concern.

In our comment letter dated March 23, 2015, ORDC, OBRAG and CANDO respectfully requested that the Town of Caledon reconsider the proposal as presented and to limit the multiple grade level crossings proposed and explore options that would limit motorists, the public, and residents interaction with the active rail line. Reasons given included the safety and risk factors to the railway, road authority, municipalities, and crossing users, the adverse effects for future maintenance, the issue that crossings encourage trespassers and the inherent risk of accident and derailment. The position of all parties was that if there was a need for a new crossing that there be only one as was presented in a very early option to the Town, or alternatively if there were to be two, that they be grade separated.

While we appreciate that the Mayfield West Phase 2 Secondary Plan as presented has received Town of Caledon approval as the proposed framework and all supporting traffic documentation to date has resulted in these two grade level crossings, (Spine Road and Collector Road A) the presence of the two grade level crossings still pose a serious challenge to the operations of ORDC.

Steve Gallagher of CANDO, although not present at the meeting, has provided subsequent response to the meeting minutes prepared for the meeting. He has indicated the following:

"Cando still stands by its earlier convictions of reducing grade level crossings on the OBRY as opposed to increasing the number of crossings on this line. Cando is responsible for the liability aspect of grade level crossing accidents and that liability increases every time a new crossing is introduced on the OBRY."

With respect to comments at the meeting regarding "recognized Industry guidelines", Steve further states that:

"Industry practice and Transport Canada current initiatives are moving to reduce grade level crossings and for new construction to develop grade separated crossings. This has been re-iterated several times and in fact it is outlined in the FCM-RAC Guidelines for New Development in Proximity to Railway Operations as outlined below in Section 2.1.2 of the Guidelines. It is strongly suggested that the Town of Caledon consult these guidelines or adapt them given that the Federation of Canadian Municipalities supports them." It should also be noted that at its June 2015 meeting, the ORDC Board of Directors adopted these guidelines. This was brought to your attention at our meeting on the 13th of August.

Section 2.1.2 of the guidelines specifies the following:

> "2.1.2 Crossings - As urban areas grow in proximity to railway corridors, road traff c at existing crossings increases and can lead to demands for improvements to such crossings, demands for additional crossings, or demands for grade separations to accommodate the f ow of the traff c from the new development to areas on the other side of the railway. Conversely, Transport Canada and the railways strive to reduce the number of at-grade crossings since each new crossing increases the risk exposure for potential vehicle/train and pedestrian accidents, as well as the related road traff c delays. Grade-separated crossings address both these issues, but are expensive to construct. Safety at railway crossings is a concern for all stakeholders and planning is necessary to consider alternatives to creating new grade crossings, including upgrading and improving safety at existing crossings and grade-separated crossings."

In summary, Steve has commented that CANDO's position with respect to this plan is consistent with industry practices, in conjunction with Transport Canada initiatives, and fully supported by the Federation of Canadian Municipalities. Further, he states, that the Town of Caledon should consider within their cost structure to increase the crossing protection and crossing safety levels at roads immediately north and south of this development (Old School Rd and Mayfield Rd) as traffic patterns will be affected by this construction whether or not there are crossings within the boundaries of the development or not.

Our collective opinion has been, and continues to be that insufficient effort has been made to look at alternatives providing the two grade level crossings, nor has the potential grade separations been explored nor has the cost been determined for these works.

In the meeting it was suggested that consideration be given to providing a second looped road east of the rail corridor similar to the Collector Road A feeding in to a local road west of the railway corridor, parallel to the railway, thereby eliminating the crossing of the railway at this location. The road would appear to serve a similar residential density both east and west of the railway with the westerly loop also serving a significant medium density neighbourhood. Representatives from Caledon explained that the crossing is required for the road network capacity and efficient vehicle circulation with the planned community, and for supporting efficient local bus service and to provide flexibility to fire and emergency services. Is it not possible to re-route the proposed bus service accordingly? It was also noted that it is highly desirable to provide a second east-west road route that by-passes the community centre. It was suggested by ORDC staff that Old School Road provides a second crossing that could also serve as close proximity east-west route, less than 1.5 km away.

Based on the transportation work that has been completed to date on the secondary plan, it is the opinion of representatives from ORDC, OBRAG and CANDO that further assessment be undertaken to explore alternatives to the two crossings proposed prior to Caledon Council adoption of the secondary plan.

With respect to the draft Noise and Vibration policies presented we offer the following comments for consideration:

Section 7.15.7.1.1.- This doesn't read as a policy but rather a statement of fact
Section 7.15.7.1.2 – Perhaps you need to mention also those guidelines recently adopted by ORDC "Guidelines for New Development in Proximity to Railway Operations" (May 2013)
Section 7.15.7.1.1 – Should it not also reference when ORDC has identified the need for an environmental noise and vibration impact assessment or for any development within 300 m of the corridor, and no residential development within 30m of the rail corridor
Section 7.15.7.1.7 – ORDC should be added in this section
Section 7.15.7.1.8 – Indicates that noise fences and berms which restrict visual and physical access to the street shall be prohibited, but Section 7.15.7.1.6 states that the applicant will implement all measures of the approved noise and vibration impact assessment. Will this be achievable in all situations?
Section 7.15.7.1.10 – Reference should be OBRY not ORBY throughout all the policies
Section 7.15.7.2.2 - Or any sensitive land use I would assume….daycares, seniors homes and the like
Section 7.15.7.2.3 – Should this not be all development applications within 300m of the ORDC rail corridor, we are circulated them now from Brampton

In summary grade level crossings of the railway as proposed, encourage trespassing, adversely impact and add unnecessary maintenance costs and places all users at an unnecessary risk. It is respectfully suggested that you review further transportation alternatives to the two grade level crossings as proposed. We also suggest that you investigate further, costs associated with the installation of grade separations for the two crossings proposed.

Sincerely,

Nancy Tuckett, M.Sc., B.Ed., MCIP, RPP
General Manager, ORDC

cc. ORDC Board of Directors
P. Gorski, OBRAG
S. Gallagher, CANDO

Appendix B

MW2 Trip Generation Estimates

MAYFIELD WEST PHASE 2

TRAFFIC ANALYSIS ZONE CALCULATIONS – ALL STAGES

September 23, 2013

Note: All figures indicated in the following reference the preliminary Recommended Framework Plan, August 29, 2013, prepared by NAK Design Strategies and the Traffic Analysis Zones plan provided by Paradigm. .

Zone 1 – 23.3 ac. / 9.4 ha.

- Employment –
    a. Peel Region Police Facilities employees – 650
- Population –
    a. Low Density – 178 people (56 units)
    b. Medium Density – 263 people (88 units)

Zone 2 – 42.8 ac. / 17.3 ha.

- Commercial – gross floor area – 51,200 sq.m

Zone 3 – 54.2 ac. / 22.0 ha.

- Employment –
    a. Office Business Park employees – 1,164
- Elementary School enrollment – 475

Zone 4 – 9.3 ac. / 3.8 ha.

- Population –
    a. Low Density – 125 people (39 units)
    b. Medium Density – 66 people (22 units)
    c. High Density – 302 people (140 units)

Zone 5 – 24.1 ac. / 9.7 ha.

- Population –
    a. Low Density – 688 people (214 units)

Zone 6 – 9.2 ac. / 3.7 ha.

- Population –
    a. Low Density – 286 people (89 units)

Zone 7 – 3.7 ac. / 1.5 ha.

- Private School enrollment – 68

Zone 8 – 18.2 ac. / 7.3 ha.

- Population –
    a. Low Density – 528 people (164 units)

Zone 9 – 15.8 ac. / 6.4 ha.

- Population –
    a. Low Density – 232 people (72 units)
    b. Medium Density – 325 people (110 units)
- Recreation / Community Centre

Zone 10 – 17.5 ac. / 7.1 ha.

- Secondary School enrollment - 1500

Zone 11 – 21.8 ac. / 8.8 ha.

- Population –
    a. Low Density – 528 people (165 units)
    b. Medium Density – 162 people (55 units)

Zone 12 – 21.0 ac. / 8.5 ha.

- Population –
    a. Low Density – 598 people (186 units)

Zone 13 – 6.7 ac. / 2.7 ha.

- Commercial – gross floor area – 2,850 sq.m
- Population –
    a. Medium Density – 154 people (52 units)

Zone 14 – 22.9 ac. / 9.3 ha.

- Population –
    a. Low Density – 435 people (136 units)
    b. Medium Density – 322 people (109 units)

Zone 15 – 7.7 ac. / 3.1 ha.

- Population –
    a. Medium Density – 197 people (66 units)
    b. High Density – 364 people (169 units)

Zone 16 – 22.1 ac. / 9.0 ha.

- Population –
    a. Low Density – 557 people (174 units)
    b. Medium Density – 119 people (40 units)

Zone 17 – 7.0 ac. / 2.8 ha.

- Elementary School enrollment – 750

Zone 18 – 23.8 ac. / 9.6 ha.

- Population –
    a. Low Density – 535 people (167 units)
    b. Medium Density – 219 people (74 units)

Zone 19 – 8.1 ac. / 3.3 ha.

- Population –
  a. Medium Density 2 – 540 people (182 units)
- Commercial – gross floor area – 4,800 sq.m

Zone 20 – 6.9 ac. / 2.8 ha.

- Population –
  a. Medium Density – 85 people (29 units)
  b. Medium Density 2 – 396 people (133 units)
  c. Medium Density / Live-Work – 178 people (83 units)
  d. Live-Work Commercial – gross floor area 1,650 sq.m (30 units)

Zone 21 – 19.1 ac. / 7.7 ha.

- Population –
  a. Low Density – 513 people (160 units)
  b. Medium Density – 108 people (36 units)

Zone 22 – 29.3 ac. / 11.9 ha.

- Population –
  a. Low Density – 865 people (269 units)

Zone 23 – 27.4 ac. / 11.1 ha.

- Population –
  a. Low Density – 500 people (156 units)
  b. Medium Density – 131 people (44 units)
- Elementary School enrollment - 750

Zone 24 – 4.8 ac. / 2.0 ha.

- Population –
  a. Low Density – 97 people (30 units)
  b. Medium Density 2 – 409 people (138 units)

Zone 25 – 6.7 ac. / 2.7 ha.

- Population –
  a. Low Density – 180 people (56 units)

Zone 26 – 21.8 ac. / 8.8 ha.

- Population –
  a. Low Density – 636 people (198 units)

Zone 27 – 27.4 ac. / 11.1 ha.

- Population –
  a. Low Density – 721 people (225 units)
  b. Medium Density – 120 people (40 units)

Zone 28 – 17.2 ac. / 7.0 ha.

- Population –
    a. Low Density – 229 people (71 units)
- Elementary School enrollment – 550

Zone 29 – 16.6 ac. / 6.7 ha.

- Population –
    a. Low Density – 347 people (108 units)
    b. Medium Density – 210 people (71 units)

Zone 30 – 12.5 ac. / 5.0 ha.

- Population –
    a. Medium Density – 252 people (85 units)
- Commercial – gross floor area – 5,600 sq.m

Zone 31 – 15.1 ac. / 6.1 ha.

- Population –
    a. Low Density – 313 people (98 units)
    b. Medium Density – 167 people (56 units)

Zone 32 – 28.4 ac. / 11.5 ha.

- Population –
    a. Low Density – 804 people (250 units)

Zone 33 – 24.4 ac. / 9.9 ha.

- Population –
    a. Low Density – 415 people (129 units)
    b. Medium Density – 251 people (85 units)

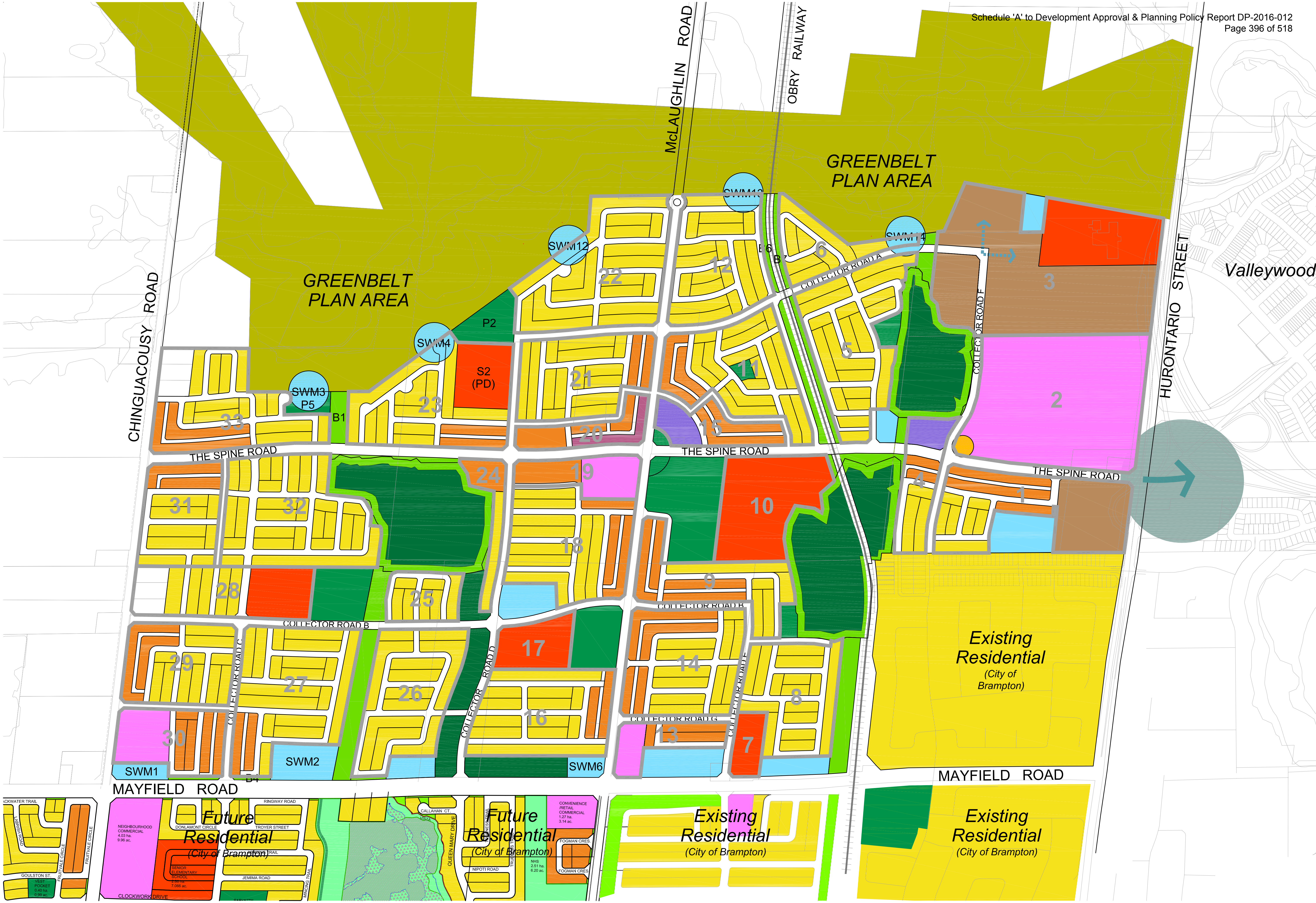
Total Residential Population (All Stages) – 15,655

Breakdown:
Low Density - singles and semis - 3212 units (30 units/nha) @ 3.21 ppu = 10,311
Medium Density – townhouses – 1062 units (44 units/nha) @ 2.97 ppu = 3,154
Medium Density 2 – stacked townhouses – 453 units (150 units/nha) @ 2.97 ppu = 1,345
High Density – apartments – 309 units (145 units/nha) @ 2.16 ppu = 667
Live/Work – 83 units (100 units/nha) @ 2.14 ppu = 178

Total Gross Area (251.1+103.9 ha.):	355.0 ha.
Exclusions (rail corridor, Greenlands A&B):	51.7 ha.
Total Net Area:	**303.3 ha.**

Total Residential Population:	15,655
Total Jobs:	3,799 +?
Total Population & Jobs:	**19,454 +?**

P2G Gross Density: 19,454 (+?) / 303.3 =


GREENBELT PLAN AREA
GREENBELT PLAN AREA
McLAUGHLIN ROAD
OBRY RAILWAY
CHINGUACOUSY ROAD
HURONTARIO STREET
Valleywood
THE SPINE ROAD
THE SPINE ROAD
THE SPINE ROAD
COLLECTOR ROAD A
COLLECTOR ROAD B
COLLECTOR ROAD B
COLLECTOR ROAD C
COLLECTOR ROAD D
COLLECTOR ROAD E
COLLECTOR ROAD F
COLLECTOR ROAD G
MAYFIELD ROAD
MAYFIELD ROAD
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Brampton)
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Residential
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Residential
(City of Brampton)
Existing
Residential
(City of Brampton)
Existing
Residential
(City of Brampton)

Based on TRAFFIC ANALYSIS ZONE CALCULATIONS **Sep 30/13**

Zones	Land Use Scenario													
	Residential Dwelling Units						Commercial	Employment		Peel Region Police	Church	Schools		
	Low Density		Medium Density		High Density			Office Business Park	Warehouse			Elementary	Daycare	Secondary
	people	*units*	*people*	*units*	*people*	*units*	*GFA (sq m)*	*Employees*	*Employees*	*Employees*	*GFA (sq m)*	*pupils*	*pupils*	*pupils*
1	178	55	263	89						650				
2							51,200							
3								1,164				475		
4	125	39	66	22	302	140								
5	688	214												
6	286	89												
7											14,973		68	
8	528	164												
9	232	72	325	109										
10														1,500
11	528	164	162	55										
12	598	186												
13			154	52			2,850							
14	435	136	322	109										
15			197	66	364	169								
16	557	174	119	40										
17												750		
18	535	167	219	74										
19			540	182			4,800							
20			659	245			1,650							
21	513	160	108	36										
22	865	269												
23	500	156	131	44								750		
24	97	30	409	138										
25	180	56												
26	636	198												
27	721	225	120	40										
28	229	71										550		
29	347	108	210	71										
30			252	85			5,600							
31	313	98	167	56										
32	804	250												
33	415	129	251	85										
TOTAL	**10,310**	**3,212**	**4,674**	**1,597**	**666**	**308**	**66,100**	**1,164**	**0**	**650**	**14,973**	**2,525**	**68**	**1,500**

Assumptions:
Low Density 210 Single Family Detached
Medium Density 230 Residential Condominium/Townhouse
High Density 220 Apartment

1 square meter = 10.763 910 417 square foot

Based on TRAFFIC ANALYSIS ZONE CALCULATIONS
30-Sep-13

sqm sqft
1 10.764

	ITE Land Use Code	Description of Land Use Type	Units	AM In	AM Out	AM Total	PM In	PM Out	PM Total	Saturday In	Saturday Out	Saturday Total		
	Zone 1													
	LEA Trip Gen	Peel Regional Police Station		167	55	222	137	259	396	152	160	312	sqm	sqft
Trip Eqn	210	Single Family Detached	55	12	36	48	39	23	62	31	27	58		
	230	Residential Condominium/Townhouse	89	8	39	47	37	18	55	37	31	68		
	Zone 1 Residential Modal Split 5%			1	4	5	4	2	6	3	3	6		
	Zone 1 Residential Trips			19	71	90	72	39	111	65	55	120		
	Zone 1 New Trips			186	126	312	209	298	507	217	215	432		
	Zone 2													
Avg Rate	820	Shopping Center	551,117 sq.ft.	336	215	551	1007	1048	2055	1401	1294	2695	51200	551,117
	Pass-By Reduction - Shopping Center(0% AM, 35% PM, 25% SAT)			0	0	0	352	367	719	350	324	674		
	Zone 2 Modal Split 5%			17	11	28	50	52	103	70	65	135		
	Zone 2 New Trips			319	204	523	605	629	1233	981	905	1886		
	Zone 3													
Avg Rate	520	Elementary School	475 students	118	96	214	35	36	71	0	0	0		
Trip Eqn	770	Business Park	1,164 employees	482	85	567	115	407	522	0	0	0		
	Zone 3 Business Park Modal Split 10%			48	9	57	12	41	53	0	0	0		
	Zone 3 Business Park Trips			434	76	510	103	366	469	0	0	0		
	Zone 3 School Modal Split 5%			6	5	11	2	2	4	0	0	0		
	Zone 3 School Trips			112	91	203	33	34	67	0	0	0		
	Zone 3 New Trips			546	167	713	136	400	536	0	0	0		
	Zone 4													
Trip Eqn	210	Single Family Detached	39	9	28	37	28	17	45	23	21	44		
Trip Eqn	230	Residential Condominium/Townhouse	22	3	13	16	12	6	18	26	23	49		
Trip Eqn	220	Apartment	140	14	58	72	62	33	95	50	27	77		
	Zone 4 Modal Split 5%			1	5	6	5	3	8	5	4	9		
	Zone 4 New Trips			25	94	119	97	53	150	94	67	162		
	Zone 5													
Trip Eqn	210	Single Family Detached	214	40	120	160	131	77	208	106	94	200		
	Zone 5 Modal Split 5%			2	6	8	7	4	10	5	5	10		
	Zone 5 New Trips			38	114	152	124	73	198	101	89	190		
	Zone 6													
Trip Eqn	210	Single Family Detached	89	18	54	72	60	35	95	47	42	89		
	Zone 6 Modal Split 5%			1	3	4	3	2	5	2	2	4		
	Zone 6 New Trips			17	51	68	57	33	90	45	40	85		
	Zone 7													
Trip Eqn	565	Daycare Centre (existing Church used for daycare)	68 students	29	26	55	25	29	54	0	0	0		
	Zone 7 Modal Split 5%			1	1	3	1	1	3	0	0	0		
	Zone 7 New Trips			28	25	52	24	28	51	0	0	0		
	Zone 8													
Trip Eqn	210	Single Family Detached	164	31	93	124	103	61	164	82	73	155		
	Zone 8 Modal Split 5%			2	5	6	5	3	8	4	4	8		
	Zone 8 New Trips			29	88	118	98	58	156	78	69	147		
	Zone 9													
Trip Eqn	210	Single Family Detached	72	15	45	60	49	29	78	39	35	74		
Trip Eqn	230	Residential Condominium/Townhouse	109	9	46	55	43	21	64	40	34	74		
	Zone 9 Modal Split 5%			1	5	6	5	3	7	4	3	7		
	Zone 9 New Trips			23	86	109	87	48	135	75	66	141		
	Zone 10												Acre	
Avg Rate	530	High School	1,500 students	428	202	630	92	103	195	0	0	0	3.70	161,172
	Zone 10 Modal Split 5%			21	10	32	5	5	10	0	0	0		
	Zone 10 New Trips			407	192	599	87	98	185	0	0	0		
	Zone 11													
Trip Eqn	210	Single Family Detached	164	31	93	124	103	61	164	82	73	155		
Trip Eqn	230	Residential Condominium/Townhouse	55	5	27	32	25	12	37	32	27	59		
	Zone 11 Modal Split 5%			2	6	8	6	4	10	6	5	11		
	Zone 11 New Trips			34	114	148	122	69	191	108	95	203		
	Zone 12													
Trip Eqn	210	Single Family Detached	186	35	105	140	116	68	184	93	82	175		
	Zone 12 Modal Split 5%			2	5	7	6	3	9	5	4	9		
	Zone 12 New Trips			33	100	133	110	65	175	88	78	166		
	Zone 13													
Trip Eqn	230	Residential Condominium/Townhouse	52	5	25	30	24	12	36	31	27	58		-
	Zone 13 Residential Modal Split 5%			0	1	2	1	1	2	2	1	3		
	Zone 13 Residential Trips			5	24	29	23	11	34	29	26	55		
Avg Rate	820	Shopping Center	30,677 sq. ft.	19	12	31	56	58	114	78	72	150	2850	30,677
	Pass-By Reduction - Shopping Center(0% AM, 35% PM, 25% SAT)			0	0	0	20	20	40	20	18	38		
	Zone 13 Commercial Modal Split 5%			1	1	2	3	3	6	4	4	8		
	Zone 13 Commercial Trips			18	11	29	33	35	68	54	50	105		
	Zone 13 New Trips			23	35	58	56	47	103	84	76	160		
	Zone 14													
Trip Eqn	210	Single Family Detached	136	26	79	105	87	51	138	69	61	130		
Trip Eqn	230	Residential Condominium/Townhouse	109	9	46	55	43	21	64	40	34	74		
	Zone 14 Modal Split 5%			2	6	8	7	4	10	5	5	10		
	Zone 14 New Trips			33	119	152	124	68	192	104	90	194		
	Zone 15													
Trip Eqn	230	Residential Condominium/Townhouse	66	6	31	37	29	14	43	33	28	61		
Trip Eqn	220	Apartment	169	17	69	86	72	39	111	58	31	89		
	Zone 15 Modal Split 5%			1	5	6	5	3	8	5	3	8		
	Zone 15 New Trips			22	95	117	96	50	146	86	56	143		
	Zone 16													
Trip Eqn	210	Single Family Detached	174	33	99	132	109	64	173	87	77	164		
Trip Eqn	230	Residential Condominium/Townhouse	40	4	21	25	19	9	28	29	25	54		
	Zone 16 Modal Split 5%			2	6	8	6	4	10	6	5	11		
	Zone 16 New Trips			35	114	149	122	69	191	110	97	207		
	Zone 17													
Avg Rate	520	Elementary School	750 students	186	152	338	55	57	112	0	0	0		
	Zone 17 Modal Split 5%			9	8	17	3	3	6	0	0	0		
	Zone 17 New Trips			177	144	321	52	54	106	0	0	0		
	Zone 18													
Trip Eqn	210	Single Family Detached	167	32	95	127	105	62	167	84	74	158		
Trip Eqn	230	Residential Condominium/Townhouse	74	7	34	41	31	15	46	35	29	64		
	Zone 18 Modal Split 5%			2	6	8	7	4	11	6	5	11		
	Zone 18 New Trips			37	123	160	129	73	202	113	98	211		
	Zone 19													
Trip Eqn	230	Residential Condominium/Townhouse	182	14	69	83	66	32	98	52	44	96		
	Zone 19 Residental Modal Split 5%			1	3	4	3	2	5	3	2	5		
	Zone 19 Residential Trips			13	66	79	63	30	93	49	42	91		
Avg Rate	820	Shopping Center	51,667 sq. ft	32	20	52	94	98	192	131	121	252	4800	51,667
	Pass-By Reduction - Shopping Center(0% AM, 35% PM, 25% SAT)			0	0	0	33	34	67	33	30	63		
	Zone 19 Commercial Modal Split 5%			2	1	3	5	5	10	7	6	13		
	Zone 19 Commercial Trips			30	19	49	56	59	115	91	85	176		
	Zone 19 New Trips			44	85	128	119	90	209	141	127	268		
	Zone 20													
Trip Eqn	230	Residential Condominium/Townhouse	162	13	63	76	60	29	89	48	41	89		
Trip Eqn	230	Medium Density Work / Live Condos / Towns	83	8	37	45	35	17	52	36	31	67		
	Work-Live Trip Reduction (25%)			2	9	11	9	4	13	9	8	17		
	Zone 20 Modal Split 5%			1	5	6	5	2	7	4	4	8		
	Zone 20 Residential Trips			18	86	104	82	39	121	71	61	131		
Trip Eqn	814	Live-Work Commercial (Speciality Retail)	17,761 sq. ft.	0	0	0	26	36	62	0	0	0	1650	17,761
	Work-Live Trip Reduction (25%)			0	0	0	7	9	16	0	0	0		
	Zone 20 Modal Split 5%			0	0	0	1	2	3	0	0	0		
	Zone 20 Commerical Trips			0	0	0	18	25	43	0	0	0		
	Zone 20 New Trips			18	86	104	100	65	164	71	61	131		
	Zone 21													
Trip Eqn	210	Single Family Detached	160	30	91	121	101	59	160	81	71	152		
Trip Eqn	230	Residential Condominium/Townhouse	36	4	19	23	17	9	26	29	24	53		
	Zone 21 Modal Split 5%			2	6	7	6	3	9	6	5	10		
	Zone 21 New Trips			32	105	137	112	65	177	105	90	195		
	Zone 22													
Trip Eqn	210	Single Family Detached	269	50	149	199	161	95	256	132	117	249		
	Zone 22 Modal Split 5%			3	7	10	8	5	13	7	6	12		
	Zone 22 New Trips			48	142	189	153	90	243	125	111	237		
	Zone 23													
Trip Eqn	210	Single Family Detached	156	30	89	119	99	58	157	79	70	149		
Trip Eqn	230	Residential Condominium/Townhouse	44	5	22	27	21	10	31	30	25	55		
	Zone 23 Residential Modal Split 5%			2	6	7	6	3	9	5	5	10		
	Zone 23 Residential Trips			33	105	139	114	65	179	104	90	194		
Avg Rate	520	Elementary School	750 students	186	152	338	55	57	112	0	0	0		
	Zone 23 School Modal Split 5%			9	8	17	3	3	6	0	0	0		
	Zone 23 New Trips			210	250	460	166	119	285	104	90	194		
	Zone 24													
Trip Eqn	210	Single Family Detached	30	8	23	31	22	13	35	19	17	36		
Trip Eqn	230	Residential Condominium/Townhouse	138	11	55	66	52	26	78	45	38	83		
	Zone 24 Modal Split 5%			1	4	5	4	2	6	3	3	6		
	Zone 24 New Trips			18	74	92	70	37	107	61	52	113		
	Zone 25													
Trip Eqn	210	Single Family Detached	56	12	37	49	39	23	62	31	28	59		
	Zone 25 Modal Split 5%			1	2	2	2	1	3	2	1	3		
	Zone 25 New Trips			11	35	47	37	22	59	29	27	56		
	Zone 26													
Trip Eqn	210	Single Family Detached	198	37	111	148	122	72	194	98	87	185		
	Zone 26 Modal Split 5%			2	6	7	6	4	10	5	4	9		
	Zone 26 New Trips			35	105	141	116	68	184	93	83	176		
	Zone 27													
Trip Eqn	210	Single Family Detached	225	42	125	167	137	81	218	111	99	210		
Trip Eqn	230	Residential Condominium/Townhouse	40	4	21	25	19	9	28	29	25	54		
	Zone 27 Modal Split 5%			2	7	10	8	5	12	7	6	13		
	Zone 27 New Trips			44	139	182	148	86	234	133	118	251		
	Zone 28													
Trip Eqn	210	Single Family Detached	71	15	45	60	49	29	78	39	34	73		
	Zone 28 Residential Modal Split 5%			1	2	3	2	1	4	2	2	4		
Trip Eqn	Zone 28 Residential Trips			14	43	57	47	28	74	37	32	69		
Avg Rate	520	Elementary School	550 students	136	111	247	40	42	82	0	0	0		
	Zone 28 School Modal Split 5%			7	6	12	2	2	4	0	0	0		
	Zone 28 New Trips			143	148	292	85	67	152	37	32	69		
	Zone 29													
Trip Eqn	210	Single Family Detached	108	21	64	85	71	42	113	56	50	106		
Trip Eqn	230	Residential Condominium/Townhouse	71	7	33	40	30	15	45	34	29	63		
	Zone 29 Modal Split 5%			1	5	6	5	3	8	5	4	8		
	Zone 29 New Trips			27	92	119	96	54	150	86	75	161		
	Zone 30													
Trip Eqn	220	Apartment	85	9	36	45	42	23	65	35	19	54		
	Zone 30 Modal Split 5%			0	2	2	2	1	3	2	1	3		
	Zone 30 Residential Trips			9	34	43	40	22	62	33	18	51		
Avg Rate	820	Shopping Centre	60,278 sq.ft.	37	24	61	110	115	225	153	141	294	5600	60,278
	Pass-By Reduction - Shopping Center(0% AM, 35% PM, 25% SAT)			0	0	0	39	40	79	38	35	73		
	Zone 30 Commercial Modal Split 5%			2	1	3	6	6	11	8	7	15		
	Zone 30 Commercial Trips			35	23	58	66	69	135	107	99	206		
	Zone 30 New Trips			44	57	101	105	91	197	141	117	258		
	Zone 31													
Trip Eqn	210	Single Family Detached	98	20	59	79	65	38	103	51	45	96		
Trip Eqn	230	Residential Condominium/Townhouse	56	6	27	33	25	12	37	32	27	59		
	Zone 31 Modal Split 5%			1	4	6	5	3	7	4	4	8		
	Zone 31 New Trips			25	82	106	86	48	133	79	68	147		
	Zone 32													
Trip Eqn	210	Single Family Detached	250	46	139	185	151	89	240	123	109	232		
	Zone 32 Modal Split 5%			2	7	9	8	4	12	6	5	12		
	Zone 32 New Trips			44	132	176	143	85	228	117	104	220		
	Zone 33													
Trip Eqn	210	Single Family Detached	129	25	75	100	83	49	132	66	58	124		
Trip Eqn	230	Residential Condominium/Townhouse	85	8	38	46	35	17	52	36	31	67		
	Zone 33 Modal Split 5%			2	6	7	6	3	9	5	4	10		
	Zone 33 New Trips			31	107	139	112	63	175	97	85	181		
	Total			2,785	3,630	6,415	3,984	3,261	7,245	3,701	3,281	6,982		

AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Saturday In	Saturday Out	Saturday Total
2,785	3,630	6,415	3,984	3,261	7,245	3,701	3,281	6,982

Appendix C

Traffic Analyses

HCM Signalized Intersection Capacity Analysis — 2031 Total Traffic - AM Peak Hour
1: Mayfield Rd & Chinguacousy Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	1088	60	219	1164	14	34	124	491	61	252	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		0.97	0.91		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1623	3292		3148	4759		1623	1746	1452	1623	1723	
Flt Permitted	0.18	1.00		0.95	1.00		0.29	1.00	1.00	0.67	1.00	
Satd. Flow (perm)	303	3292		3148	4759		487	1746	1452	1146	1723	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	35	1183	65	238	1265	15	37	135	534	66	274	27
RTOR Reduction (vph)	0	3	0	0	1	0	0	0	103	0	3	0
Lane Group Flow (vph)	35	1245	0	238	1279	0	37	135	431	66	298	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	pm+pt			Prot			pm+pt		Perm	Perm		
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2						8		8	4		
Actuated Green, G (s)	68.7	63.7		13.1	73.8		45.2	45.2	45.2	36.4	36.4	
Effective Green, g (s)	68.7	65.7		15.1	75.8		45.2	47.2	47.2	38.4	38.4	
Actuated g/C Ratio	0.49	0.47		0.11	0.54		0.32	0.34	0.34	0.27	0.27	
Clearance Time (s)	4.0	6.0		6.0	6.0		4.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	196	1545		340	2577		196	589	490	314	473	
v/s Ratio Prot	0.01	c0.38		c0.08	0.27		0.01	0.08			0.17	
v/s Ratio Perm	0.08						0.05		c0.30	0.06		
v/c Ratio	0.18	0.81		0.70	0.50		0.19	0.23	0.88	0.21	0.63	
Uniform Delay, d1	18.8	31.7		60.3	20.1		34.4	33.3	43.7	39.1	44.6	
Progression Factor	1.00	1.00		1.45	0.28		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.4	4.6		5.8	0.6		0.5	0.2	16.7	0.3	2.7	
Delay (s)	19.3	36.3		92.9	6.2		34.9	33.5	60.4	39.5	47.3	
Level of Service	B	D		F	A		C	C	E	D	D	
Approach Delay (s)		35.8			19.8			53.9			45.9	
Approach LOS		D			B			D			D	

Intersection Summary			
HCM Average Control Delay	33.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

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HCM Signalized Intersection Capacity Analysis — 2031 Total Traffic - AM Peak Hour
2: Mayfield Rd & Collector Rd C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	1584	14	23	1300	61	49	10	73	152	0	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.87		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1623	4762		1623	4736		1623	1517		1623	1484	
Flt Permitted	0.15	1.00		0.10	1.00		0.73	1.00		0.65	1.00	
Satd. Flow (perm)	251	4762		166	4736		1247	1517		1109	1484	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	7	1722	15	25	1413	66	53	11	79	165	0	41
RTOR Reduction (vph)	0	0	0	0	2	0	0	64	0	0	33	0
Lane Group Flow (vph)	7	1737	0	25	1477	0	53	26	0	165	8	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	pm+pt			pm+pt			Perm			Perm		
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	96.0	94.8		101.4	97.5		25.3	25.3		25.3	25.3	
Effective Green, g (s)	96.0	96.8		101.4	99.5		27.3	27.3		27.3	27.3	
Actuated g/C Ratio	0.69	0.69		0.72	0.71		0.20	0.20		0.20	0.20	
Clearance Time (s)	4.0	6.0		4.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	184	3293		161	3366		243	296		216	289	
v/s Ratio Prot	0.00	c0.36		c0.00	0.31			0.02			0.01	
v/s Ratio Perm	0.03			0.11			0.04			c0.15		
v/c Ratio	0.04	0.53		0.16	0.44		0.22	0.09		0.76	0.03	
Uniform Delay, d1	7.4	10.5		7.4	8.5		47.4	46.2		53.3	45.6	
Progression Factor	0.99	0.79		0.45	0.62		1.00	1.00		0.99	1.00	
Incremental Delay, d2	0.1	0.4		0.4	0.4		0.5	0.1		14.8	0.0	
Delay (s)	7.3	8.7		3.8	5.7		47.8	46.3		67.6	45.6	
Level of Service	A	A		A	A		D	D		E	D	
Approach Delay (s)		8.7			5.6			46.9			63.2	
Approach LOS		A			A			D			E	

Intersection Summary			
HCM Average Control Delay	12.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	52.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

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HCM Signalized Intersection Capacity Analysis — 2031 Total Traffic - AM Peak Hour
3: Mayfield Rd & Collector Rd D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	1760	13	27	1288	96	64	0	85	246	0	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1623	4763		1623	4718		1623	1484		1623	1484	
Flt Permitted	0.13	1.00		0.07	1.00		0.72	1.00		0.43	1.00	
Satd. Flow (perm)	214	4763		114	4718		1230	1484		729	1484	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	1913	14	29	1400	104	70	0	92	267	0	57
RTOR Reduction (vph)	0	0	0	0	4	0	0	82	0	0	42	0
Lane Group Flow (vph)	33	1927	0	29	1500	0	70	10	0	267	15	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	pm+pt			pm+pt			Perm			pm+pt		
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	89.8	85.6		89.6	85.5		13.3	13.3		34.3	34.3	
Effective Green, g (s)	89.8	87.6		89.6	87.5		15.3	15.3		34.3	36.3	
Actuated g/C Ratio	0.64	0.63		0.64	0.62		0.11	0.11		0.24	0.26	
Clearance Time (s)	4.0	6.0		4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	180	2980		117	2949		134	162		287	385	
v/s Ratio Prot	0.01	c0.40		c0.01	0.32			0.01		c0.11	0.01	
v/s Ratio Perm	0.11			0.15			0.06			c0.11		
v/c Ratio	0.18	0.65		0.25	0.51		0.52	0.06		0.93	0.04	
Uniform Delay, d1	10.7	16.5		13.0	14.4		58.9	55.9		49.3	38.8	
Progression Factor	0.47	0.71		1.73	0.72		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.4	1.0		0.9	0.5		3.6	0.2		35.1	0.0	
Delay (s)	5.5	12.6		23.5	10.9		62.5	56.1		84.4	38.8	
Level of Service	A	B		C	B		E	E		F	D	
Approach Delay (s)		12.5			11.2			58.9			76.4	
Approach LOS		B			B			E			E	

Intersection Summary			
HCM Average Control Delay	19.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis — 2031 Total Traffic - AM Peak Hour
4: Mayfield Rd & McLaughlin Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	67	1643	140	171	1240	93	50	186	324	246	348	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.99		1.00	0.90		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1623	4768	1452	3148	4718		1623	3002		1623	3263	
Flt Permitted	0.12	1.00	1.00	0.95	1.00		0.50	1.00		0.15	1.00	
Satd. Flow (perm)	209	4768	1452	3148	4718		861	3002		250	3263	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	73	1786	152	186	1348	101	54	202	352	267	378	47
RTOR Reduction (vph)	0	0	46	0	5	0	0	106	0	0	8	0
Lane Group Flow (vph)	73	1786	106	186	1444	0	54	448	0	267	417	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	pm+pt		Perm	Prot			Perm			pm+pt		
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2		2				8			4		
Actuated Green, G (s)	68.1	60.9	60.9	12.9	68.6		26.2	26.2		48.2	48.2	
Effective Green, g (s)	68.1	62.9	62.9	14.9	70.6		28.2	28.2		50.2	50.2	
Actuated g/C Ratio	0.49	0.45	0.45	0.11	0.50		0.20	0.20		0.36	0.36	
Clearance Time (s)	4.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	174	2142	652	335	2379		173	605		266	1170	
v/s Ratio Prot	0.02	c0.37		c0.06	0.31			0.15		c0.13	0.13	
v/s Ratio Perm	0.18		0.07				0.06			c0.23		
v/c Ratio	0.42	0.83	0.16	0.56	0.61		0.31	0.87dr		1.00	0.36	
Uniform Delay, d1	20.8	33.9	22.9	59.4	24.8		47.6	52.5		38.5	33.0	
Progression Factor	1.04	0.67	0.68	0.58	0.99		1.00	1.00		0.97	0.89	
Incremental Delay, d2	1.2	3.1	0.4	1.8	1.1		1.0	4.8		55.3	0.2	
Delay (s)	22.9	25.8	15.9	36.3	25.7		48.7	57.3		92.7	29.7	
Level of Service	C	C	B	D	C		D	E		F	C	
Approach Delay (s)		24.9			26.9			56.5			54.0	
Approach LOS		C			C			E			D	

Intersection Summary			
HCM Average Control Delay	33.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	79.2%	ICU Level of Service	D
Analysis Period (min)	15		
dr Defacto Right Lane. Recode with 1 though lane as a right lane.			
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis — 2031 Total Traffic - AM Peak Hour
5: Mayfield Rd & Collector Rd E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	13	1987	7	44	1417	44	11	0	205	101	0	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1623	4765		1623	4746		1623	1484		1623	1484	
Flt Permitted	0.14	1.00		0.05	1.00		0.72	1.00		0.34	1.00	
Satd. Flow (perm)	243	4765		86	4746		1227	1484		588	1484	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	2160	8	48	1540	48	12	0	223	110	0	59
RTOR Reduction (vph)	0	0	0	0	2	0	0	76	0	0	40	0
Lane Group Flow (vph)	14	2168	0	48	1586	0	12	147	0	110	19	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Perm			pm+pt			Perm			Perm		
Protected Phases		2		1	6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	93.6	93.6		103.0	103.0		25.0	25.0		25.0	25.0	
Effective Green, g (s)	95.6	95.6		103.0	105.0		27.0	27.0		27.0	27.0	
Actuated g/C Ratio	0.68	0.68		0.74	0.75		0.19	0.19		0.19	0.19	
Clearance Time (s)	6.0	6.0		4.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	166	3254		123	3560		237	286		113	286	
v/s Ratio Prot		c0.45		0.02	c0.33			0.10			0.01	
v/s Ratio Perm	0.06			0.27			0.01			c0.19		
v/c Ratio	0.08	0.67		0.39	0.45		0.05	0.51		0.97	0.07	
Uniform Delay, d1	7.5	12.9		11.9	6.6		46.1	50.6		56.1	46.2	
Progression Factor	0.41	0.62		3.25	0.67		1.00	1.00		1.04	1.19	
Incremental Delay, d2	0.5	0.6		1.8	0.3		0.1	1.6		75.7	0.1	
Delay (s)	3.6	8.7		40.3	4.8		46.1	52.2		134.1	55.2	
Level of Service	A	A		D	A		D	D		F	E	
Approach Delay (s)		8.6			5.8			51.9			106.6	
Approach LOS		A			A			D			F	

Intersection Summary			
HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis — 2031 Total Traffic - AM Peak Hour
6: Mayfield Rd & Hurontario St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	428	1690	445	250	926	212	152	440	144	140	855	146
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3148	4768	1452	3148	4768	1452	1623	3318	1452	3148	3318	1452
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.10	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3148	4768	1452	3148	4768	1452	162	3318	1452	3148	3318	1452
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	465	1837	484	272	1007	230	165	478	157	152	929	159
RTOR Reduction (vph)	0	0	96	0	0	157	0	0	108	0	0	110
Lane Group Flow (vph)	465	1837	388	272	1007	73	165	478	49	152	929	49
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Prot		Perm	Prot		Perm	pm+pt		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		8			4
Actuated Green, G (s)	23.6	53.6	53.6	12.3	42.3	42.3	53.1	42.1	42.1	8.0	41.1	41.1
Effective Green, g (s)	25.6	55.6	55.6	14.3	44.3	44.3	53.1	44.1	44.1	10.0	43.1	43.1
Actuated g/C Ratio	0.18	0.40	0.40	0.10	0.32	0.32	0.38	0.32	0.32	0.07	0.31	0.31
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	4.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	576	1894	577	322	1509	459	176	1045	457	225	1021	447
v/s Ratio Prot	c0.15	c0.39		0.09	0.21		c0.07	0.14		0.05	0.28	
v/s Ratio Perm			0.27			0.05	c0.28		0.03			0.03
v/c Ratio	0.81	0.97	0.67	0.84	0.67	0.16	0.94	0.46	0.11	0.68	0.91	0.11
Uniform Delay, d1	54.8	41.4	34.7	61.8	41.5	34.4	35.5	38.4	34.0	63.4	46.6	34.7
Progression Factor	0.90	0.86	0.68	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	6.8	12.9	5.1	18.0	2.4	0.7	49.4	0.3	0.1	7.8	11.6	0.1
Delay (s)	55.9	48.4	28.6	79.8	43.8	35.2	84.9	38.7	34.1	71.2	58.2	34.8
Level of Service	E	D	C	E	D	D	F	D	C	E	E	C
Approach Delay (s)		46.2			49.0			47.3			56.8	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM Average Control Delay	49.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis — 2031 Total Traffic - AM Peak Hour

7: The Spine Rd & Chinguacousy Rd

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	103	34	78	92	28	146
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	112	37	85	100	30	159
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	304	85			185	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	304	85			185	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	83	96			98	
cM capacity (veh/h)	672	974			1390	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	112	37	85	100	30	159
Volume Left	112	0	0	0	30	0
Volume Right	0	37	0	100	0	0
cSH	672	974	1700	1700	1390	1700
Volume to Capacity	0.17	0.04	0.05	0.06	0.02	0.09
Queue Length 95th (m)	4.8	0.9	0.0	0.0	0.5	0.0
Control Delay (s)	11.4	8.8	0.0	0.0	7.6	0.0
Lane LOS	B	A			A	
Approach Delay (s)	10.8		0.0		1.2	
Approach LOS	B					

Intersection Summary			
Average Delay	3.5		
Intersection Capacity Utilization	20.6%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis — 2031 Total Traffic - AM Peak Hour

8: The Spine Rd & Collector Rd C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	189	18	35	183	20	55	4	88	57	23	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	205	20	38	199	22	60	4	96	62	25	7
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	221			225			514	516	215	593	515	210
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	221			225			514	516	215	593	515	210
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			86	99	88	83	94	99
cM capacity (veh/h)	1349			1344			438	449	825	358	450	830

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	2	225	38	221	60	100	62	32
Volume Left	2	0	38	0	60	0	62	0
Volume Right	0	20	0	22	0	96	0	7
cSH	1349	1700	1344	1700	438	796	358	497
Volume to Capacity	0.00	0.13	0.03	0.13	0.14	0.13	0.17	0.06
Queue Length 95th (m)	0.0	0.0	0.7	0.0	3.8	3.4	4.9	1.6
Control Delay (s)	7.7	0.0	7.8	0.0	14.5	10.2	17.2	12.7
Lane LOS	A		A		B	B	C	B
Approach Delay (s)	0.1		1.1		11.8		15.7	
Approach LOS					B		C	

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	34.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis — 2031 Total Traffic - AM Peak Hour
9: The Spine Rd & Collector Rd D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	456	22	102	215	61	5	46	191	115	105	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.97		1.00	0.88		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	1870		1750	1821		1750	1656		1750	1785	
Flt Permitted	0.54	1.00		0.34	1.00		0.64	1.00		0.54	1.00	
Satd. Flow (perm)	992	1870		631	1821		1186	1656		986	1785	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	496	24	111	234	66	5	50	208	125	114	61
RTOR Reduction (vph)	0	3	0	0	17	0	0	132	0	0	32	0
Lane Group Flow (vph)	54	517	0	111	283	0	5	126	0	125	143	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	28.0	28.0		28.0	28.0		20.0	20.0		20.0	20.0	
Effective Green, g (s)	30.0	30.0		30.0	30.0		22.0	22.0		22.0	22.0	
Actuated g/C Ratio	0.50	0.50		0.50	0.50		0.37	0.37		0.37	0.37	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Grp Cap (vph)	496	935		316	911		435	607		362	655	
v/s Ratio Prot		c0.28			0.16			0.08			0.08	
v/s Ratio Perm	0.05			0.18			0.00			c0.13		
v/c Ratio	0.11	0.55		0.35	0.31		0.01	0.21		0.35	0.22	
Uniform Delay, d1	7.9	10.4		9.1	8.9		12.1	13.0		13.8	13.1	
Progression Factor	1.00	1.00		0.86	0.86		1.00	1.00		1.13	1.19	
Incremental Delay, d2	0.4	2.4		2.9	0.8		0.0	0.8		2.6	0.8	
Delay (s)	8.4	12.7		10.7	8.4		12.1	13.8		18.1	16.4	
Level of Service	A	B		B	A		B	B		B	B	
Approach Delay (s)		12.3			9.0			13.8			17.1	
Approach LOS		B			A			B			B	

Intersection Summary			
HCM Average Control Delay	12.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis — 2031 Total Traffic - AM Peak Hour
10: The Spine Rd & McLaughlin Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	67	693	108	228	300	53	46	220	396	75	359	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	2.0	4.0	7.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.90		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	1883	1566	1750	1841		1750	3234		1750	3540	
Flt Permitted	0.52	1.00	1.00	0.07	1.00		0.35	1.00		0.15	1.00	
Satd. Flow (perm)	959	1883	1566	129	1841		644	3234		269	3540	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	73	753	117	248	326	58	50	239	430	82	390	30
RTOR Reduction (vph)	0	0	20	0	6	0	0	224	0	0	5	0
Lane Group Flow (vph)	73	753	97	248	378	0	50	445	0	82	415	0
Turn Type	pm+pt		Perm	pm+pt			pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	57.8	53.0	53.0	71.4	62.6		32.3	27.1		32.9	27.4	
Effective Green, g (s)	61.8	55.0	52.0	71.4	64.6		32.3	29.1		32.9	29.4	
Actuated g/C Ratio	0.51	0.46	0.43	0.60	0.54		0.27	0.24		0.27	0.24	
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	539	863	679	271	991		221	784		142	867	
v/s Ratio Prot	0.01	0.40		c0.11	0.21		0.01	c0.14		c0.03	0.12	
v/s Ratio Perm	0.06		0.06	c0.43			0.05			0.13		
v/c Ratio	0.14	0.87	0.14	0.92	0.38		0.23	0.57		0.58	0.48	
Uniform Delay, d1	14.7	29.3	20.5	37.1	16.1		33.3	39.9		34.7	38.8	
Progression Factor	0.82	0.90	0.90	1.53	0.42		1.00	1.00		1.28	1.24	
Incremental Delay, d2	0.1	9.1	0.1	31.6	0.2		0.5	3.0		5.3	1.8	
Delay (s)	12.3	35.5	18.5	88.2	7.0		33.8	42.9		49.7	49.7	
Level of Service	B	D	B	F	A		C	D		D	D	
Approach Delay (s)		31.6			38.8			42.3			49.7	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM Average Control Delay	39.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis — 2031 Total Traffic - AM Peak Hour

11: The Spine Rd & local street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	915	282	113	470	16	110	0	82	58	12	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	2.0	4.0	4.0	2.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.85		1.00	0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	1842	1566	1750	1842	1566	1750	1566		1750	1685	
Flt Permitted	0.47	1.00	1.00	0.07	1.00	1.00	0.67	1.00		0.70	1.00	
Satd. Flow (perm)	863	1842	1566	126	1842	1566	1235	1566		1288	1685	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	995	307	123	511	17	120	0	89	63	13	17
RTOR Reduction (vph)	0	0	56	0	0	5	0	67	0	0	14	0
Lane Group Flow (vph)	13	995	251	123	511	12	120	22	0	63	16	0
Turn Type	Perm		Perm	pm+pt		Perm	pm+pt			Perm		
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	70.0	70.0	70.0	80.0	80.0	80.0	28.0	28.0		18.0	18.0	
Effective Green, g (s)	72.0	72.0	72.0	82.0	82.0	82.0	30.0	30.0		20.0	20.0	
Actuated g/C Ratio	0.60	0.60	0.60	0.68	0.68	0.68	0.25	0.25		0.17	0.17	
Clearance Time (s)	6.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		6.0	6.0	
Lane Grp Cap (vph)	518	1105	940	194	1259	1070	343	392		215	281	
v/s Ratio Prot		c0.54		c0.04	0.28		c0.02	0.01			0.01	
v/s Ratio Perm	0.02		0.16	0.39		0.01	0.06			c0.05		
v/c Ratio	0.03	0.90	0.27	0.63	0.41	0.01	0.35	0.06		0.29	0.06	
Uniform Delay, d1	9.7	20.9	11.4	24.0	8.3	6.1	36.3	34.2		43.8	42.1	
Progression Factor	1.18	0.99	1.29	2.48	0.50	0.16	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	8.5	0.5	14.5	1.0	0.0	2.8	0.3		3.4	0.4	
Delay (s)	11.5	29.1	15.3	74.3	5.1	1.0	39.1	34.5		47.2	42.4	
Level of Service	B	C	B	E	A	A	D	C		D	D	
Approach Delay (s)		25.7			18.1			37.1			45.7	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM Average Control Delay	25.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis — 2031 Total Traffic - AM Peak Hour

12: The Spine Rd & Collector Rd F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	97	1033	6	39	509	404	35	7	135	201	5	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.5	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		0.97	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.86		1.00	0.86	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1716	3506		1716	3510	1536	1716	1584		3330	1552	
Flt Permitted	0.40	1.00		0.19	1.00	1.00	0.70	1.00		0.95	1.00	
Satd. Flow (perm)	717	3506		352	3510	1536	1269	1584		3330	1552	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	105	1123	7	42	553	439	38	8	147	218	5	79
RTOR Reduction (vph)	0	0	0	0	0	98	0	127	0	0	61	0
Lane Group Flow (vph)	105	1130	0	42	553	341	38	28	0	218	23	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	pm+pt			pm+pt		Perm	Perm			Prot		
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6		6	8					
Actuated Green, G (s)	80.6	72.6		75.4	70.0	70.0	9.2	9.2		12.8	26.0	
Effective Green, g (s)	80.6	74.6		75.4	72.0	72.0	11.2	11.2		12.8	28.0	
Actuated g/C Ratio	0.67	0.62		0.63	0.60	0.60	0.09	0.09		0.11	0.23	
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	6.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	548	2180		283	2106	922	118	148		355	362	
v/s Ratio Prot	c0.01	c0.32		0.01	0.16			0.02		c0.07	0.02	
v/s Ratio Perm	0.12			0.09		0.22	c0.03					
v/c Ratio	0.19	0.52		0.15	0.26	0.37	0.32	0.19		0.61	0.06	
Uniform Delay, d1	7.2	12.7		9.6	11.4	12.3	50.9	50.2		51.2	35.8	
Progression Factor	1.15	1.48		0.27	0.23	0.07	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1	0.6		0.2	0.3	1.1	1.6	0.6		3.1	0.1	
Delay (s)	8.3	19.4		2.8	2.9	1.9	52.4	50.8		54.4	35.9	
Level of Service	A	B		A	A	A	D	D		D	D	
Approach Delay (s)		18.4			2.5			51.2			49.2	
Approach LOS		B			A			D			D	

Intersection Summary			
HCM Average Control Delay	18.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis — 2031 Total Traffic - AM Peak Hour
13: The Spine Rd & Commercial Access

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	68	1264	37	132	888	201	13	0	42	120	0	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		0.97	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1716	3495		1716	3510	1536	1716	1570		3330	1570	
Flt Permitted	0.27	1.00		0.10	1.00	1.00	0.72	1.00		0.95	1.00	
Satd. Flow (perm)	497	3495		180	3510	1536	1303	1570		3330	1570	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	74	1374	40	143	965	218	14	0	46	130	0	55
RTOR Reduction (vph)	0	1	0	0	0	0	0	43	0	0	44	0
Lane Group Flow (vph)	74	1413	0	143	965	218	14	3	0	130	11	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	pm+pt			pm+pt		Free	Perm			Prot		
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6		Free	8					
Actuated Green, G (s)	74.9	69.0		86.2	76.3	120.0	5.8	5.8		10.0	21.8	
Effective Green, g (s)	74.9	71.0		86.2	78.3	120.0	7.8	7.8		12.0	23.8	
Actuated g/C Ratio	0.62	0.59		0.72	0.65	1.00	0.06	0.06		0.10	0.20	
Clearance Time (s)	4.0	6.0		4.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	370	2068		298	2290	1536	85	102		333	311	
v/s Ratio Prot	0.01	c0.40		c0.05	0.27			0.00		c0.04	0.01	
v/s Ratio Perm	0.12			0.29		c0.14	0.01					
v/c Ratio	0.20	0.68		0.48	0.42	0.14	0.16	0.03		0.39	0.04	
Uniform Delay, d1	9.0	16.8		13.7	10.0	0.0	53.0	52.6		50.6	38.8	
Progression Factor	0.38	0.35		0.88	1.92	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	1.6		0.9	0.1	0.1	0.9	0.1		0.8	0.0	
Delay (s)	3.7	7.5		13.0	19.3	0.1	53.9	52.7		51.3	38.9	
Level of Service	A	A		B	B	A	D	D		D	D	
Approach Delay (s)		7.3			15.5			53.0			47.6	
Approach LOS		A			B			D			D	

Intersection Summary			
HCM Average Control Delay	14.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis — 2031 Total Traffic - AM Peak Hour
14: The Spine Rd & Hurontario St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	117	1125	183	0	806	55	206	591	0	180	1019	219
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.91			0.91	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.98			1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1716	4937			5043	1536	1716	3510		1716	3510	1536
Flt Permitted	0.14	1.00			1.00	1.00	0.11	1.00		0.35	1.00	1.00
Satd. Flow (perm)	253	4937			5043	1536	195	3510		639	3510	1536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	127	1223	199	0	876	60	224	642	0	196	1108	238
RTOR Reduction (vph)	0	19	0	0	0	16	0	0	0	0	0	0
Lane Group Flow (vph)	127	1403	0	0	876	44	224	642	0	196	1108	238
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	pm+pt			Perm		Perm	pm+pt			pm+pt		Free
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		Free
Actuated Green, G (s)	38.2	38.2			24.6	24.6	69.6	54.9		62.0	51.1	120.0
Effective Green, g (s)	38.2	40.2			26.6	26.6	69.6	56.9		62.0	53.1	120.0
Actuated g/C Ratio	0.32	0.34			0.22	0.22	0.58	0.47		0.52	0.44	1.00
Clearance Time (s)	4.0	6.0			6.0	6.0	4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	198	1654			1118	340	299	1664		428	1553	1536
v/s Ratio Prot	0.05	c0.28			0.17		c0.09	0.18		0.04	0.32	
v/s Ratio Perm	0.15					0.03	c0.34			0.19		0.15
v/c Ratio	0.64	0.85			0.78	0.13	0.75	0.39		0.46	0.71	0.15
Uniform Delay, d1	32.1	37.1			44.0	37.4	23.6	20.3		16.1	27.3	0.0
Progression Factor	0.56	0.65			1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.5	3.4			3.7	0.2	9.9	0.7		0.8	2.8	0.2
Delay (s)	23.6	27.3			47.7	37.6	33.4	21.0		16.9	30.1	0.2
Level of Service	C	C			D	D	C	C		B	C	A
Approach Delay (s)		27.0			47.0			24.2			23.8	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM Average Control Delay	29.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
15: Collector Rd B & Chinguacousy Rd

2031 Total Traffic - AM Peak Hour

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	96	7	164	30	4	262
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	104	8	178	33	4	285
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	488	195			211	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	488	195			211	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	81	99			100	
cM capacity (veh/h)	537	847			1360	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	112	211	4	285
Volume Left	104	0	4	0
Volume Right	8	33	0	0
cSH	551	1700	1360	1700
Volume to Capacity	0.20	0.12	0.00	0.17
Queue Length 95th (m)	6.0	0.0	0.1	0.0
Control Delay (s)	13.2	0.0	7.7	0.0
Lane LOS	B		A	
Approach Delay (s)	13.2	0.0	0.1	
Approach LOS	B			

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	26.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
16: Collector Rd C & Chinguacousy Rd

2031 Total Traffic - AM Peak Hour

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	16	5	109	3	2	158
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	17	5	118	3	2	172
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	296	120			122	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	296	120			122	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	99			100	
cM capacity (veh/h)	694	931			1466	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	23	122	2	172
Volume Left	17	0	2	0
Volume Right	5	3	0	0
cSH	739	1700	1466	1700
Volume to Capacity	0.03	0.07	0.00	0.10
Queue Length 95th (m)	0.8	0.0	0.0	0.0
Control Delay (s)	10.0	0.0	7.5	0.0
Lane LOS	B		A	
Approach Delay (s)	10.0	0.0	0.1	
Approach LOS	B			

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	18.3%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis — 2031 Total Traffic - AM Peak Hour
17: Old School Rd & Chinguacousy Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	71	7	13	35	8	1	76	17	20	140	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	77	8	14	38	9	1	83	18	22	152	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	317	299	152	336	290	92	152			101		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	317	299	152	336	290	92	152			101		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	87	99	97	94	99	100			99		
cM capacity (veh/h)	593	604	894	546	611	966	1429			1491		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	85	61	102	174
Volume Left	0	14	1	22
Volume Right	8	9	18	0
cSH	622	627	1429	1491
Volume to Capacity	0.14	0.10	0.00	0.01
Queue Length 95th (m)	3.8	2.6	0.0	0.4
Control Delay (s)	11.7	11.4	0.1	1.0
Lane LOS	B	B	A	A
Approach Delay (s)	11.7	11.4	0.1	1.0
Approach LOS	B	B		

Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	31.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis — 2031 Total Traffic - AM Peak Hour
18: Collector Rd G & McLaughlin Rd

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	13	22	337	9	4	624
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	24	366	10	4	678
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			189			313
pX, platoon unblocked						
vC, conflicting volume	719	188			376	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	719	188			376	
tC, single (s)	6.9	7.0			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	97			100	
cM capacity (veh/h)	358	816			1165	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	38	244	132	4	339	339
Volume Left	14	0	0	4	0	0
Volume Right	24	0	10	0	0	0
cSH	553	1700	1700	1165	1700	1700
Volume to Capacity	0.07	0.14	0.08	0.00	0.20	0.20
Queue Length 95th (m)	1.8	0.0	0.0	0.1	0.0	0.0
Control Delay (s)	12.0	0.0	0.0	8.1	0.0	0.0
Lane LOS	B			A		
Approach Delay (s)	12.0	0.0		0.1		
Approach LOS	B					

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	27.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis — 2031 Total Traffic - AM Peak Hour
19: Collector Rd B & McLaughlin Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↑↱		↰	↑↱	
Volume (vph)	101	44	69	14	58	186	12	345	2	75	555	82
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.91		1.00	0.89		1.00	1.00		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	1711		1750	1668		1750	3576		1750	3510	
Flt Permitted	0.30	1.00		0.68	1.00		0.39	1.00		0.46	1.00	
Satd. Flow (perm)	558	1711		1249	1668		716	3576		839	3510	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	48	75	15	63	202	13	375	2	82	603	89
RTOR Reduction (vph)	0	54	0	0	170	0	0	1	0	0	12	0
Lane Group Flow (vph)	110	69	0	15	95	0	13	376	0	82	680	0
Turn Type	pm+pt			Perm			Perm			pm+pt		
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	18.0	18.0		9.2	9.2		30.1	30.1		40.0	40.0	
Effective Green, g (s)	18.0	20.0		11.2	11.2		32.1	32.1		40.0	42.0	
Actuated g/C Ratio	0.26	0.29		0.16	0.16		0.46	0.46		0.57	0.60	
Clearance Time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	225	489		200	267		328	1640		556	2106	
v/s Ratio Prot	c0.03	0.04			0.06			0.11		0.01	c0.19	
v/s Ratio Perm	c0.09			0.01			0.02			0.07		
v/c Ratio	0.49	0.14		0.07	0.36		0.04	0.23		0.15	0.32	
Uniform Delay, d1	21.3	18.6		25.0	26.2		10.5	11.5		6.9	6.9	
Progression Factor	1.01	1.06		0.93	0.80		0.69	0.69		1.00	1.00	
Incremental Delay, d2	1.7	0.1		0.2	0.8		0.2	0.3		0.1	0.4	
Delay (s)	23.2	19.8		23.4	21.7		7.4	8.2		7.0	7.4	
Level of Service	C	B		C	C		A	A		A	A	
Approach Delay (s)		21.4			21.8			8.1			7.3	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	11.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis — 2031 Total Traffic - AM Peak Hour
20: Collector Rd A & McLaughlin Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↰	↱		↰	↱		↰	↱		↰	↱	
Volume (vph)	120	25	72	83	11	63	43	217	79	64	307	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.89		1.00	0.87		1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	1674		1750	1643		1750	1808		1750	1845	
Flt Permitted	0.70	1.00		0.69	1.00		0.44	1.00		0.51	1.00	
Satd. Flow (perm)	1299	1674		1270	1643		816	1808		931	1845	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	130	27	78	90	12	68	47	236	86	70	334	52
RTOR Reduction (vph)	0	47	0	0	41	0	0	22	0	0	10	0
Lane Group Flow (vph)	130	58	0	90	39	0	47	300	0	70	376	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	22.0	22.0		22.0	22.0		26.0	26.0		26.0	26.0	
Effective Green, g (s)	24.0	24.0		24.0	24.0		28.0	28.0		28.0	28.0	
Actuated g/C Ratio	0.40	0.40		0.40	0.40		0.47	0.47		0.47	0.47	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Grp Cap (vph)	520	670		508	657		381	844		434	861	
v/s Ratio Prot		0.03			0.02			0.17			c0.20	
v/s Ratio Perm	c0.10			0.07			0.06			0.08		
v/c Ratio	0.25	0.09		0.18	0.06		0.12	0.36		0.16	0.44	
Uniform Delay, d1	12.0	11.2		11.6	11.1		9.1	10.2		9.2	10.7	
Progression Factor	1.00	1.00		1.00	1.00		1.37	1.34		0.91	0.92	
Incremental Delay, d2	1.1	0.3		0.8	0.2		0.6	1.0		0.8	1.6	
Delay (s)	13.1	11.4		12.4	11.2		13.0	14.7		9.2	11.4	
Level of Service	B	B		B	B		B	B		A	B	
Approach Delay (s)		12.4			11.8			14.5			11.1	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	12.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

21: Old School Rd & McLaughlin Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	79	31	174	35	16	13	72	336	8	181	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.95		1.00	0.88		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	1803		1750	1796		1750	1651		1750	1881	
Flt Permitted	0.72	1.00		0.68	1.00		0.63	1.00		0.39	1.00	
Satd. Flow (perm)	1328	1803		1252	1796		1166	1651		718	1881	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	1	86	34	189	38	17	14	78	365	9	197	2
RTOR Reduction (vph)	0	20	0	0	10	0	0	195	0	0	1	0
Lane Group Flow (vph)	1	100	0	189	45	0	14	248	0	9	198	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	22.0	22.0		22.0	22.0		26.0	26.0		26.0	26.0	
Effective Green, g (s)	24.0	24.0		24.0	24.0		28.0	28.0		28.0	28.0	
Actuated g/C Ratio	0.40	0.40		0.40	0.40		0.47	0.47		0.47	0.47	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Grp Cap (vph)	531	721		501	718		544	770		335	878	
v/s Ratio Prot		0.06			0.02			c0.15			0.11	
v/s Ratio Perm	0.00			c0.15			0.01			0.01		
v/c Ratio	0.00	0.14		0.38	0.06		0.03	0.32		0.03	0.23	
Uniform Delay, d1	10.8	11.4		12.7	11.1		8.6	10.0		8.6	9.5	
Progression Factor	1.00	1.00		1.00	1.00		0.93	1.47		1.00	1.00	
Incremental Delay, d2	0.0	0.4		2.2	0.2		0.1	1.1		0.1	0.6	
Delay (s)	10.8	11.8		14.9	11.2		8.1	15.9		8.8	10.1	
Level of Service	B	B		B	B		A	B		A	B	
Approach Delay (s)		11.8			14.1			15.7			10.1	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	13.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	47.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

22: Old School Rd & Hurontario St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	148	75	187	29	17	26	56	577	128	231	1201	151
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.89		1.00	0.91		1.00	0.97		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	1682		1750	1711		1750	3481		1750	3519	
Flt Permitted	0.49	1.00		0.49	1.00		0.12	1.00		0.23	1.00	
Satd. Flow (perm)	897	1682		910	1711		221	3481		425	3519	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	161	82	203	32	18	28	61	627	139	251	1305	164
RTOR Reduction (vph)	0	132	0	0	24	0	0	20	0	0	9	0
Lane Group Flow (vph)	161	153	0	32	22	0	61	746	0	251	1460	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	19.3	12.9		10.5	8.1		35.6	31.3		48.7	38.4	
Effective Green, g (s)	19.3	14.9		10.5	10.1		39.6	33.3		50.7	40.4	
Actuated g/C Ratio	0.24	0.19		0.13	0.13		0.50	0.42		0.63	0.50	
Clearance Time (s)	4.0	6.0		4.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	293	313		145	216		230	1449		491	1777	
v/s Ratio Prot	c0.05	c0.09		0.01	0.01		0.02	0.21		c0.09	c0.41	
v/s Ratio Perm	0.08			0.02			0.11			0.24		
v/c Ratio	0.55	0.49		0.22	0.10		0.27	0.51		0.51	0.82	
Uniform Delay, d1	25.5	29.1		30.8	30.9		13.1	17.3		8.1	16.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	1.2		0.8	0.2		0.6	1.3		0.9	4.4	
Delay (s)	27.6	30.4		31.6	31.1		13.7	18.7		9.0	21.2	
Level of Service	C	C		C	C		B	B		A	C	
Approach Delay (s)		29.4			31.3			18.3			19.4	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	20.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis — 2031 Total Traffic - AM Peak Hour
23: Collector Rd B & Collector Rd C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	2	189	18	35	80	4	55	4	88	57	23	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	205	20	38	87	4	60	4	96	62	25	7
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	91			225			404	387	215	483	395	89
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	91			225			404	387	215	483	395	89
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			97			89	99	88	85	95	99
cM capacity (veh/h)	1504			1344			521	531	825	424	526	969

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	227	129	160	93
Volume Left	2	38	60	62
Volume Right	20	4	96	7
cSH	1504	1344	669	467
Volume to Capacity	0.00	0.03	0.24	0.20
Queue Length 95th (m)	0.0	0.7	7.4	5.9
Control Delay (s)	0.1	2.4	12.1	14.6
Lane LOS	A	A	B	B
Approach Delay (s)	0.1	2.4	12.1	14.6
Approach LOS			B	B

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	36.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis — 2031 Total Traffic - AM Peak Hour
24: Collector Rd B & Collector Rd D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	89	106	109	35	88	33	40	105	75	69	153	50
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	97	115	118	38	96	36	43	114	82	75	166	54
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	628	626	193	734	612	155	221			196		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	628	626	193	734	612	155	221			196		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	66	69	86	81	74	96	97			95		
cM capacity (veh/h)	285	367	848	205	373	891	1349			1377		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	330	170	43	196	75	221
Volume Left	97	38	43	0	75	0
Volume Right	118	36	0	82	0	54
cSH	417	352	1349	1700	1377	1700
Volume to Capacity	0.79	0.48	0.03	0.12	0.05	0.13
Queue Length 95th (m)	55.8	20.1	0.8	0.0	1.4	0.0
Control Delay (s)	39.5	24.4	7.8	0.0	7.8	0.0
Lane LOS	E	C	A		A	
Approach Delay (s)	39.5	24.4	1.4		2.0	
Approach LOS	E	C				

Intersection Summary			
Average Delay	17.5		
Intersection Capacity Utilization	49.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis — 2031 Total Traffic - AM Peak Hour
25: Collector Rd G & Collector Rd E

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	49	70	18	39	85	15
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	53	76	20	42	92	16
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				182		
pX, platoon unblocked						
vC, conflicting volume	182	101	109			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	182	101	109			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	92	99			
cM capacity (veh/h)	797	955	1482			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	129	62	109
Volume Left	53	20	0
Volume Right	76	0	16
cSH	883	1482	1700
Volume to Capacity	0.15	0.01	0.06
Queue Length 95th (m)	4.1	0.3	0.0
Control Delay (s)	9.8	2.4	0.0
Lane LOS	A	A	
Approach Delay (s)	9.8	2.4	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	4.7		
Intersection Capacity Utilization	23.4%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis — 2031 Total Traffic - AM Peak Hour
26: Collector Rd D & Collector Rd A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	0	10	154	0	8	76
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	11	167	0	9	83
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			11		340	5
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			11		340	5
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			90		99	92
cM capacity (veh/h)			1608		587	1078

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	11	167	91
Volume Left	0	167	9
Volume Right	11	0	83
cSH	1700	1608	998
Volume to Capacity	0.01	0.10	0.09
Queue Length 95th (m)	0.0	2.8	2.4
Control Delay (s)	0.0	7.5	9.0
Lane LOS		A	A
Approach Delay (s)	0.0	7.5	9.0
Approach LOS			A

Intersection Summary			
Average Delay	7.7		
Intersection Capacity Utilization	27.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis — 2031 Total Traffic - AM Peak Hour
27: Collector Rd A & Collector Rd F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	114	131	95	50	0	31	149	286	0	28	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	124	142	103	54	0	34	162	311	0	30	0

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total (vph)	0	266	103	54	34	473	30
Volume Left (vph)	0	0	103	0	34	0	0
Volume Right (vph)	0	142	0	0	0	311	0
Hadj (s)	0.00	-0.34	0.53	0.03	0.53	-0.43	0.03
Departure Headway (s)	6.3	6.0	7.0	6.5	6.4	5.4	6.7
Degree Utilization, x	0.00	0.44	0.20	0.10	0.06	0.71	0.06
Capacity (veh/h)	543	569	474	506	541	641	477
Control Delay (s)	8.1	12.3	10.6	9.0	8.6	19.4	10.1
Approach Delay (s)	12.3		10.0		18.7		10.1
Approach LOS	B		B		C		B

Intersection Summary			
Delay	15.2		
HCM Level of Service	C		
Intersection Capacity Utilization	54.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis — 2031 Total Traffic - PM Peak Hour
1: Mayfield Rd & Chinguacousy Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	43	1031	96	562	1003	32	88	258	288	35	177	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		0.97	0.91		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1623	3276		3148	4746		1623	1746	1452	1623	1703	
Flt Permitted	0.26	1.00		0.95	1.00		0.26	1.00	1.00	0.51	1.00	
Satd. Flow (perm)	452	3276		3148	4746		441	1746	1452	869	1703	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	43	1031	96	562	1003	32	88	258	288	35	177	35
RTOR Reduction (vph)	0	4	0	0	2	0	0	0	217	0	6	0
Lane Group Flow (vph)	43	1123	0	562	1033	0	88	258	71	35	206	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	pm+pt			Prot			pm+pt		Perm	Perm		
Protected Phases	5	2		1	6		3	8			4	
Permitted Phases	2						8		8	4		
Actuated Green, G (s)	65.0	59.4		30.3	86.1		32.3	32.3	32.3	22.3	22.3	
Effective Green, g (s)	65.0	61.4		32.3	88.1		32.3	34.3	34.3	24.3	24.3	
Actuated g/C Ratio	0.46	0.44		0.23	0.63		0.23	0.24	0.24	0.17	0.17	
Clearance Time (s)	4.0	6.0		6.0	6.0		4.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	257	1437		726	2987		152	428	356	151	296	
v/s Ratio Prot	0.01	c0.34		c0.18	0.22		0.02	c0.15			c0.12	
v/s Ratio Perm	0.07						0.11		0.05	0.04		
v/c Ratio	0.17	0.78		0.77	0.35		0.58	0.60	0.20	0.23	0.70	
Uniform Delay, d1	20.6	33.6		50.4	12.3		45.1	46.8	41.9	49.8	54.4	
Progression Factor	1.00	1.00		1.13	1.24		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.3	4.3		4.6	0.3		5.3	2.4	0.3	0.8	7.0	
Delay (s)	20.9	37.8		61.6	15.5		50.4	49.2	42.2	50.6	61.3	
Level of Service	C	D		E	B		D	D	D	D	E	
Approach Delay (s)		37.2			31.7			46.2			59.8	
Approach LOS		D			C			D			E	

Intersection Summary			
HCM Average Control Delay	37.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	77.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis — 2031 Total Traffic - PM Peak Hour
2: Mayfield Rd & Collector Rd C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	23	1224	45	67	1618	165	32	15	39	96	0	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	0.89		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1623	4742		1623	4702		1623	1557		1623	1484	
Flt Permitted	0.10	1.00		0.18	1.00		0.74	1.00		0.48	1.00	
Satd. Flow (perm)	175	4742		315	4702		1261	1557		820	1484	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	23	1224	45	67	1618	165	32	15	39	96	0	29
RTOR Reduction (vph)	0	2	0	0	5	0	0	36	0	0	25	0
Lane Group Flow (vph)	23	1267	0	67	1778	0	32	18	0	96	4	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	pm+pt			pm+pt			Perm			pm+pt		
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	103.8	100.1		107.6	102.0		8.0	8.0		18.3	18.3	
Effective Green, g (s)	103.8	102.1		107.6	104.0		10.0	10.0		18.3	20.3	
Actuated g/C Ratio	0.74	0.73		0.77	0.74		0.07	0.07		0.13	0.15	
Clearance Time (s)	4.0	6.0		4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	168	3458		294	3493		90	111		143	215	
v/s Ratio Prot	0.00	0.27		c0.01	c0.38			0.01		c0.03	0.00	
v/s Ratio Perm	0.10			0.17			0.03			c0.06		
v/c Ratio	0.14	0.37		0.23	0.51		0.36	0.16		0.67	0.02	
Uniform Delay, d1	5.6	7.0		4.5	7.4		61.9	61.1		57.0	51.3	
Progression Factor	0.25	0.18		0.18	0.32		1.00	1.00		0.92	1.00	
Incremental Delay, d2	0.3	0.2		0.3	0.4		2.4	0.7		11.7	0.0	
Delay (s)	1.7	1.5		1.1	2.8		64.3	61.7		63.8	51.4	
Level of Service	A	A		A	A		E	E		E	D	
Approach Delay (s)		1.5			2.8			62.7			60.9	
Approach LOS		A			A			E			E	

Intersection Summary			
HCM Average Control Delay	6.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis — 2031 Total Traffic - PM Peak Hour
3: Mayfield Rd & Collector Rd D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	62	1283	44	78	1773	244	42	0	39	153	0	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.98		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1623	4744		1623	4681		1623	1484		1623	1484	
Flt Permitted	0.07	1.00		0.17	1.00		0.73	1.00		0.51	1.00	
Satd. Flow (perm)	117	4744		285	4681		1241	1484		865	1484	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	62	1283	44	78	1773	244	42	0	39	153	0	47
RTOR Reduction (vph)	0	2	0	0	8	0	0	36	0	0	39	0
Lane Group Flow (vph)	62	1325	0	78	2009	0	42	3	0	153	8	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	pm+pt			pm+pt			Perm			pm+pt		
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	99.7	93.7		102.3	95.0		9.0	9.0		23.0	23.0	
Effective Green, g (s)	99.7	95.7		102.3	97.0		11.0	11.0		23.0	25.0	
Actuated g/C Ratio	0.71	0.68		0.73	0.69		0.08	0.08		0.16	0.18	
Clearance Time (s)	4.0	6.0		4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	148	3243		278	3243		98	117		196	265	
v/s Ratio Prot	c0.02	0.28		0.01	c0.43			0.00		c0.06	0.01	
v/s Ratio Perm	0.28			0.19			0.03			c0.07		
v/c Ratio	0.42	0.41		0.28	0.62		0.43	0.03		0.78	0.03	
Uniform Delay, d1	9.6	9.7		6.2	11.6		61.5	59.6		54.8	47.5	
Progression Factor	3.13	0.47		0.49	0.31		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.8	0.4		0.4	0.7		3.0	0.1		18.0	0.0	
Delay (s)	31.8	5.0		3.5	4.3		64.5	59.6		72.8	47.5	
Level of Service	C	A		A	A		E	E		E	D	
Approach Delay (s)		6.2			4.2			62.2			66.9	
Approach LOS		A			A			E			E	

Intersection Summary			
HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	68.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis | 2031 Total Traffic - PM Peak Hour
4: Mayfield Rd & McLaughlin Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	74	1235	50	400	1666	227	145	426	144	182	265	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.96		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1623	4768	1452	3148	4682		1623	3193		1623	3210	
Flt Permitted	0.07	1.00	1.00	0.95	1.00		0.46	1.00		0.16	1.00	
Satd. Flow (perm)	127	4768	1452	3148	4682		783	3193		266	3210	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	74	1235	50	400	1666	227	145	426	144	182	265	74
RTOR Reduction (vph)	0	0	22	0	11	0	0	26	0	0	20	0
Lane Group Flow (vph)	74	1235	28	400	1882	0	145	544	0	182	319	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	pm+pt		Perm	Prot			pm+pt			pm+pt		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2				8			4		
Actuated Green, G (s)	61.8	54.0	54.0	21.9	70.1		39.2	29.2		45.0	32.1	
Effective Green, g (s)	61.8	56.0	56.0	23.9	72.1		39.2	31.2		45.0	34.1	
Actuated g/C Ratio	0.44	0.40	0.40	0.17	0.51		0.28	0.22		0.32	0.24	
Clearance Time (s)	4.0	6.0	6.0	6.0	6.0		4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	139	1907	581	537	2411		279	712		211	782	
v/s Ratio Prot	0.03	0.26		c0.13	c0.40		0.04	0.17		c0.08	0.10	
v/s Ratio Perm	0.21		0.02				0.11			c0.20		
v/c Ratio	0.53	0.65	0.05	0.74	0.78		0.52	0.76		0.86	0.41	
Uniform Delay, d1	25.6	34.0	25.7	55.2	27.5		39.9	51.0		38.3	44.5	
Progression Factor	1.38	0.65	0.76	0.81	0.72		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.6	1.6	0.1	4.9	2.3		1.6	4.9		28.5	0.3	
Delay (s)	39.0	23.6	19.6	49.7	22.1		41.6	55.9		66.8	44.8	
Level of Service	D	C	B	D	C		D	E		E	D	
Approach Delay (s)		24.3			26.9			53.0			52.5	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	32.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	81.1%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis | 2031 Total Traffic - PM Peak Hour
5: Mayfield Rd & Collector Rd E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	51	1373	18	168	2090	125	2	0	93	66	0	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1623	4759		1623	4727		1623	1484		1623	1484	
Flt Permitted	0.07	1.00		0.15	1.00		0.74	1.00		0.40	1.00	
Satd. Flow (perm)	126	4759		264	4727		1258	1484		690	1484	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	51	1373	18	168	2090	125	2	0	93	66	0	32
RTOR Reduction (vph)	0	1	0	0	2	0	0	88	0	0	10	0
Lane Group Flow (vph)	51	1390	0	168	2213	0	2	5	0	66	22	0
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Perm			pm+pt			Perm			pm+pt		
Protected Phases		2		1	6			8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	98.6	98.6		113.3	113.3		5.9	5.9		14.7	14.7	
Effective Green, g (s)	100.6	100.6		113.3	115.3		7.9	7.9		14.7	16.7	
Actuated g/C Ratio	0.72	0.72		0.81	0.82		0.06	0.06		0.10	0.12	
Clearance Time (s)	6.0	6.0		4.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	91	3420		318	3893		71	84		104	177	
v/s Ratio Prot		0.29		0.04	c0.47			0.00		c0.02	0.02	
v/s Ratio Perm	0.40			0.39			0.00			c0.04		
v/c Ratio	0.56	0.41		0.53	0.57		0.03	0.06		0.63	0.13	
Uniform Delay, d1	9.3	7.8		4.7	4.1		62.4	62.5		59.1	55.1	
Progression Factor	0.64	0.14		6.07	1.07		1.00	1.00		1.00	1.00	
Incremental Delay, d2	17.1	0.3		0.4	0.2		0.2	0.3		12.0	0.3	
Delay (s)	23.0	1.4		29.1	4.5		62.6	62.9		71.1	55.4	
Level of Service	C	A		C	A		E	E		E	E	
Approach Delay (s)		2.1			6.3			62.9			66.0	
Approach LOS		A			A			E			E	

Intersection Summary			
HCM Average Control Delay	7.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis — 2031 Total Traffic - PM Peak Hour
6: Mayfield Rd & Hurontario St

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	220	1055	172	367	1702	282	429	479	144	162	907	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3148	4768	1452	3148	4768	1452	1623	3318	1452	3148	3318	1452
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.09	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3148	4768	1452	3148	4768	1452	152	3318	1452	3148	3318	1452
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	220	1055	172	367	1702	282	429	479	144	162	907	153
RTOR Reduction (vph)	0	0	125	0	0	185	0	0	86	0	0	74
Lane Group Flow (vph)	220	1055	47	367	1702	97	429	479	58	162	907	79
Heavy Vehicles (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%
Turn Type	Prot		Perm	Prot		Perm	pm+pt		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6	8		8			4
Actuated Green, G (s)	6.1	36.3	36.3	15.8	46.0	46.0	69.9	54.1	54.1	9.8	40.9	40.9
Effective Green, g (s)	8.1	38.3	38.3	17.8	48.0	48.0	69.9	56.1	56.1	11.8	42.9	42.9
Actuated g/C Ratio	0.06	0.27	0.27	0.13	0.34	0.34	0.50	0.40	0.40	0.08	0.31	0.31
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	4.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	182	1304	397	400	1635	498	339	1330	582	265	1017	445
v/s Ratio Prot	c0.07	0.22		c0.12	c0.36		c0.23	0.14		0.05	0.27	
v/s Ratio Perm			0.03			0.07	c0.41		0.04			0.05
v/c Ratio	1.21	0.81	0.12	0.92	1.04	0.19	1.27	0.36	0.10	0.61	0.89	0.18
Uniform Delay, d1	66.0	47.4	38.2	60.4	46.0	32.4	44.9	29.4	26.2	61.9	46.3	35.6
Progression Factor	0.82	0.88	2.30	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	132.0	5.2	0.6	25.4	33.7	0.9	140.9	0.2	0.1	4.1	10.0	0.2
Delay (s)	185.8	46.8	88.2	85.8	79.7	33.3	185.8	29.5	26.3	66.0	56.3	35.8
Level of Service	F	D	F	F	E	C	F	C	C	E	E	D
Approach Delay (s)		72.9			75.1			92.8			55.0	
Approach LOS		E			E			F			E	

Intersection Summary			
HCM Average Control Delay	73.6	HCM Level of Service	E
HCM Volume to Capacity ratio	1.11		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	101.3%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis — 2031 Total Traffic - PM Peak Hour
7: The Spine Rd & Chinguacousy Rd

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	129	71	117	171	37	89
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	140	77	127	186	40	97
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	304	127			313	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	304	127			313	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	79	92			97	
cM capacity (veh/h)	665	923			1247	

Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	140	77	127	186	40	97
Volume Left	140	0	0	0	40	0
Volume Right	0	77	0	186	0	0
cSH	665	923	1700	1700	1247	1700
Volume to Capacity	0.21	0.08	0.07	0.11	0.03	0.06
Queue Length 95th (m)	6.3	2.2	0.0	0.0	0.8	0.0
Control Delay (s)	11.8	9.3	0.0	0.0	8.0	0.0
Lane LOS	B	A			A	
Approach Delay (s)	10.9		0.0		2.3	
Approach LOS	B					

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	22.5%	ICU Level of Service	A
Analysis Period (min)	15		

8: The Spine Rd & Collector Rd C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	223	5	92	227	74	30	14	70	34	14	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	242	5	100	247	80	33	15	76	37	15	3
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	327			248			720	790	245	830	752	287
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	327			248			720	790	245	830	752	287
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			92			89	95	90	84	95	100
cM capacity (veh/h)	1232			1318			308	296	794	235	311	752

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	9	248	100	327	33	91	37	18
Volume Left	9	0	100	0	33	0	37	0
Volume Right	0	5	0	80	0	76	0	3
cSH	1232	1700	1318	1700	308	620	235	347
Volume to Capacity	0.01	0.15	0.08	0.19	0.11	0.15	0.16	0.05
Queue Length 95th (m)	0.2	0.0	2.0	0.0	2.8	4.1	4.4	1.3
Control Delay (s)	7.9	0.0	8.0	0.0	18.1	11.8	23.1	16.0
Lane LOS	A		A		C	B	C	C
Approach Delay (s)	0.3		1.9		13.5		20.7	
Approach LOS					B		C	

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	38.3%	ICU Level of Service	A
Analysis Period (min)	15		

9: The Spine Rd & Collector Rd D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	45	345	12	139	514	94	12	70	124	61	71	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98		1.00	0.90		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	1874		1750	1840		1750	1703		1750	1808	
Flt Permitted	0.26	1.00		0.47	1.00		0.69	1.00		0.58	1.00	
Satd. Flow (perm)	470	1874		867	1840		1270	1703		1077	1808	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	49	375	13	151	559	102	13	76	135	66	77	28
RTOR Reduction (vph)	0	2	0	0	11	0	0	90	0	0	19	0
Lane Group Flow (vph)	49	386	0	151	650	0	13	121	0	66	86	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	30.0	30.0		30.0	30.0		18.0	18.0		18.0	18.0	
Effective Green, g (s)	32.0	32.0		32.0	32.0		20.0	20.0		20.0	20.0	
Actuated g/C Ratio	0.53	0.53		0.53	0.53		0.33	0.33		0.33	0.33	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Grp Cap (vph)	251	999		462	981		423	568		359	603	
v/s Ratio Prot		0.21			c0.35			c0.07			0.05	
v/s Ratio Perm	0.10			0.17			0.01			0.06		
v/c Ratio	0.20	0.39		0.33	0.66		0.03	0.21		0.18	0.14	
Uniform Delay, d1	7.3	8.2		7.9	10.1		13.5	14.4		14.2	14.0	
Progression Factor	1.00	1.00		0.87	0.85		1.00	1.00		1.16	1.21	
Incremental Delay, d2	1.7	1.1		1.4	2.6		0.1	0.9		1.1	0.5	
Delay (s)	9.0	9.4		8.3	11.2		13.6	15.2		17.6	17.4	
Level of Service	A	A		A	B		B	B		B	B	
Approach Delay (s)		9.3			10.7			15.1			17.5	
Approach LOS		A			B			B			B	

Intersection Summary			
HCM Average Control Delay	11.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis — 2031 Total Traffic - PM Peak Hour
10: The Spine Rd & McLaughlin Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	448	69	469	568	70	131	388	327	16	296	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.0	4.0	7.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.93		1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	1883	1566	1750	1852		1750	3333		1750	3487	
Flt Permitted	0.37	1.00	1.00	0.11	1.00		0.26	1.00		0.19	1.00	
Satd. Flow (perm)	673	1883	1566	194	1852		485	3333		351	3487	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	487	75	510	617	76	142	422	355	17	322	66
RTOR Reduction (vph)	0	0	19	0	4	0	0	127	0	0	15	0
Lane Group Flow (vph)	87	487	56	510	689	0	142	651	0	17	373	0
Turn Type	pm+pt		Perm	pm+pt			pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	40.0	34.0	34.0	72.0	62.0		36.0	26.0		27.0	21.0	
Effective Green, g (s)	40.0	36.0	33.0	72.0	64.0		36.0	28.0		27.0	23.0	
Actuated g/C Ratio	0.33	0.30	0.28	0.60	0.53		0.30	0.23		0.22	0.19	
Clearance Time (s)	4.0	6.0	6.0	4.0	6.0		4.0	6.0		4.0	6.0	
Lane Grp Cap (vph)	278	565	431	557	988		261	778		149	668	
v/s Ratio Prot	0.02	0.26		c0.26	0.37		c0.05	c0.20		0.01	0.11	
v/s Ratio Perm	0.09		0.04	c0.29			0.11			0.02		
v/c Ratio	0.31	0.86	0.13	0.92	0.70		0.54	0.84		0.11	0.56	
Uniform Delay, d1	28.1	39.7	32.7	33.4	20.8		32.7	43.8		37.6	43.9	
Progression Factor	0.90	0.90	0.89	1.57	1.10		1.00	1.00		1.26	1.24	
Incremental Delay, d2	2.8	15.4	0.6	12.0	1.9		7.9	10.4		1.4	3.1	
Delay (s)	28.2	50.9	29.7	64.3	24.8		40.7	54.2		48.8	57.5	
Level of Service	C	D	C	E	C		D	D		D	E	
Approach Delay (s)		45.4			41.6			52.1			57.2	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM Average Control Delay	47.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	87.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis — 2031 Total Traffic - PM Peak Hour
11: The Spine Rd & local street

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	24	729	58	27	1078	72	67	3	28	38	2	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	2.0	4.0	4.0	2.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.86		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	1842	1566	1750	1842	1566	1750	1591		1750	1603	
Flt Permitted	0.06	1.00	1.00	0.19	1.00	1.00	0.68	1.00		0.74	1.00	
Satd. Flow (perm)	102	1842	1566	349	1842	1566	1252	1591		1355	1603	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	26	792	63	29	1172	78	73	3	30	41	2	13
RTOR Reduction (vph)	0	0	14	0	0	22	0	23	0	0	11	0
Lane Group Flow (vph)	26	792	49	29	1172	56	73	11	0	41	4	0
Turn Type	Perm		Perm	pm+pt		Perm	pm+pt			Perm		
Protected Phases		4		3	8		5	2			6	
Permitted Phases	4		4	8		8	2			6		
Actuated Green, G (s)	70.0	70.0	70.0	80.0	80.0	80.0	28.0	28.0		18.0	18.0	
Effective Green, g (s)	72.0	72.0	72.0	82.0	82.0	82.0	30.0	30.0		20.0	20.0	
Actuated g/C Ratio	0.60	0.60	0.60	0.68	0.68	0.68	0.25	0.25		0.17	0.17	
Clearance Time (s)	6.0	6.0	6.0	4.0	6.0	6.0	4.0	6.0		6.0	6.0	
Lane Grp Cap (vph)	61	1105	940	332	1259	1070	346	398		226	267	
v/s Ratio Prot		0.43		0.01	c0.64		c0.01	0.01			0.00	
v/s Ratio Perm	0.25		0.03	0.05		0.04	0.04			c0.03		
v/c Ratio	0.43	0.72	0.05	0.09	0.93	0.05	0.21	0.03		0.18	0.02	
Uniform Delay, d1	12.9	16.8	9.9	11.7	16.5	6.2	35.2	34.0		43.0	41.8	
Progression Factor	1.26	1.17	1.50	1.25	2.14	2.30	1.00	1.00		1.00	1.00	
Incremental Delay, d2	11.3	2.2	0.1	0.4	12.0	0.1	1.4	0.1		1.8	0.1	
Delay (s)	27.6	21.9	15.0	15.0	47.3	14.4	36.6	34.1		44.7	41.9	
Level of Service	C	C	B	B	D	B	D	C		D	D	
Approach Delay (s)		21.6			44.6			35.8			44.0	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM Average Control Delay	35.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis — 2031 Total Traffic - PM Peak Hour
12: The Spine Rd & Collector Rd F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	748	20	136	1091	354	18	2	75	402	3	118
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.5	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		0.97	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1716	3496		1716	3510	1536	1716	1577		3330	1542	
Flt Permitted	0.16	1.00		0.25	1.00	1.00	0.67	1.00		0.95	1.00	
Satd. Flow (perm)	296	3496		456	3510	1536	1216	1577		3330	1542	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	813	22	148	1186	385	20	2	82	437	3	128
RTOR Reduction (vph)	0	1	0	0	0	40	0	76	0	0	100	0
Lane Group Flow (vph)	71	834	0	148	1186	345	20	8	0	437	31	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	pm+pt			pm+pt		Perm	pm+pt			Prot		
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6		6	8					
Actuated Green, G (s)	69.8	63.6		76.4	66.9	66.9	9.4	7.0		19.9	24.5	
Effective Green, g (s)	69.8	65.6		76.4	68.9	68.9	9.4	9.0		19.9	26.5	
Actuated g/C Ratio	0.58	0.55		0.64	0.57	0.57	0.08	0.08		0.17	0.22	
Clearance Time (s)	4.0	6.0		4.0	6.0	6.0	4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	246	1911		390	2015	882	105	118		552	341	
v/s Ratio Prot	0.01	0.24		c0.03	c0.34		0.00	0.01		c0.13	0.02	
v/s Ratio Perm	0.15			0.21		0.22	c0.01					
v/c Ratio	0.29	0.44		0.38	0.59	0.39	0.19	0.07		0.79	0.09	
Uniform Delay, d1	12.9	16.2		10.2	16.4	14.0	51.6	51.6		48.1	37.2	
Progression Factor	0.45	0.59		0.36	0.16	0.07	1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5	0.6		0.4	0.7	0.7	0.9	0.2		7.6	0.1	
Delay (s)	6.3	10.1		4.0	3.4	1.7	52.5	51.9		55.7	37.3	
Level of Service	A	B		A	A	A	D	D		E	D	
Approach Delay (s)		9.8			3.1			52.0			51.4	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM Average Control Delay	14.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis — 2031 Total Traffic - PM Peak Hour
13: The Spine Rd & Commercial Access

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	138	1002	41	110	1343	413	68	0	191	399	0	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		0.97	1.00	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.85		1.00	0.85	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1716	3489		1716	3510	1536	1716	1570		3330	1570	
Flt Permitted	0.07	1.00		0.14	1.00	1.00	0.64	1.00		0.95	1.00	
Satd. Flow (perm)	127	3489		260	3510	1536	1158	1570		3330	1570	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	150	1089	45	120	1460	449	74	0	208	434	0	185
RTOR Reduction (vph)	0	2	0	0	0	0	0	105	0	0	94	0
Lane Group Flow (vph)	150	1132	0	120	1460	449	74	103	0	434	91	0
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	pm+pt			pm+pt		Free	Perm			Prot		
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	2			6		Free	8					
Actuated Green, G (s)	70.5	56.9		63.5	53.4	120.0	13.4	13.4		17.6	37.0	
Effective Green, g (s)	70.5	58.9		63.5	55.4	120.0	15.4	15.4		19.6	39.0	
Actuated g/C Ratio	0.59	0.49		0.53	0.46	1.00	0.13	0.13		0.16	0.32	
Clearance Time (s)	4.0	6.0		4.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	255	1713		260	1620	1536	149	201		544	510	
v/s Ratio Prot	c0.07	0.32		0.04	c0.42			c0.07		c0.13	0.06	
v/s Ratio Perm	0.28			0.21		0.29	0.06					
v/c Ratio	0.59	0.66		0.46	0.90	0.29	0.50	0.51		0.80	0.18	
Uniform Delay, d1	26.8	23.0		17.2	29.8	0.0	48.7	48.8		48.3	29.0	
Progression Factor	1.07	1.10		1.60	0.31	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.0	1.8		0.6	3.4	0.2	2.6	2.2		8.0	0.2	
Delay (s)	31.7	27.0		28.1	12.7	0.2	51.3	51.0		56.3	29.2	
Level of Service	C	C		C	B	A	D	D		E	C	
Approach Delay (s)		27.6			10.8			51.1			48.2	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM Average Control Delay	24.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	81.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
14: The Spine Rd & Hurontario St

2031 Total Traffic - PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	274	1227	257	0	1413	187	259	852	0	113	640	208
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.91			0.91	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.97			1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1716	4912			5043	1536	1716	3510		1716	3510	1536
Flt Permitted	0.10	1.00			1.00	1.00	0.18	1.00		0.14	1.00	1.00
Satd. Flow (perm)	185	4912			5043	1536	319	3510		261	3510	1536
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	298	1334	279	0	1536	203	282	926	0	123	696	226
RTOR Reduction (vph)	0	27	0	0	0	31	0	0	0	0	0	0
Lane Group Flow (vph)	298	1586	0	0	1536	172	282	926	0	123	696	226
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Turn Type	pm+pt			Perm		Perm	pm+pt			pm+pt		Free
Protected Phases	7	4			8		5	2		1	6	
Permitted Phases	4			8		8	2			6		Free
Actuated Green, G (s)	56.0	56.0			35.0	35.0	52.0	41.0		42.0	35.0	120.0
Effective Green, g (s)	56.0	58.0			37.0	37.0	52.0	43.0		42.0	37.0	120.0
Actuated g/C Ratio	0.47	0.48			0.31	0.31	0.43	0.36		0.35	0.31	1.00
Clearance Time (s)	4.0	6.0			6.0	6.0	4.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	303	2374			1555	474	290	1258		176	1082	1536
v/s Ratio Prot	c0.14	0.32			0.30		c0.11	0.26		0.04	0.20	
v/s Ratio Perm	c0.32					0.11	c0.32			0.20		0.15
v/c Ratio	0.98	0.67			0.99	0.36	0.97	0.74		0.70	0.64	0.15
Uniform Delay, d1	36.3	23.7			41.3	32.3	26.8	33.6		29.2	35.8	0.0
Progression Factor	1.18	1.30			1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	41.6	0.6			19.7	0.5	45.0	3.9		11.5	2.9	0.2
Delay (s)	84.4	31.4			61.0	32.8	71.8	37.4		40.6	38.8	0.2
Level of Service	F	C			E	C	E	D		D	D	A
Approach Delay (s)		39.7			57.7			45.4			30.6	
Approach LOS		D			E			D			C	

Intersection Summary			
HCM Average Control Delay	44.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	87.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

HCM Unsignalized Intersection Capacity Analysis
15: Collector Rd B & Chinguacousy Rd

2031 Total Traffic - PM Peak Hour

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	58	4	300	70	6	218
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	63	4	326	76	7	237
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	614	364			402	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	614	364			402	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	99			99	
cM capacity (veh/h)	453	681			1156	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	67	402	7	237
Volume Left	63	0	7	0
Volume Right	4	76	0	0
cSH	463	1700	1156	1700
Volume to Capacity	0.15	0.24	0.01	0.14
Queue Length 95th (m)	4.1	0.0	0.1	0.0
Control Delay (s)	14.1	0.0	8.1	0.0
Lane LOS	B		A	
Approach Delay (s)	14.1	0.0	0.2	
Approach LOS	B			

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	30.2%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
16: Collector Rd C & Chinguacousy Rd

2031 Total Traffic - PM Peak Hour

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	10	2	176	12	4	116
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	2	191	13	4	126
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	333	198			204	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	333	198			204	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	100			100	
cM capacity (veh/h)	660	843			1367	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	13	204	4	126
Volume Left	11	0	4	0
Volume Right	2	13	0	0
cSH	685	1700	1367	1700
Volume to Capacity	0.02	0.12	0.00	0.07
Queue Length 95th (m)	0.5	0.0	0.1	0.0
Control Delay (s)	10.4	0.0	7.6	0.0
Lane LOS	B		A	
Approach Delay (s)	10.4	0.0	0.3	
Approach LOS	B			

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	20.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
17: Old School Rd & Chinguacousy Rd

2031 Total Traffic - PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	34	7	30	117	12	9	170	24	43	83	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	37	8	33	127	13	10	185	26	47	90	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	478	415	91	428	402	198	91			211		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	478	415	91	428	402	198	91			211		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	93	99	93	75	98	99			97		
cM capacity (veh/h)	385	507	967	488	515	843	1504			1360		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	53	173	221	138
Volume Left	9	33	10	47
Volume Right	8	13	26	1
cSH	515	525	1504	1360
Volume to Capacity	0.10	0.33	0.01	0.03
Queue Length 95th (m)	2.8	11.4	0.2	0.9
Control Delay (s)	12.8	15.2	0.4	2.8
Lane LOS	B	C	A	A
Approach Delay (s)	12.8	15.2	0.4	2.8
Approach LOS	B	C		

Intersection Summary			
Average Delay	6.5		
Intersection Capacity Utilization	39.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis — 2031 Total Traffic - PM Peak Hour

18: Collector Rd G & McLaughlin Rd

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	14	32	706	21	35	507
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	35	767	23	38	551
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (m)			189			313
pX, platoon unblocked	0.89	0.89			0.89	
vC, conflicting volume	1130	395			790	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	897	69			514	
tC, single (s)	6.9	7.0			4.2	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	94	96			96	
cM capacity (veh/h)	235	865			919	

Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	50	512	279	38	276	276
Volume Left	15	0	0	38	0	0
Volume Right	35	0	23	0	0	0
cSH	476	1700	1700	919	1700	1700
Volume to Capacity	0.10	0.30	0.16	0.04	0.16	0.16
Queue Length 95th (m)	2.8	0.0	0.0	1.0	0.0	0.0
Control Delay (s)	13.4	0.0	0.0	9.1	0.0	0.0
Lane LOS	B			A		
Approach Delay (s)	13.4	0.0		0.6		
Approach LOS	B					

Intersection Summary			
Average Delay	0.7		
Intersection Capacity Utilization	36.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis — 2031 Total Traffic - PM Peak Hour

19: Collector Rd B & McLaughlin Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	56	17	44	8	18	112	29	700	8	169	490	122
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.89		1.00	0.87		1.00	1.00		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	1678		1750	1641		1750	3572		1750	3471	
Flt Permitted	0.34	1.00		0.71	1.00		0.40	1.00		0.29	1.00	
Satd. Flow (perm)	624	1678		1315	1641		734	3572		541	3471	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	61	18	48	9	20	122	32	761	9	184	533	133
RTOR Reduction (vph)	0	39	0	0	110	0	0	0	0	0	13	0
Lane Group Flow (vph)	61	27	0	9	32	0	32	770	0	184	653	0
Turn Type	pm+pt			Perm			Perm			pm+pt		
Protected Phases	7	4			8			2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	17.9	17.9		7.8	7.8		60.4	60.4		73.3	73.3	
Effective Green, g (s)	17.9	19.9		9.8	9.8		62.4	62.4		73.3	75.3	
Actuated g/C Ratio	0.17	0.19		0.09	0.09		0.60	0.60		0.71	0.73	
Clearance Time (s)	4.0	6.0		6.0	6.0		6.0	6.0		4.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	175	324		125	156		444	2160		489	2533	
v/s Ratio Prot	c0.02	0.02			0.02			0.22		c0.03	0.19	
v/s Ratio Perm	c0.04			0.01			0.04			c0.24		
v/c Ratio	0.35	0.08		0.07	0.20		0.07	0.36		0.38	0.26	
Uniform Delay, d1	36.8	34.2		42.6	43.1		8.4	10.3		5.8	4.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	0.1		0.2	0.6		0.3	0.5		0.5	0.2	
Delay (s)	38.0	34.3		42.8	43.7		8.7	10.7		6.3	4.9	
Level of Service	D	C		D	D		A	B		A	A	
Approach Delay (s)		36.1			43.7			10.7			5.2	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM Average Control Delay	12.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	103.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis — 2031 Total Traffic - PM Peak Hour
20: Collector Rd A & McLaughlin Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	74	28	29	97	140	52	107	371	82	86	272	113
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	0.96		1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	1738		1750	1806		1750	1832		1750	1801	
Flt Permitted	0.61	1.00		0.72	1.00		0.40	1.00		0.33	1.00	
Satd. Flow (perm)	1127	1738		1320	1806		741	1832		613	1801	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	80	30	32	105	152	57	116	403	89	93	296	123
RTOR Reduction (vph)	0	19	0	0	23	0	0	13	0	0	25	0
Lane Group Flow (vph)	80	43	0	105	186	0	116	479	0	93	394	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	23.0	23.0		23.0	23.0		25.0	25.0		25.0	25.0	
Effective Green, g (s)	25.0	25.0		25.0	25.0		27.0	27.0		27.0	27.0	
Actuated g/C Ratio	0.42	0.42		0.42	0.42		0.45	0.45		0.45	0.45	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Grp Cap (vph)	470	724		550	753		333	824		276	810	
v/s Ratio Prot		0.02			c0.10			c0.26			0.22	
v/s Ratio Perm	0.07			0.08			0.16			0.15		
v/c Ratio	0.17	0.06		0.19	0.25		0.35	0.58		0.34	0.49	
Uniform Delay, d1	11.0	10.5		11.1	11.4		10.8	12.3		10.7	11.6	
Progression Factor	1.00	1.00		1.00	1.00		1.50	1.49		1.10	1.17	
Incremental Delay, d2	0.8	0.2		0.8	0.8		1.9	2.0		2.8	1.8	
Delay (s)	11.8	10.6		11.9	12.2		18.1	20.3		14.6	15.4	
Level of Service	B	B		B	B		B	C		B	B	
Approach Delay (s)		11.3			12.1			19.9			15.2	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	16.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis — 2031 Total Traffic - PM Peak Hour
21: Old School Rd & McLaughlin Rd

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	5	52	57	352	126	20	26	202	263	4	94	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	0.98		1.00	0.92		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	1736		1750	1844		1750	1724		1750	1865	
Flt Permitted	0.66	1.00		0.68	1.00		0.69	1.00		0.29	1.00	
Satd. Flow (perm)	1209	1736		1254	1844		1265	1724		539	1865	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	5	57	62	383	137	22	28	220	286	4	102	7
RTOR Reduction (vph)	0	34	0	0	10	0	0	78	0	0	4	0
Lane Group Flow (vph)	5	85	0	383	149	0	28	428	0	4	105	0
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	25.0	25.0		25.0	25.0		23.0	23.0		23.0	23.0	
Effective Green, g (s)	27.0	27.0		27.0	27.0		25.0	25.0		25.0	25.0	
Actuated g/C Ratio	0.45	0.45		0.45	0.45		0.42	0.42		0.42	0.42	
Clearance Time (s)	6.0	6.0		6.0	6.0		6.0	6.0		6.0	6.0	
Lane Grp Cap (vph)	544	781		564	830		527	718		225	777	
v/s Ratio Prot		0.05			0.08			c0.25			0.06	
v/s Ratio Perm	0.00			c0.31			0.02			0.01		
v/c Ratio	0.01	0.11		0.68	0.18		0.05	0.60		0.02	0.14	
Uniform Delay, d1	9.1	9.5		13.1	9.9		10.4	13.6		10.3	10.8	
Progression Factor	1.00	1.00		1.00	1.00		1.12	0.96		1.00	1.00	
Incremental Delay, d2	0.0	0.3		6.5	0.5		0.2	3.2		0.1	0.4	
Delay (s)	9.1	9.8		19.5	10.3		11.9	16.2		10.4	11.2	
Level of Service	A	A		B	B		B	B		B	B	
Approach Delay (s)		9.8			16.8			16.0			11.2	
Approach LOS		A			B			B			B	

Intersection Summary			
HCM Average Control Delay	15.4	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	59.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
22: Old School Rd & Hurontario St

2031 Total Traffic - PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	118	28	125	75	106	114	197	1071	44	26	761	159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5	3.5	3.7	3.5
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.88		1.00	0.92		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1750	1652		1750	1737		1750	3557		1750	3486	
Flt Permitted	0.36	1.00		0.55	1.00		0.14	1.00		0.13	1.00	
Satd. Flow (perm)	668	1652		1013	1737		265	3557		244	3486	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	128	30	136	82	115	124	214	1164	48	28	827	173
RTOR Reduction (vph)	0	110	0	0	57	0	0	3	0	0	19	0
Lane Group Flow (vph)	128	56	0	82	182	0	214	1209	0	28	981	0
Turn Type	pm+pt			pm+pt			pm+pt			pm+pt		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	16.6	12.0		16.6	12.0		36.9	31.8		29.7	28.2	
Effective Green, g (s)	16.6	14.0		16.6	14.0		40.9	33.8		33.7	30.2	
Actuated g/C Ratio	0.23	0.19		0.23	0.19		0.57	0.47		0.47	0.42	
Clearance Time (s)	4.0	6.0		4.0	6.0		6.0	6.0		6.0	6.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	223	322		281	338		297	1672		188	1464	
v/s Ratio Prot	c0.04	0.03		0.02	c0.10		c0.07	c0.34		0.01	0.28	
v/s Ratio Perm	0.10			0.05			0.34			0.06		
v/c Ratio	0.57	0.18		0.29	0.54		0.72	0.72		0.15	0.67	
Uniform Delay, d1	23.1	24.1		22.3	26.0		10.9	15.3		11.6	16.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.5	0.3		0.6	1.6		8.3	2.7		0.4	2.5	
Delay (s)	26.7	24.4		22.9	27.7		19.3	18.0		12.0	19.3	
Level of Service	C	C		C	C		B	B		B	B	
Approach Delay (s)		25.4			26.5			18.2			19.1	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	20.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	71.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	69.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
23: Collector Rd B & Collector Rd C

2031 Total Traffic - PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	8	223	5	92	70	10	30	14	70	34	14	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	242	5	100	76	11	33	15	76	37	15	3
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	87			248			555	549	245	628	547	82
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	87			248			555	549	245	628	547	82
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			92			92	96	90	89	96	100
cM capacity (veh/h)	1509			1318			402	407	794	326	409	978

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	257	187	124	55
Volume Left	9	100	33	37
Volume Right	5	11	76	3
cSH	1509	1318	578	360
Volume to Capacity	0.01	0.08	0.21	0.15
Queue Length 95th (m)	0.1	2.0	6.5	4.3
Control Delay (s)	0.3	4.6	12.9	16.8
Lane LOS	A	A	B	C
Approach Delay (s)	0.3	4.6	12.9	16.8
Approach LOS			B	C

Intersection Summary			
Average Delay	5.6		
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
24: Collector Rd B & Collector Rd D

2031 Total Traffic - PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	63	48	76	29	119	19	114	147	32	34	136	71
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	68	52	83	32	129	21	124	160	35	37	148	77
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	753	703	186	755	724	177	225			195		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	753	703	186	755	724	177	225			195		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	65	84	90	87	58	98	91			97		
cM capacity (veh/h)	197	320	856	234	311	866	1344			1379		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total	203	182	124	195	37	225
Volume Left	68	32	124	0	37	0
Volume Right	83	21	0	35	0	77
cSH	335	316	1344	1700	1379	1700
Volume to Capacity	0.61	0.57	0.09	0.11	0.03	0.13
Queue Length 95th (m)	30.2	27.0	2.4	0.0	0.7	0.0
Control Delay (s)	31.0	30.7	8.0	0.0	7.7	0.0
Lane LOS	D	D	A		A	
Approach Delay (s)	31.0	30.7	3.1		1.1	
Approach LOS	D	D				

Intersection Summary			
Average Delay	13.6		
Intersection Capacity Utilization	47.0%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
25: Collector Rd G & Collector Rd E

2031 Total Traffic - PM Peak Hour

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	28	40	72	104	58	52
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	30	43	78	113	63	57
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (m)				182		
pX, platoon unblocked						
vC, conflicting volume	361	91	120			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	361	91	120			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	96	95			
cM capacity (veh/h)	604	966	1468			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	74	191	120
Volume Left	30	78	0
Volume Right	43	0	57
cSH	775	1468	1700
Volume to Capacity	0.10	0.05	0.07
Queue Length 95th (m)	2.5	1.3	0.0
Control Delay (s)	10.1	3.4	0.0
Lane LOS	B	A	
Approach Delay (s)	10.1	3.4	0.0
Approach LOS	B		

Intersection Summary			
Average Delay	3.6		
Intersection Capacity Utilization	26.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis — 2031 Total Traffic - PM Peak Hour
26: Collector Rd D & Collector Rd A

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (veh/h)	0	3	90	0	3	97
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	3	98	0	3	105
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume			3		197	2
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			3		197	2
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		100	90
cM capacity (veh/h)			1619		744	1083

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	3	98	109
Volume Left	0	98	3
Volume Right	3	0	105
cSH	1700	1619	1068
Volume to Capacity	0.00	0.06	0.10
Queue Length 95th (m)	0.0	1.5	2.7
Control Delay (s)	0.0	7.4	8.8
Lane LOS		A	A
Approach Delay (s)	0.0	7.4	8.8
Approach LOS			A

Intersection Summary			
Average Delay	8.0		
Intersection Capacity Utilization	24.5%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis — 2031 Total Traffic - PM Peak Hour
27: Collector Rd A & Collector Rd F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	0	30	104	219	74	0	231	35	72	0	108	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	33	113	238	80	0	251	38	78	0	117	0

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total (vph)	0	146	238	80	251	116	117
Volume Left (vph)	0	0	238	0	251	0	0
Volume Right (vph)	0	113	0	0	0	78	0
Hadj (s)	0.00	-0.51	0.53	0.03	0.53	-0.44	0.03
Departure Headway (s)	6.5	6.0	6.7	6.2	6.7	5.7	6.6
Degree Utilization, x	0.00	0.24	0.45	0.14	0.47	0.18	0.22
Capacity (veh/h)	522	552	508	544	509	597	502
Control Delay (s)	8.3	9.7	13.9	9.1	14.2	8.8	11.4
Approach Delay (s)	9.7		12.7		12.4		11.4
Approach LOS	A		B		B		B

Intersection Summary			
Delay	12.0		
HCM Level of Service	B		
Intersection Capacity Utilization	49.6%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix D

Transportation Assessment Study

TRANSPORTATION ASSESSMENT STUDY: PROPOSED INTERCHANGE MODIFICATIONS & RESPONSES TO MTO/PEEL REGION COMMENTS RE:

MAYFIELD WEST PHASE 2 TRANSPORTATION MASTER PLAN

Town of Caledon

8619/200 October 2015

LEA Consulting Ltd.
Consulting Engineers & Planners

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APPENDICES

1 INTRODUCTION

On behalf of the Mayfield West Phase 2 Landowners and the Town of Caledon, LEA Consulting Ltd. (LEA) was requested to conduct a transportation assessment that would supplement the work previously being undertaken by the Town for the Mayfield West Secondary Plan – Phase 2 Transportation Master Plan. The purpose of the supplementary work is twofold:

(i) To assess a proposed connection of the Spine Road to the Highway 410/Valleywood interchange; and

(ii) To address MTO and Peel Region comments on the Town's TMP, related to the Highway 410 interchanges at Valleywood and Mayfield Road.

This work is based on a meeting held at the Town of Caledon on November 3, 2014, with Town staff, their Transportation Consultant, the Mayfield West Phase 2 Landowners, and LEA.

Figure 1 shows the location of the development and the area considered for this study, which is edged by Chinguacousy Road to the west, Old School Road to the north, Dixie Road to the east and Sandalwood Parkway to the south.

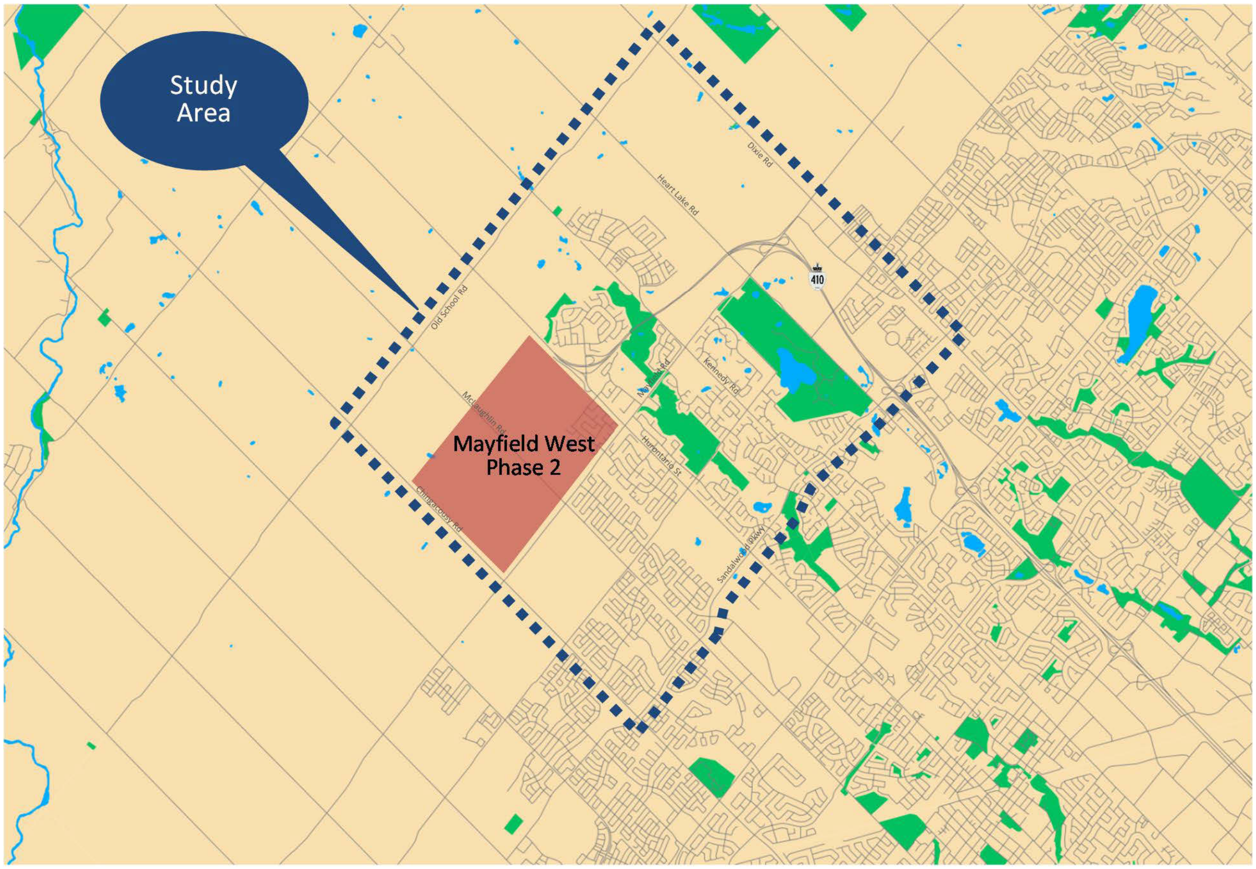


Figure 1: Study Area

The overall objectives of the study are:

- Forecast traffic by relying on analytical practices and tools recognized by provincial and regional transportation agencies (including Ministry of Transportation and Peel Region) that consider all trips generated in the GTA.
- Assess an improvement scenario proposed by LEA to connect the Mayfield West Phase 2 Secondary Plan area to the highway network (Spine Road connection to Hurontario Street) given traffic forecast and road improvements already part of the Official Plans.
- Review potential of the proposed Spine Road modification to meet travel demand generated by the development and regional growth.
- Address MTO and Peel Region comments on the TMP, related to the Highway 410 interchanges at Valleywood and Mayfield Road.

The key MTO and Peel Region comments can generally be summarized as follows:

- Update the traffic volumes;
- Assess Highway 410 interchange ramp terminals at Valleywood and at Mayfield Road;
- Use micro-simulation modelling to assess the Valleywood interchange modification option;
- Provide more explanation on future travel forecasting;
- Consider MTO guidelines for evaluating critical movements at intersections/ramp terminals;
- Justify amount of development with traffic analysis;
- Address issue of MTO-proposed Valleywood/Highway 410 interchange modifications being delayed or cancelled and how would it impact the development of Mayfield West Phase 2?

The analysis in this report addresses these questions/comments. However, the specific MTO and Peel Region questions/comments have been responded to separately, in Appendix A and B.

2 EXISTING CONDITIONS

2.1 NETWORK

2.1.1 Road

The road network of the study area consists mainly of the following:

- Highway 410 has 2 or 3 lanes per direction with the three following interchanges serving trips generated by the study area:
  - Hurontario Street / Valleywood Boulevard, whose intersections are currently unsignalized;
  - Mayfield Road, whose intersections are signalized;
  - Sandalwood Parkway, whose intersections are signalized.
- North-South arterials:
  - Dixie Road (Highway 4), which is a regional road that has 2 travel lanes (1/ direction) and a posted speed of 70 km/h between Sandalwood Parkway and Mayfield Road ;
  - Kennedy Road, which is a major road with 2 travel lanes (1/direction) and a posted speed of 60 km/h;
  - Hurontario Street, which is a major road with 4 travel lanes (2/direction) and a posted speed of 70 km/h;
  - McLaughlin Road, which is a major road with 2 travel lanes (1/direction) and a posted speed of 60 km/h;
  - Chinguacousy Road, is a major road with 2 travel lanes (1/direction) and a posted speed of 70 km/h.
- East-West arterials:
  - Mayfield Road (Highway 14), which is a regional road that has:
    - 2 travel lanes (1/direction) west of Heart Lake Road with a posted speed of 60 km/h;
    - 4 travel lanes (2/ direction) east of Heart Lake Road with a posted speed of 70 km/h;
  - Old School Road, which is a major road with 2 travel lanes (1/direction) and a posted speed of 80 km/h;
  - Sandalwood Parkway, which is a major road with 4 travel lanes (2/direction) and a posted speed of 60 km/h.

2.1.2 Transit

Figure 2 presents the current GO Transit Services as shown in the Transportation Impact Study part of the Mayfield West Phase 2 Secondary Plan (submitted by the firm Paradigm in November 2008). More local transit services are also available but are not mentioned in this report.

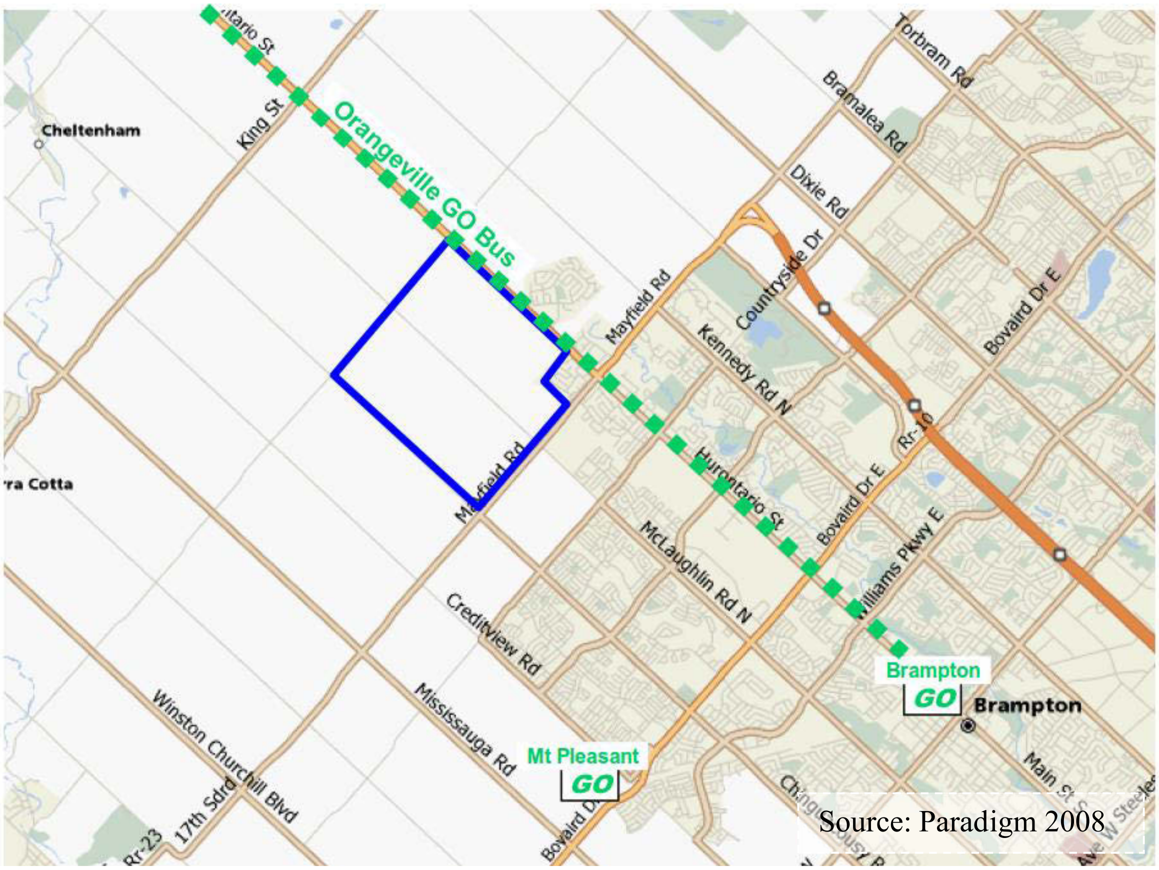
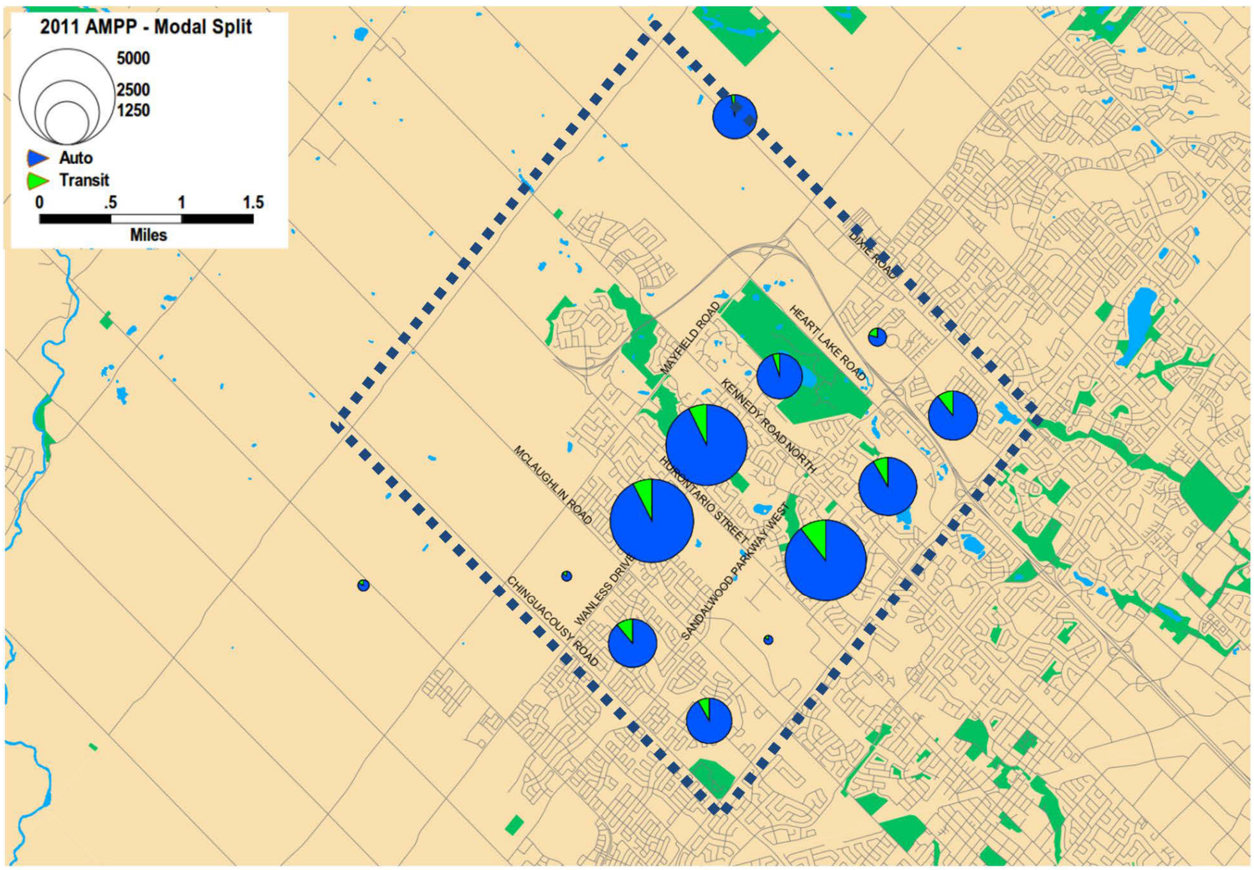


Figure 2: Current GO Transit Services

2.2 TRAVEL DEMAND

Built based on TTS 2011 data, **Figure 3** shows the modal split (auto / transit) of trips produced by the transportation zones inside the extended study area (which extends south to Bovaird Drive) during the morning peak period in 2011. The size of the circle indicates the volume of trips produced, while the pie chart sectors in green and blue respectively show the shares of transit and car drivers. Figure 3 shows that the vast majority of trips produced by the study area in the weekday morning peak period are by car.



Source: TTS 2011

Figure 3: 2011 AM / Modal Split

Figure 4 shows the destination of trips produced by the study area using car during the morning peak period in 2011. As before, the size of the circle indicates the volume of trips produced, while the color of the pie slice indicates where the trips are destined. Figure 4 shows that the majority of trips stay within the cities of Caledon and Brampton (blue and green) while around ¼ is destined in other parts of the GTA.

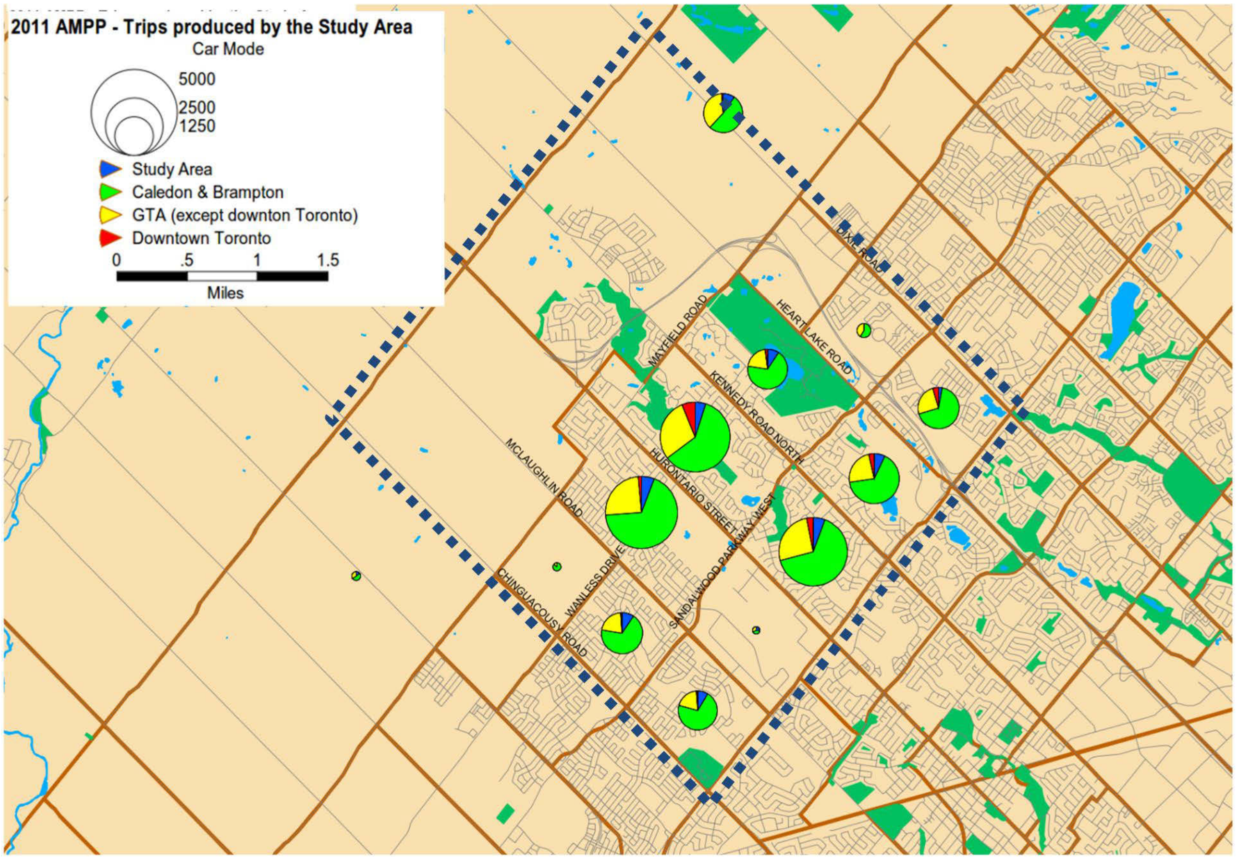
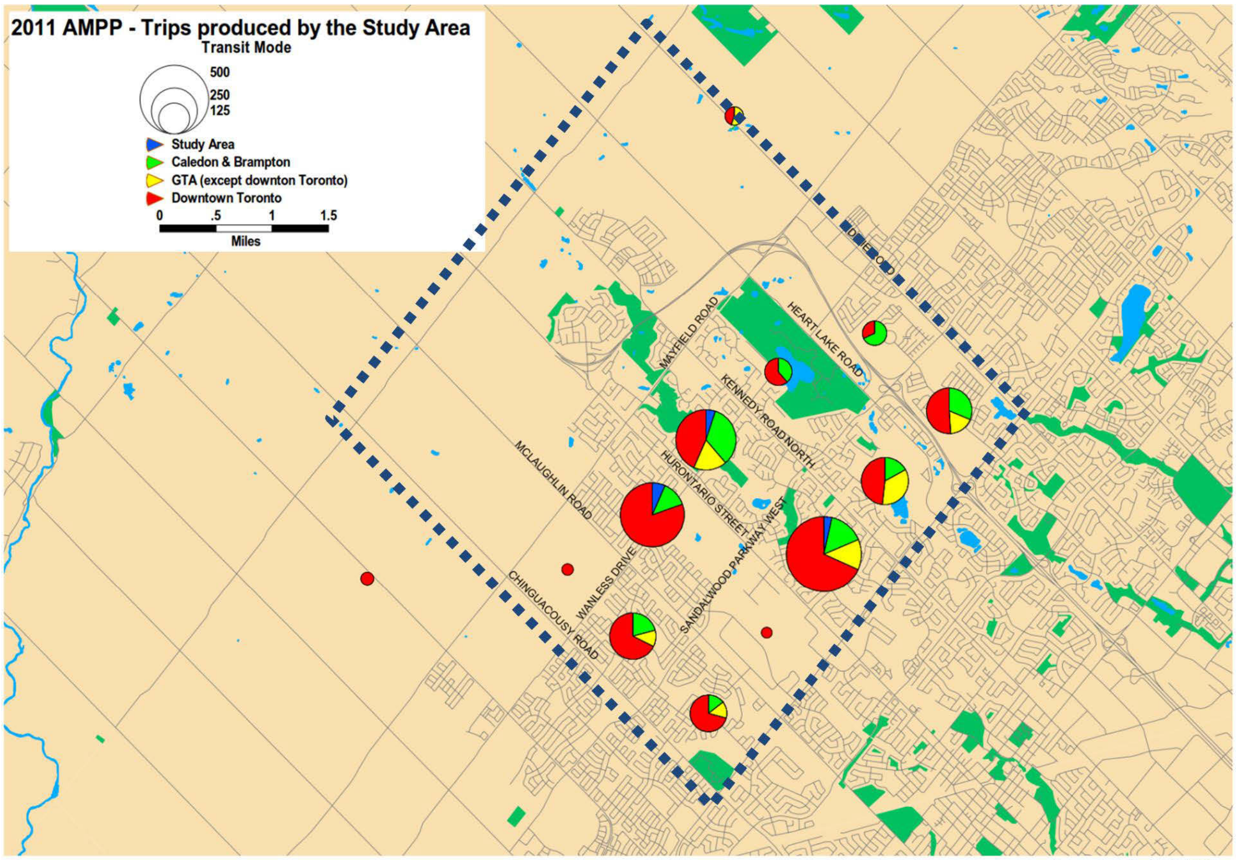


Figure 4: 2011 AM / Destination / Trips by Car

Figure 5 shows the destination of trips produced by the study area using transit during the morning peak period in 2011. What is interesting to note is that the majority of trips are destined to downtown Toronto. It can be assumed that these trips use the GO Transit services.



Source: TTS 2011

Figure 5: 2011 AM / Destination / Trips by Transit

Figure 6 shows the number of trips generated by the study area in relation to the trip purposes during the weekday morning and evening peak periods. The main findings from the analysis of these graphs are:

- Overall, there are more trips generated in the morning (553k) than in the evening (492k);
- Overall, the number of trips attracted in the evening (269k) is higher than in the morning (245k), which is normal given that many people return to their domicile in the evening and that the study area is predominantly residential. Likewise but more significantly, the number of Home-Based Discretionary (HBD) trips attracted in the evening (110k) is 60% higher than the number of HBD trips attracted in the morning (68k).

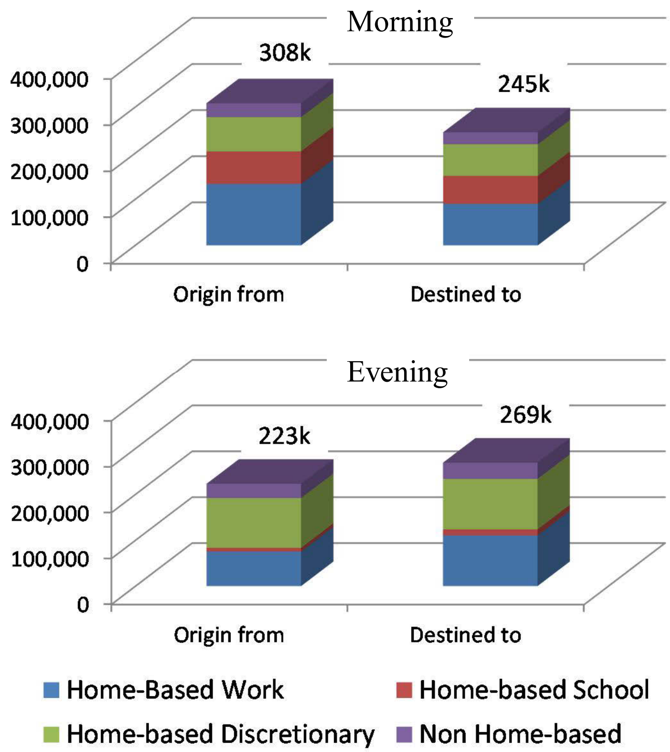


Figure 6: Trips generated by City of Brampton and Caledon / Purpose vs Peak Period

2.3 TRAFFIC CONDITIONS

Figure 7 shows the location of updated turning movement counts (TMC) used as inputs for this study. **Appendix 1** gives the details and sources of these TMC.

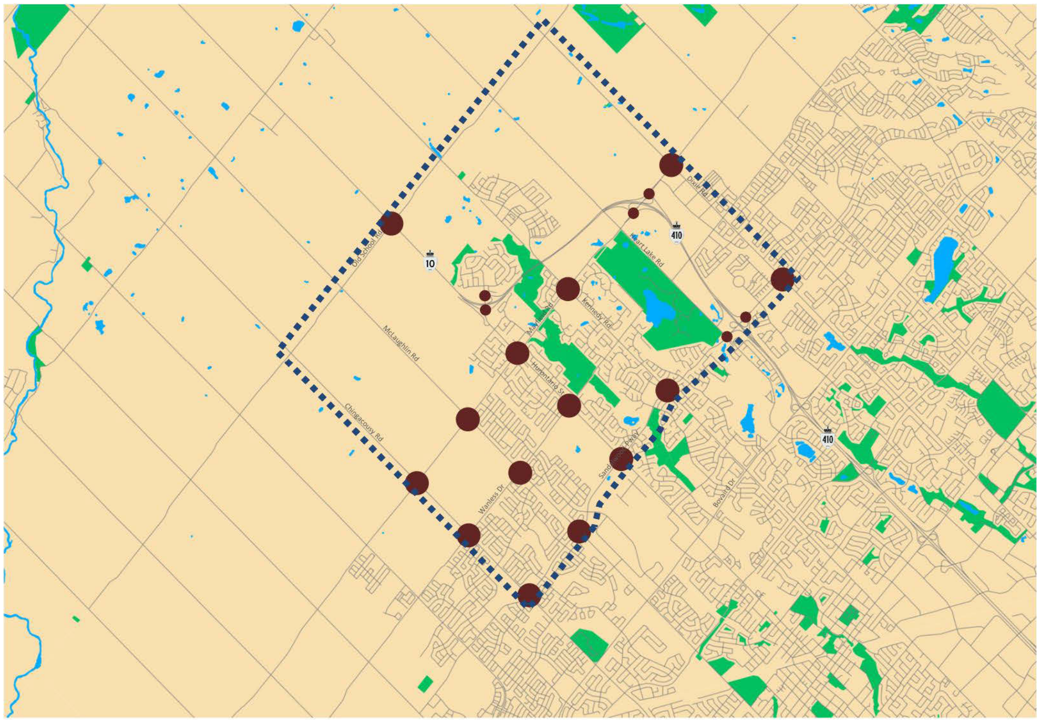


Figure 7: Location of updated Turning Movement Counts used for the Study

Given the current traffic lane configurations and signal timings, **Table 1** shows the level of service and intersection capacity utilization (ICU) evaluated at signalized intersections during the current weekday morning and evening peak hours using Synchro (**Figures 8** and **9** localizes the ICU evaluated). **Figures 10** and **11** shows movement levels of service at off-ramp terminals and at the Hurontario/Mayfield intersections.

The main observations made in regard to current traffic conditions in the study area are the following:

- During the morning peak hour:
  - The adjacent network to the Mayfield West Phase 2 area provides a good reserve of capacity that can support a high increase in travel demand.
  - Most of the major signalized intersections on the Sandalwood Parkway corridor seem to be close to saturation.
- During the evening peak hour:
  - The adjacent network to the Mayfield West Phase 2 area provides a good reserve of capacity that can support a high increase in travel demand.
  - Most of the major signalized intersections on the Sandalwood Parkway and Hurontario corridors seem to be close to saturation.

Intersection	AM			PM		
	Vol	LoS	ICU	Vol	LoS	ICU
Old School / Hurontario	2,684	B	0.49	3,347	B	0.90
Exit Ramp Hwy 410 N / Hurontario	787	A	0.19	1,666	D	0.51
Exit Ramp Hwy 410 S / Hurontario	1,418	A	0.49	1,797	A	0.60
Collingwood / Highwood / Hurontario	1,629	A	0.40	1,723	A	0.7
Mayfield / Chinguacousy	1,636	B	1.03	1,682	C	1.07
Mayfield / McLaughlin	1,803	B	0.76	1,907	B	0.75
Mayfield / Hurontario	3,070	D	0.80	1,907	C	0.87
Mayfield / Kennedy	2,502	B	0.70	2,301	B	0.55
Mayfield / Heart Lake	2,005	B	0.44	1,959	B	0.44
Exit Ramp Hwy 410 S / Mayfield	1,612	B	0.52	1,585	B	0.58
Exit Ramp Hwy 410 N / Mayfield	2,807	B	0.52	2,981	B	0.58
Mayfield / Dixie	2,719	C	0.56	2,523	B	0.59
Sandalwood Pwy / Chinguacousy	3,177	C	0.89	3,179	D	0.85
Sandalwood Pwy / Hurontario	4,400	D	0.98	4,550	D	0.96
Sandalwood Pwy / McLaughlin	3,682	D	0.88	4,821	D	0.91
Sandalwood Pwy / Kennedy	3,576	D	0.94	4,194	C	1.10
Sandalwood Pwy / Heart Lake (Hwy 410 S)	4,127	D	0.93	4,001	C	0.85
Exit Ramp Hwy 410 N / Sandalwood Pwy	2,937	B	0.49	3,737	C	0.71
Sandalwood Pwy / Dixie	4,906	C	0.93	4,172	C	0.90
Winless / Chinguacousy	1,223	B	0.60	1,198	B	0.55
Wanless / McLaughlin	1,114	B	0.50	1,060	B	0.57
Wanless / Hurontario	2,341	C	0.67	2,619	C	0.82

Table 1: Existing Conditions / Intersection Capacity Utilization at Arterial Intersections

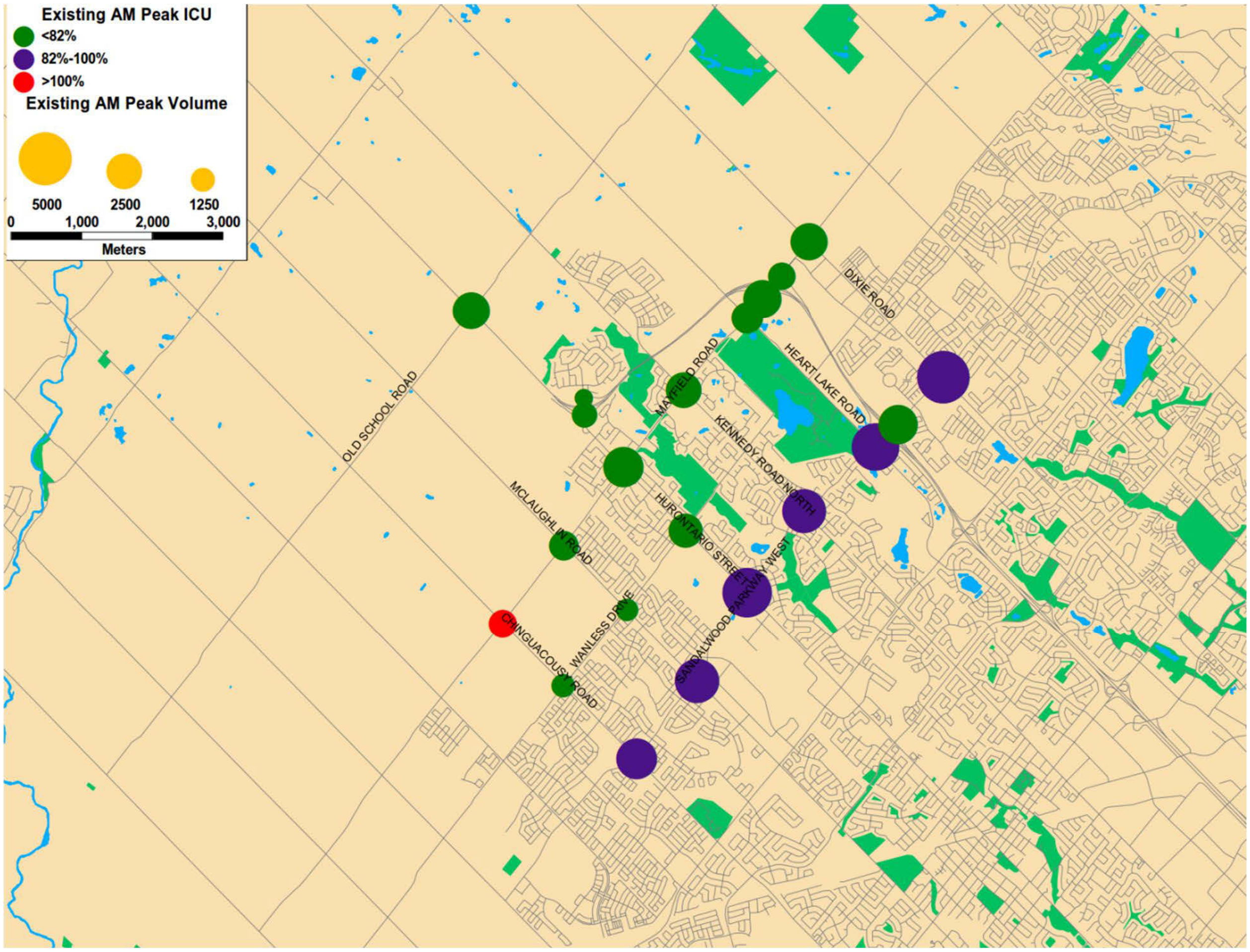


Figure 8: Existing Conditions AM Peak Hour / Signalized Intersections and ICU

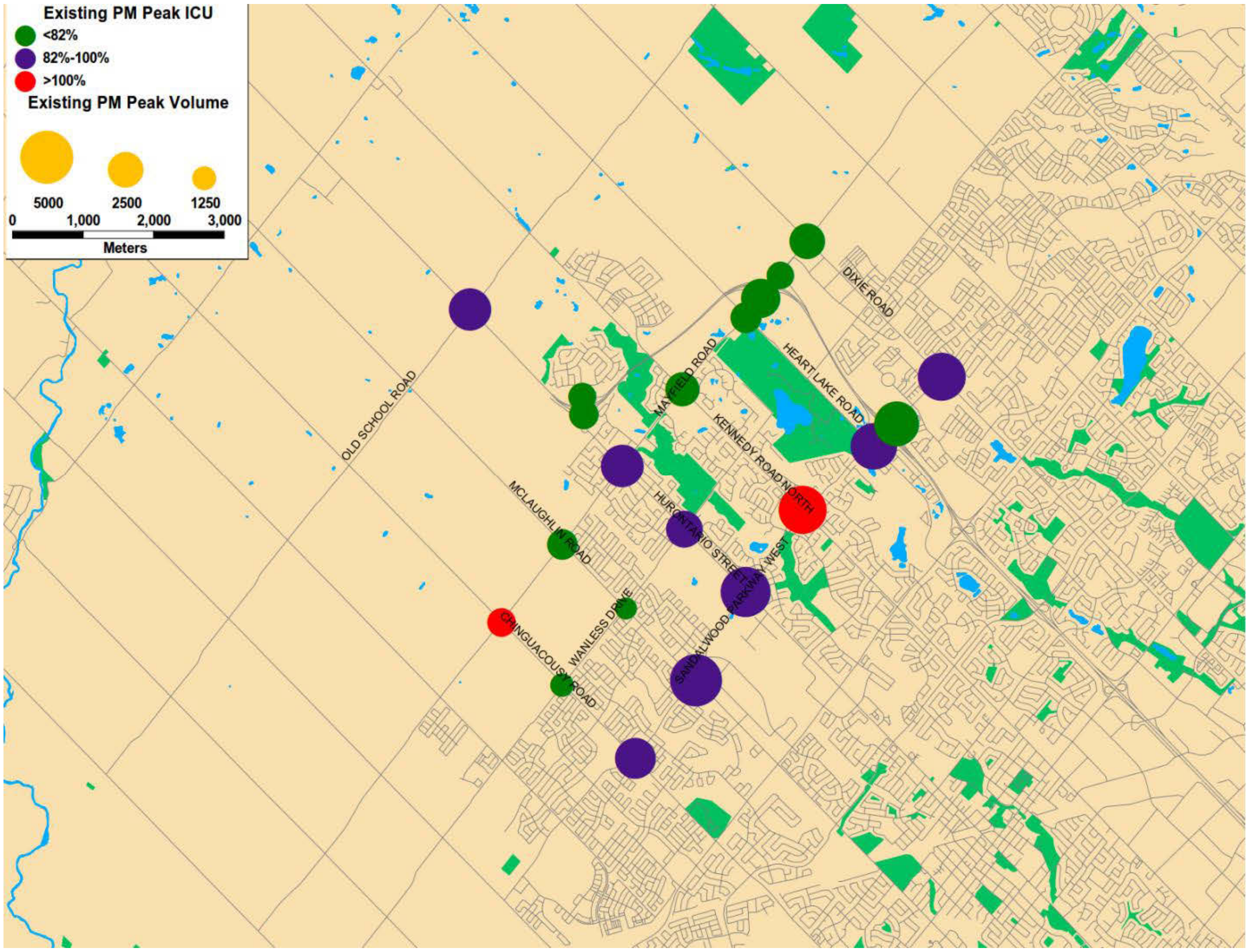


Figure 9: Existing Conditions PM Peak Hour / Signalized Intersections and ICU

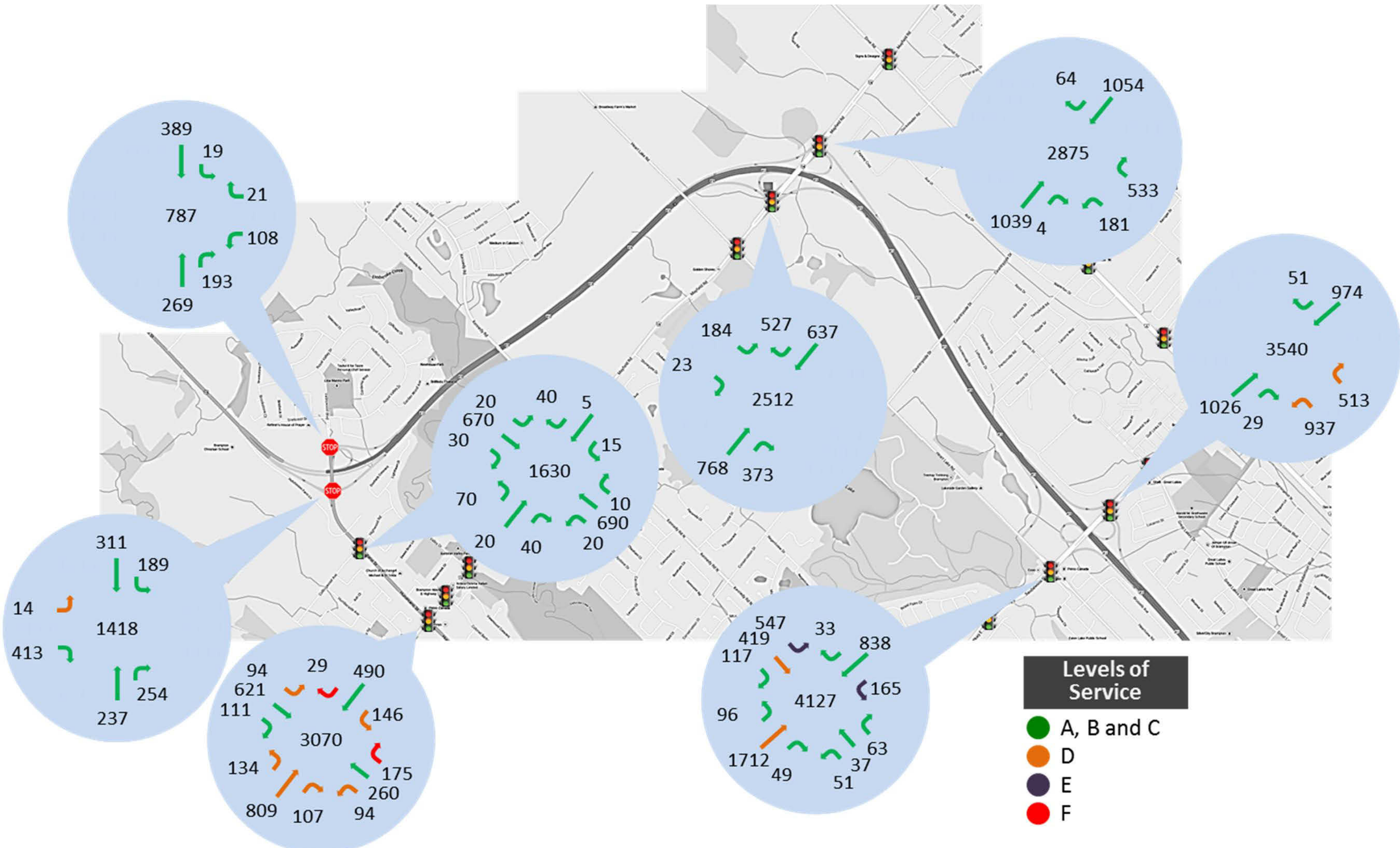


Figure 10: Existing Conditions AM Peak Hour / Turning Movement Volumes and LoS

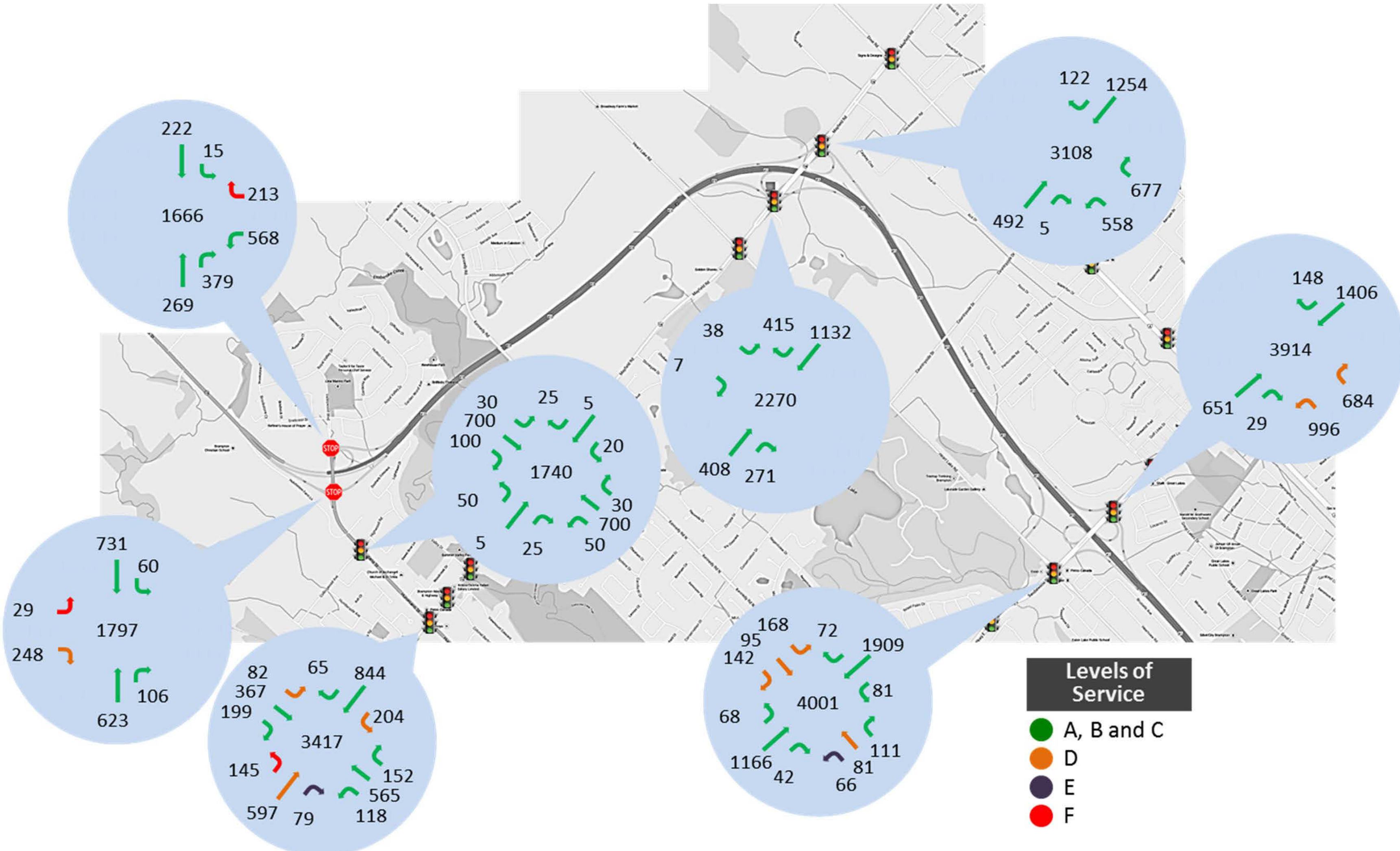


Figure 11: Existing Conditions PM Peak Hour / Turning Movement Volumes and LoS

3 TRANSPORTATION MODELLING

3.1 METHODOLOGICAL APPROACH

Figure 12 summarizes the transportation modelling framework proposed. It consists of a two-level approach where:

- The Peel Region's Emme Model is used to forecast traffic at a regional-scale based on population and employment forecasts;
- A mesoscopic Aimsun model relying on Dynamic Traffic Assignment (DTA) that allows operational assessment of the Study Area transportation network, which is very difficult using a strategic model such as Emme.

The DTA primer published by the Transportation Research Board in 2011 states that one of the primary application areas for DTA models is operational planning for assessing improvements on the transportation networks such as changes of roadway configuration, HOV lanes, integrated corridor improvements, transit priority and travel demand management strategies.

Because the study area model has to be sensitive to congestion (delays and queues), the development of a mesoscopic model is appropriate to address the problems that a strategic modelling approach cannot.

Validation was performed on the strategic model (Emme) to ensure its representativeness. The connection between this model and the mesoscopic model (Aimsun) is through traversal matrices (comprising the edges of the study area and transportation zones within this area) produced in Emme and feeding the Aimsun mesoscopic model.

Validation and calibration of the mesoscopic model are performed based on recent turning movement counts and travel time surveys to ensure adequate representativeness of simulations in regard to the conditions observed. Once validated and calibrated, the area model developed on Aimsun serves as the Baseline to evaluate effects of growth scenarios and road improvements.

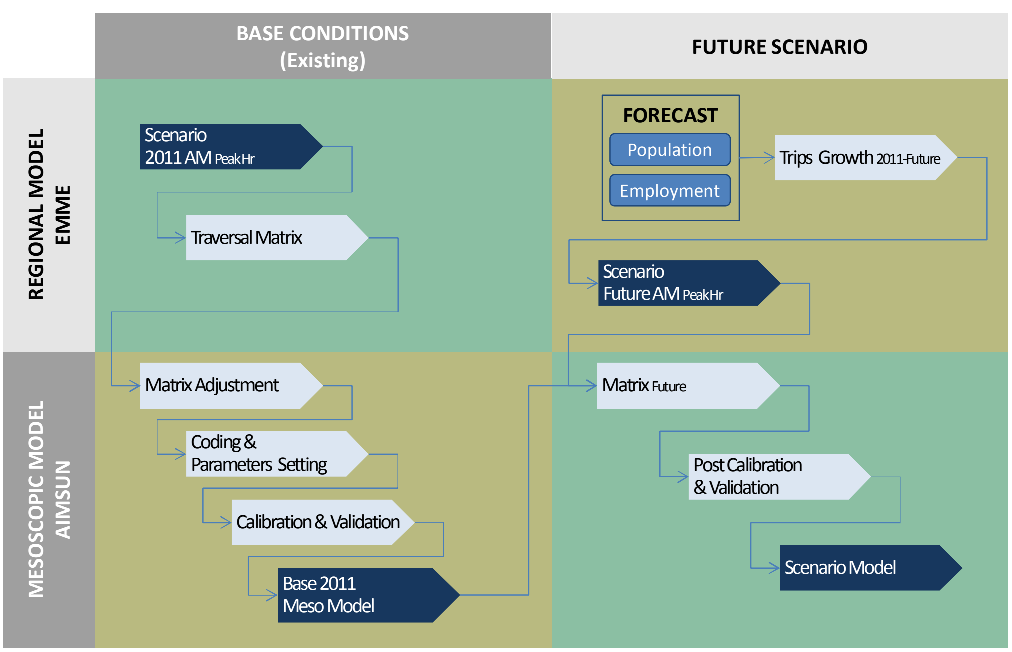


Figure 12: Transportation Modelling Framework

Strategic Modelling

The strategic model provided by Peel Region is only for the morning peak period (6 to 9 AM). The Peel Region Travel Forecasting Model Overview and Users Guide presents the guiding principles of the model.

Figure 13 shows the transportation zones defined in the study area in the strategic model that takes into account the zonal system used for the Transportation Tomorrow Survey (TTS). **Table 2** presents the 2011 characteristics (population and employment) of the zones in the study area. It shows that zone 1688, which is the zone within which the Mayfield West Phase 2 development is planned, does not generate a lot of trips since population and employment is small. Overall though, the study area produces 8,139 vehicular trips and attracts only 1,867 vehicular tips during the morning peak hour.

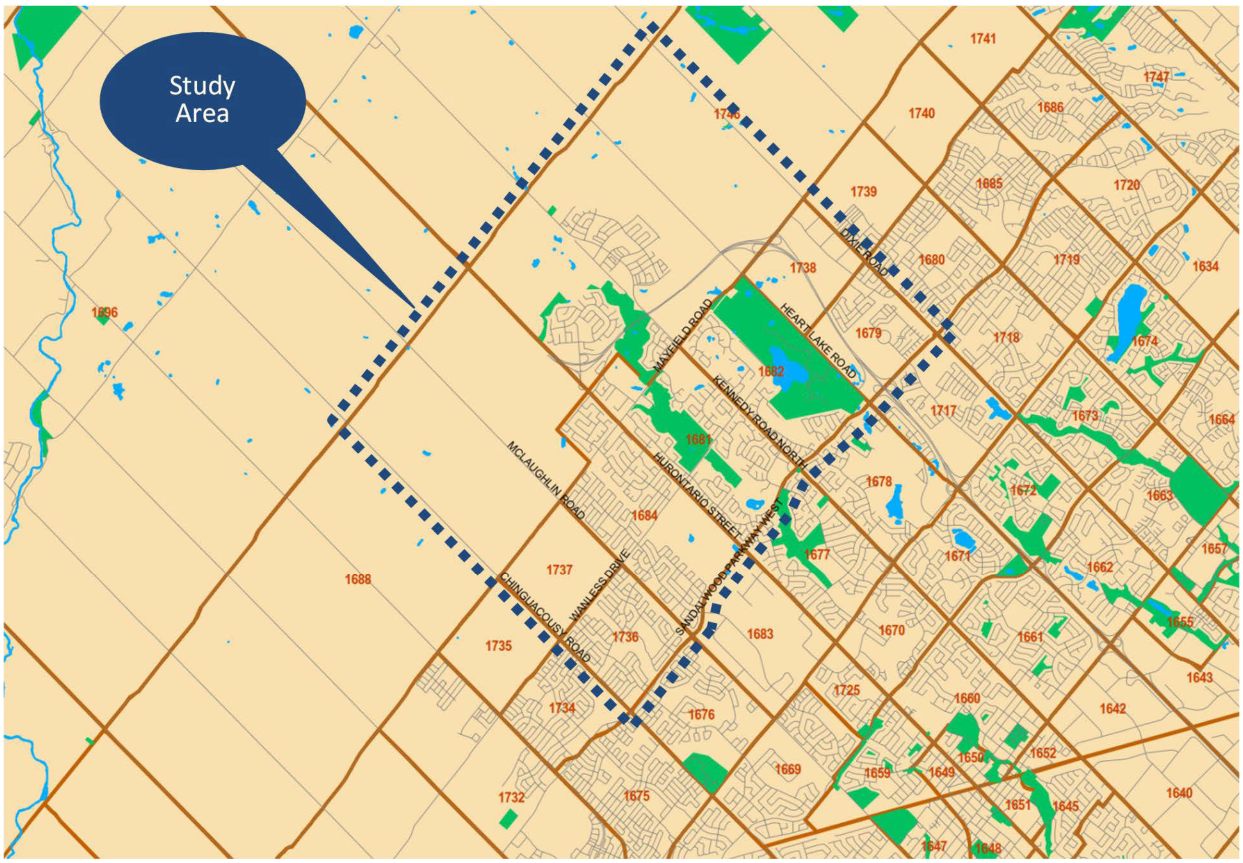


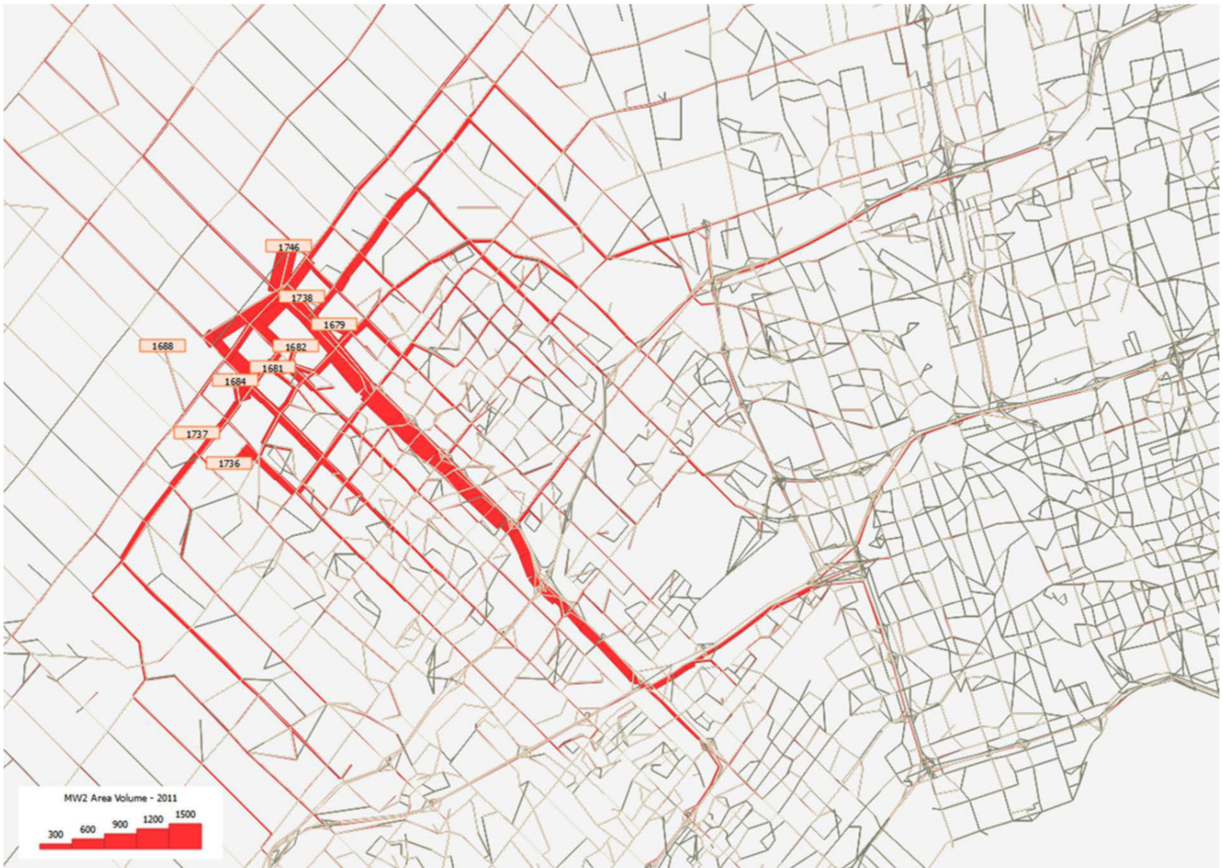
Figure 13: Peel Region Emme Model / Zoning System in the Study Area

	(A1) Population	(B1) Origin from	(B1) / (A1) Origin/Pop
1679	4,504	503	0.11
1681	10,180	1,870	0.18
1682	6,417	922	0.14
1684	15,617	2,398	0.15
1688	609	45	0.07
1736	8,167	1,107	0.14
1737	47	0	0.00
1738	33	0	0.00
1746	7,825	1,294	0.17
Total	**53,399**	**8,139**	**0.15**

	Employment	Destined to	Dest/Empl
1679	35	0	0.00
1681	1,322	421	0.32
1682	318	84	0.26
1684	1,211	266	0.22
1688	289	42	0.15
1736	350	63	0.18
1737	1	0	0.00
1738	307	52	0.17
1746	1,135	939	0.83
Total	**4,968**	**1,867**	**0.38**

Table 2: 2011 AM Peak Hour / Vehicular Trips Generated by Zones in the Study Area

Figure 14 shows the distribution of vehicular trips generated by the study area during the morning peak hour. Figure 15 shows that the vehicular trips generated significantly use Highway 410 but also major arterials like Sandalwood Parkway and Hurontario Street.



Source: Peel Regional Emme Model

Figure 14: 2011 AM Peak Hour / Vehicular Trips produced by Study Area

3.2 AREA MODELLING

3.2.1 Basic Information

As mentioned previously, the connection between the Peel Region model and the mesoscopic model (Aimsun) is through traversal matrices (comprising the edges of the study area and transportation zones within this area) produced in Emme and feeding the Aimsun mesoscopic model.

Figure 15 shows the zonal system used comprising the gates to the study area and the internal zones, which are for some a desegregation of the strategic model zones to adequately represent vehicular travel demand on the main arterial roads.

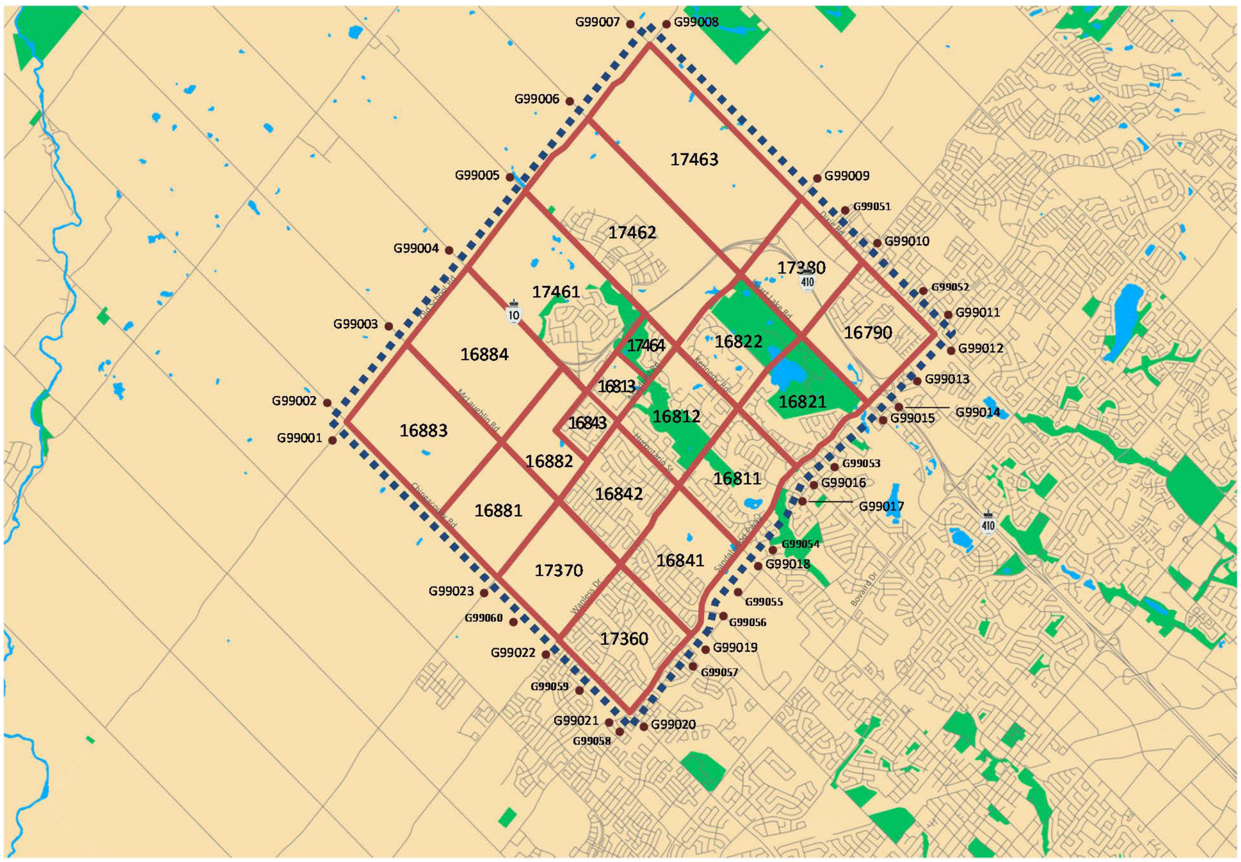


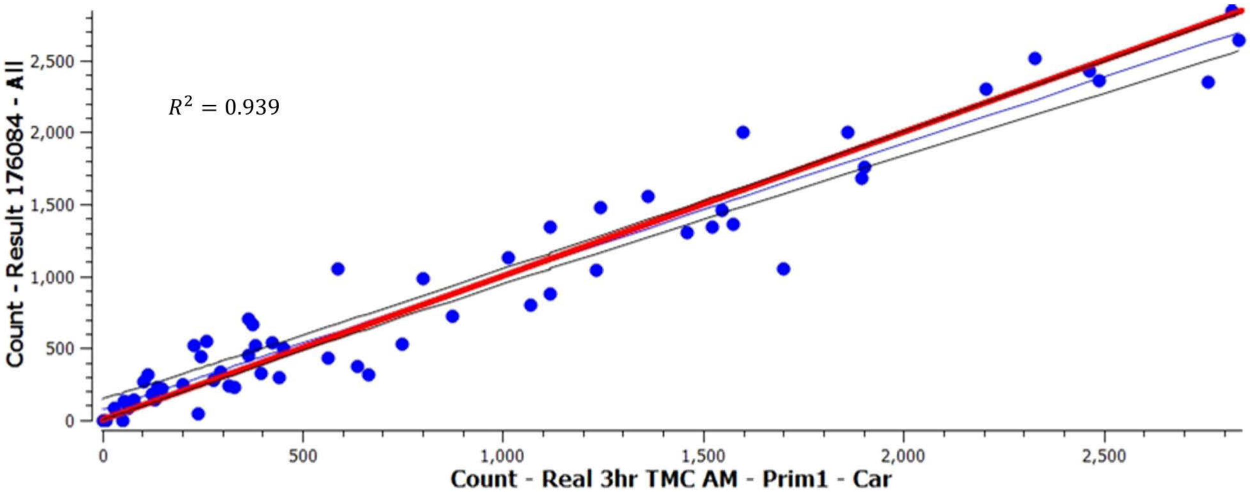
Figure 15: Mesoscopic Study Area

It is important to note that the traversal matrix generated by Emme must be adjusted to properly match the counted volumes, both at the gates and at major arterial road intersections. A module in Aimsun allows adjustments by taking into account the network physical characteristics.

The following sections show the representativeness of the model by comparing with actual observations.

3.2.2 Turning Movement Volumes

The graph below (**Figure 16**) shows the relationship between turning volumes simulated (Y axis) and counted (X axis). The linear regression curve generated demonstrates that the mesoscopic model reproduces well the conditions observed in term of turn volumes given $R^2 > 0.9$.



Source: Aimsun, 2015

Figure 16: Linear Regression on Simulated VS Counted Turning Movement Volumes at Major Intersections and on Highway Ramps / AM Peak

The GEH Statistic is a formula used to compare two sets of traffic volumes. The formula for the "GEH Statistic" is:

$$GEH = \sqrt{\frac{2(M-C)^2}{M+C}}$$

Where M is the hourly traffic volume from the traffic model and C is the observed hourly traffic count. A GEH of less than 5.0 is considered a good match between the modelled and observed hourly volumes while a GEH under 10 of 5.0 to 10.0 may warrant investigation but is still satisfactory if it applies to only a few cases. The objective is that 85% of the volumes in the mesoscopic model have a GEH less than 5.0.

The results presented in **Table 3** robustly demonstrate that the model is calibrated with respect to the traffic volumes.

GEH	Highway Ramps	Major Arterial Intersections
Under 5	94%	79%
Between 5 and 10	100%	100%

Table 3: Baseline Existing Area Model / GEH / AM Peak

3.2.3 Travel Times

As is the case in common practices, the proposed approach to validate travel times is to meet the two following requirements:

- Average modelled journey time to be within 15% or one minute of average observed journey time for full length of route;
- Travel times on each route will be cumulatively graphed by sector demonstrating that average travel time modelled is within standard deviation.

Figure 17 shows that the vehicle travel times simulated in the mesoscopic model are representative of the surveyed times on the road network. Travel times on Sandalwood Parkway are longer in the model compared to what's observed, however the difference is judged acceptable given that this arterial is observed at the modelled network edges and is located relatively far from the main area of interest, that is, the Highway 410 interchange at Hurontario Street.

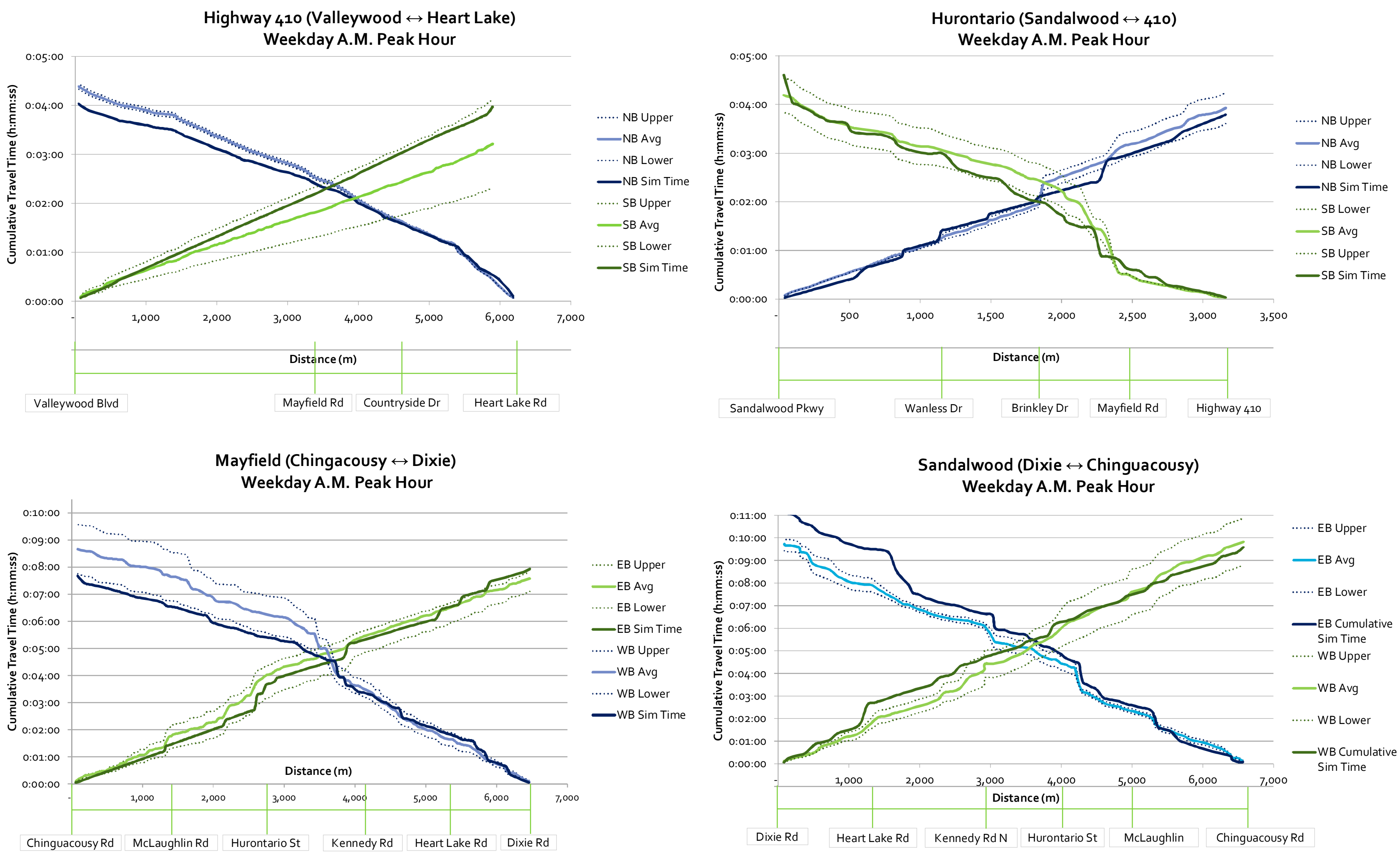


Figure 17: Travel Time Validation / AM Peak

4 TRAVEL FORECAST

4.1 GROWTH PHASES

Table 4 shows the population and employment projections assumed for Stages 1 and 2 of the Mayfield West Phase 2 development,, while **Figure 18** shows the development layout. It is according to these assumptions that the new vehicular trips were generated and traffic forecasted for the year 2031. It is important to note that the traffic forecast discussed in the next sections take into consideration the following:

- Growth is considered for all the sub-area parts of the study area as well as all the GTA. Hence, employment location of new residents is distributed based on existing travel characteristics (according to Transportation Tomorrow Survey) and location of new employment. This also applies to trips with different purposes.
- Pass-through vehicular trips (that are not generated by the study area but still travel on the transportation network part of the study area) are considered in the travel forecast. These can be significant depending on the new trip distribution inside Peel Region.
- Road improvements are considered for new trip assignments (see **Figure 19**). This means that induced traffic by increased capacity is reflected.
- The Peel Region Official 2031 Growth Assumptions, as integrated to the Emme Strategic Model, are modified to take into account the new assumptions for the Mayfield West Phase 2 development. To not overestimate the overall growth and keep it to a level comparable to what's been planned so far, the growth assumptions are slightly reduced for other areas in the Peel Region.
- Modal split assumptions are based on current statistics since the Peel Region's Strategic Model doesn't incorporate a mode choice model. Hence, the vehicular forecasts presented subsequently may be considered above the actual values that could be observed given the modal split targets (oriented toward public transit) already issued by Peel Region and Metrolinx.
- For the Stage 2 traffic forecast, only growth of Zone 1688 is modified in comparison to Stage 1. This implies that population and employment forecasts adjusted in Stage 1 are maintained the same for Stage 2. This approach is chosen to properly assess the effects of the additional development on the transportation network.

Planning Considerations	Stage	
	1	2
Population	10,671	16,245
Population-Related Jobs	2,635	2,806
Employment Area Jobs	1,164	1,164

Table 4: Growth Assumptions for Mayfield West Phase 2 Development

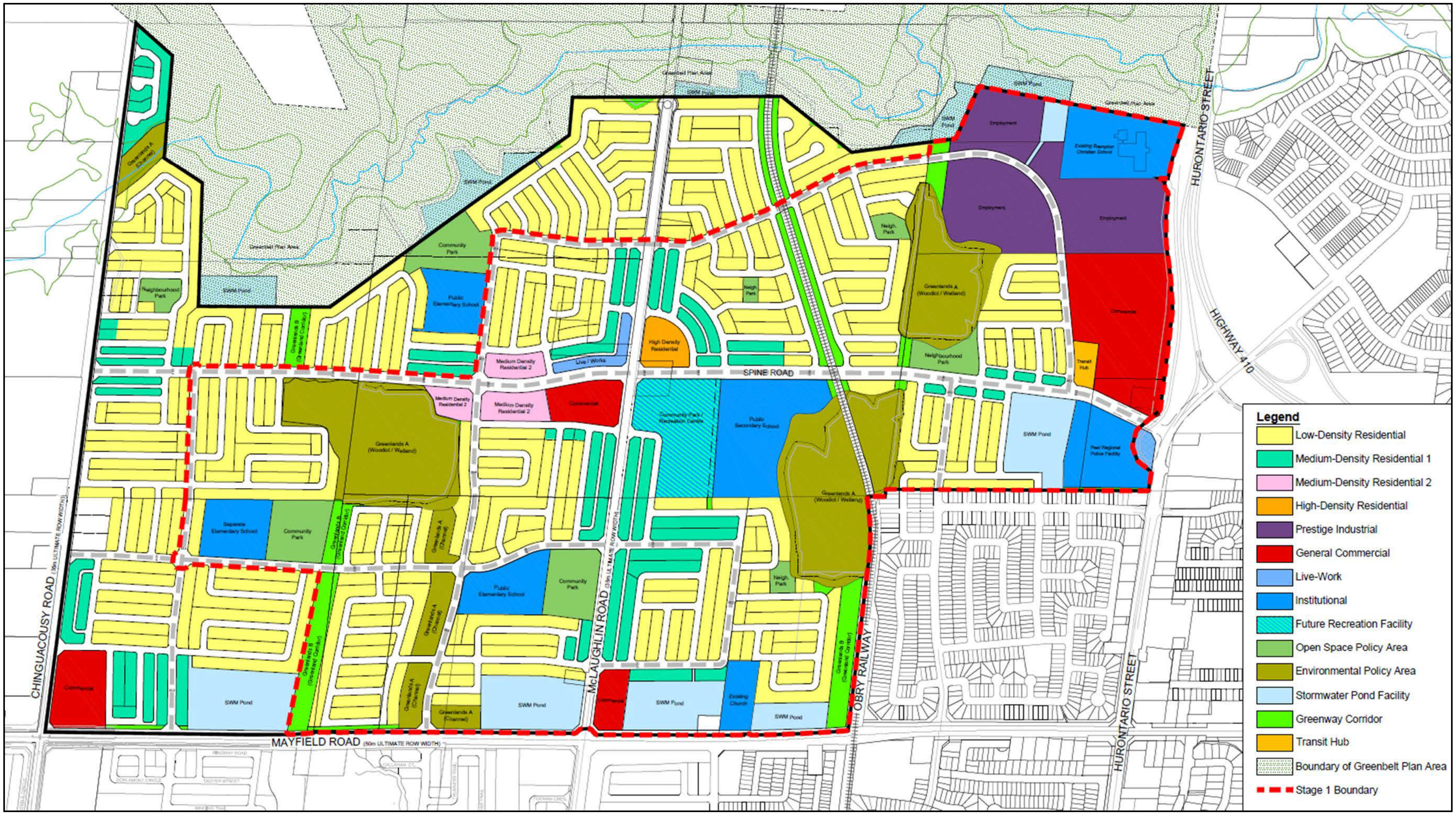


Figure 18: Planned Development Layout

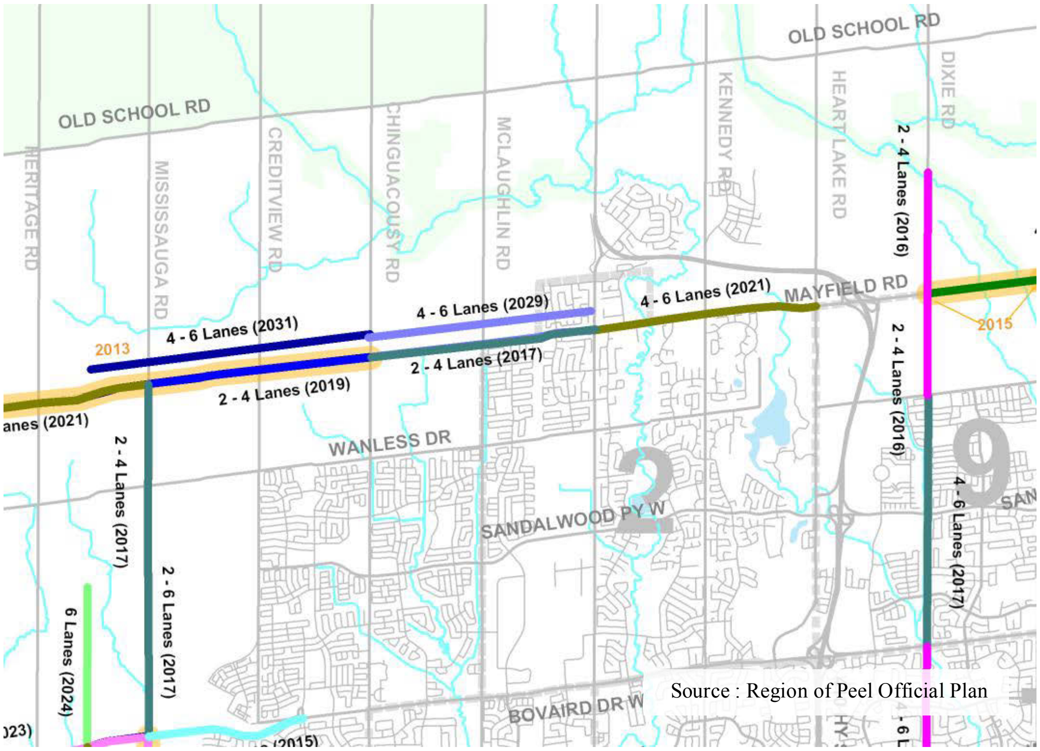


Figure 19: Road Improvements planned for 2031

4.2 VEHICULAR TRIPS

4.2.1 Trip Generation

Table 5 shows the number of trips generated during the morning peak hour by each transportation zone inside the study area (according to the Peel Region Strategic Model) of the two development stages (see **Table 4**). Under the Stage 1 development scenario, Zone 1688 (which includes the Mayfield West Phase 2 development) produces and attracts 1,363 and 878 new vehicular trips, respectively during the weekday morning peak hour. Hence, the generated trip rates increase from 0.07 to 0.12 trips produced by residents and from 0.15 to 0.22 trips attracted by jobs. In Stage 2, a total of 2,083 vehicular trips are produced, and 923 trips are attracted.

Overall, the study area population and employment grows by ~33,700 residents (+63%) and ~16,460 jobs (+331%) between 2011 and Stage 1 of 2031. The resulting number of new vehicular trips produced and attracted is ~3,570 and ~3,750 new vehicular trips respectively during the weekday morning peak hour. It is clear that the study area will experience significant population and employment growth, outside of Mayfield West Phase 2. While the overall trip generation changes from 0.15 to 0.13 trips produced by residents and from 0.38 to 0.26 trips attracted by job, the decrease in vehicular trip rates seems acceptable given that the number of vehicular trips doesn't grow linearly with population and employment, but rather grows logarithmically.

	Population			Origin from			Origin/Pop		
	2011	2031		2011	2031		2011	2031	
		St 1	St 2		St 1	St 2		St 1	St 2
1679	4,504	8,276	8,276	503	844	845	0.11	0.10	0.10
1681	10,180	9,286	9,286	1,870	1,524	1,524	0.18	0.16	0.16
1682	6,417	5,814	5,814	922	744	746	0.14	0.13	0.13
1684	15,617	16,821	16,821	2,398	2,302	2,304	0.15	0.14	0.14
1688	609	11,179	16,753	45	1,363	2,083	0.07	0.12	0.12
1736	8,167	9,606	9,606	1,107	1,140	1,142	0.14	0.12	0.12
1737	47	9,446	9,446	0	1,120	1,124	0.00	0.12	0.12
1738	33	0	0	0	0	0	0.00	0.00	0.00
1746	7,825	16,655	16,655	1,294	2,668	2,665	0.17	0.16	0.16
Total	**53,399**	**87,084**	**92,658**	**8,139**	**11,705**	**12,433**	**0.15**	**0.13**	**0.13**
	Employment			**Destined to**			**Dest/Empl**		
	2011	2031		2011	2031		2011	2031	
		St 1	St 2		St 1	St 2		St 1	St 2
1679	35	369	369	0	68	68	0.00	0.18	0.18
1681	1,322	1,376	1,376	421	418	416	0.32	0.30	0.30
1682	318	459	459	84	103	103	0.26	0.22	0.22
1684	1,211	1,565	1,565	266	343	343	0.22	0.22	0.22
1688	289	4,040	4,211	42	878	923	0.15	0.22	0.22
1736	350	588	588	63	110	110	0.18	0.19	0.19
1737	1	389	389	0	73	73	0.00	0.19	0.19
1738	307	3,360	3,360	52	704	703	0.17	0.21	0.21
1746	1,135	9,281	9,281	939	2,916	2,923	0.83	0.31	0.31
Total	**4,968**	**21,426**	**21,597**	**1,867**	**5,613**	**5,662**	**0.38**	**0.26**	**0.26**

Table 5: Trip Forecast in Peel Region Model for Zones in the Study Area / AM Peak Hour

4.2.2 Trip Distribution

Review of the distribution developed for the two development stages through the Peel Region Emme model reveals changing travel patterns between them. With the growth in population and employment forecasted in Stage 2, we observe a reduction in regional trips to the study area and through it, along with an increase in internal and outbound trips (see **Table 6**).

Stage 1	Study Area	Out	Total
Study Area	489	10,387	10,876
Out	4,297	13,701	17,998
Total	4,786	24,088	28,874

Stage 2	Study Area	Out	Total
Study Area	520	11,040	11,560
Out	4,272	13,481	17,753
Total	4,792	24,521	29,313

Stage 2 - Stage 1	Study Area	Out	Total
Study Area	31	653	684
Out	(25)	(220)	(245)
Total	6	433	439

Table 6: Trip Distribution Comparison

This is further confirmed through a screenline analysis, which shows occasional reductions in volumes on certain routes, from Stage 1 to Stage 2 (see **Table 7**). Particularly noteworthy is that traffic growth on Highway 410 is lower than on routes like Mayfield Road, where traffic flow increases significantly.

Screen Line		North/West bound			South/East bound		
		Existing	2031		Existing	2031	
			Stage 1	Stage 2		Stage 1	Stage 2
Hurontario St	North of Old School Road	1,700	1,782	1,789	4,733	6,312	6,412
	South of Sandalwood Pkwy	2,000	1,449	1,439	2,898	3,785	3,817
Mayfield Rd	West of Chinguacousy Road	1,185	2,114	2,108	1,600	3,336	2,958
	East of Dixie Road	1,811	3,612	3,550	2,175	4,524	4,687
McLaughlin Rd	South of Sandalwood Pkwy	877	1,064	1,038	2,537	1,746	2,936
Highway 410	South of Sandalwood Pkwy	5,073	5,751	5,738	10,640	12,354	12,439

Table 7: Screen Line Analysis for Growth Scenarios / Morning Peak Period (3hr)

The changing travel patterns observed between the two development scenarios are a result of the Region Model's distribution method, which links zonal pairs based on population and employment, and existing patterns. As shown in **Figure 4**, current TTS data demonstrates that the majority of study area trips are destined within Caledon and Brampton, with only a minor proportion destined to the rest of the GTA, and very few trips destined to Downtown Toronto. Given the local nature of the trip distribution forecasted for the study area, proportionally fewer trips will route via Hwy 410.

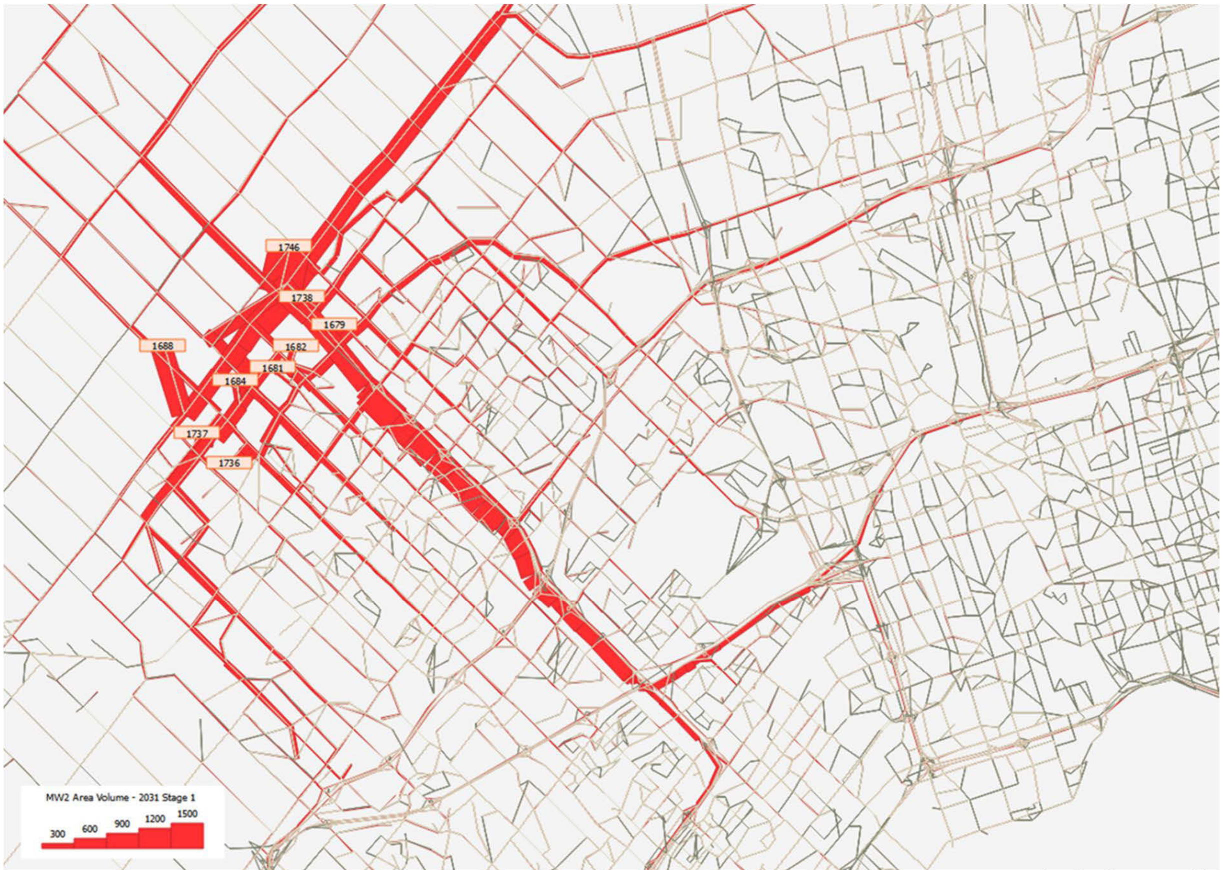
The outbound trip distributions of the study area under both Stage 1 and Stage 2 development scenarios are summarized in **Table 8**.

	Stage 1		Stage 2	
Destination	**Volume**	**%**	**Volume**	**%**
Brampton	1115	31%	1094	32%
Caledon	1114	31%	1068	31%
York Region	565	16%	548	16%
Mississauga	325	9%	306	9%
Toronto Region	230	6%	219	6%
Halton Region	113	3%	113	3%
Guelph Region	47	1%	45	1%
Niagara Region	40	1%	40	1%
Orangeville Region	14	0%	12	0%
Outsite of GTHA	2	0%	2	0%
Hamilton Region	1	0%	1	0%
Durham Region	0	0%	0	0%
Total	**3566**	**100%**	**3448**	**100%**

Table 8: Forecasted Distribution of Outbound Vehicular Trips

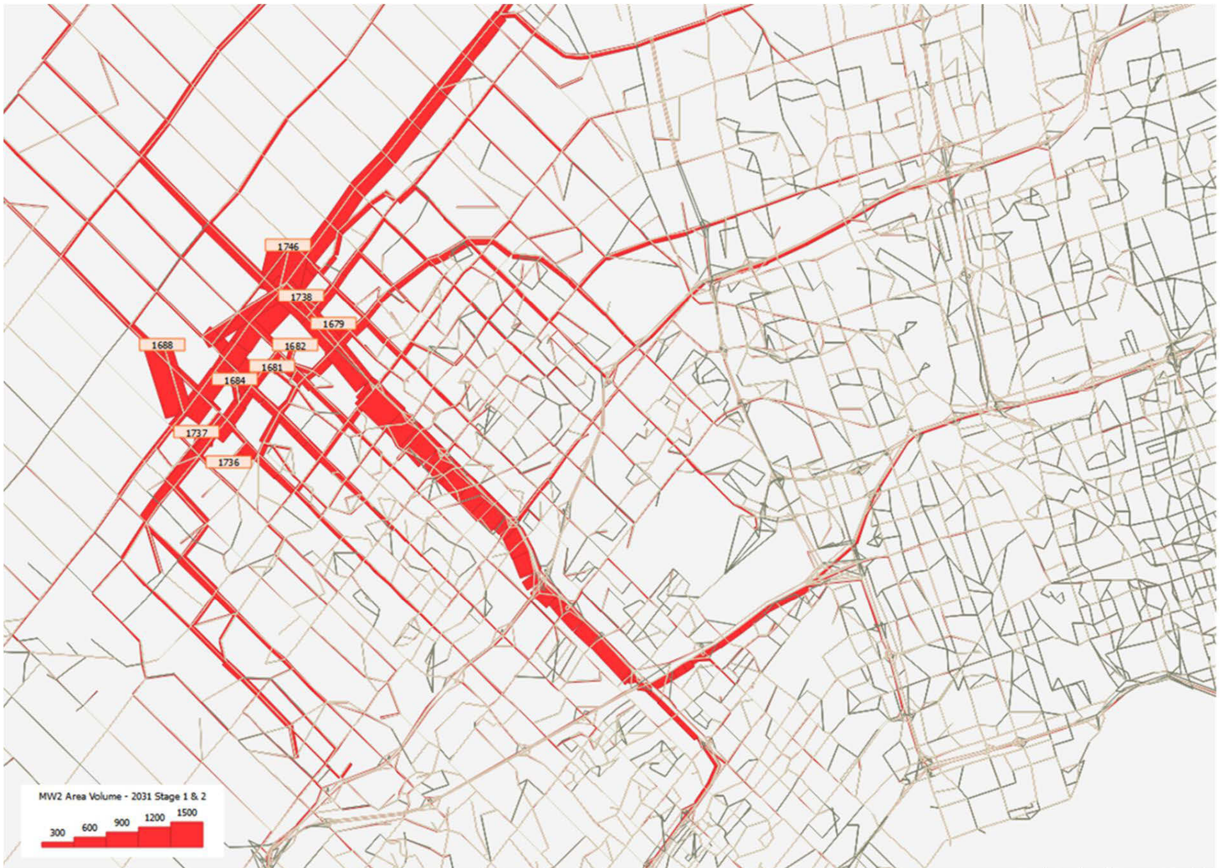
The road improvements planned in the region, most notably on Mayfield Road further encourage a reassignment of traffic from routes currently experiencing some capacity constraints to the routes experiencing capacity increases.

Figure 20 and **Figure 21** illustrate the assignment of vehicular trips generated by the study area in the two development stages during the weekday morning peak hour. Significant traffic flow increases are noticeable on arterial roads such as Mayfield Road, Hurontario Street, McLaughlin Road and Sandalwood Parkway.



Source: Peel Regional Emme Model

Figure 20: Stage 1 Trips Produced and Attracted by Study Area - AM Peak Hour



Source: Peel Regional Emme Model

Figure 21: Stage 2 Trips Produced and Attracted by Study Area – AM Peak Hour

5 FUTURE CONDITIONS

5.1 ROAD IMPROVEMENT SCENARIO

A scenario with the Spine Road connected to Hurontario Street, south of the interchange with Highway 410, has been evaluated as part of this study. **Figure 22** shows the concept developed to date.

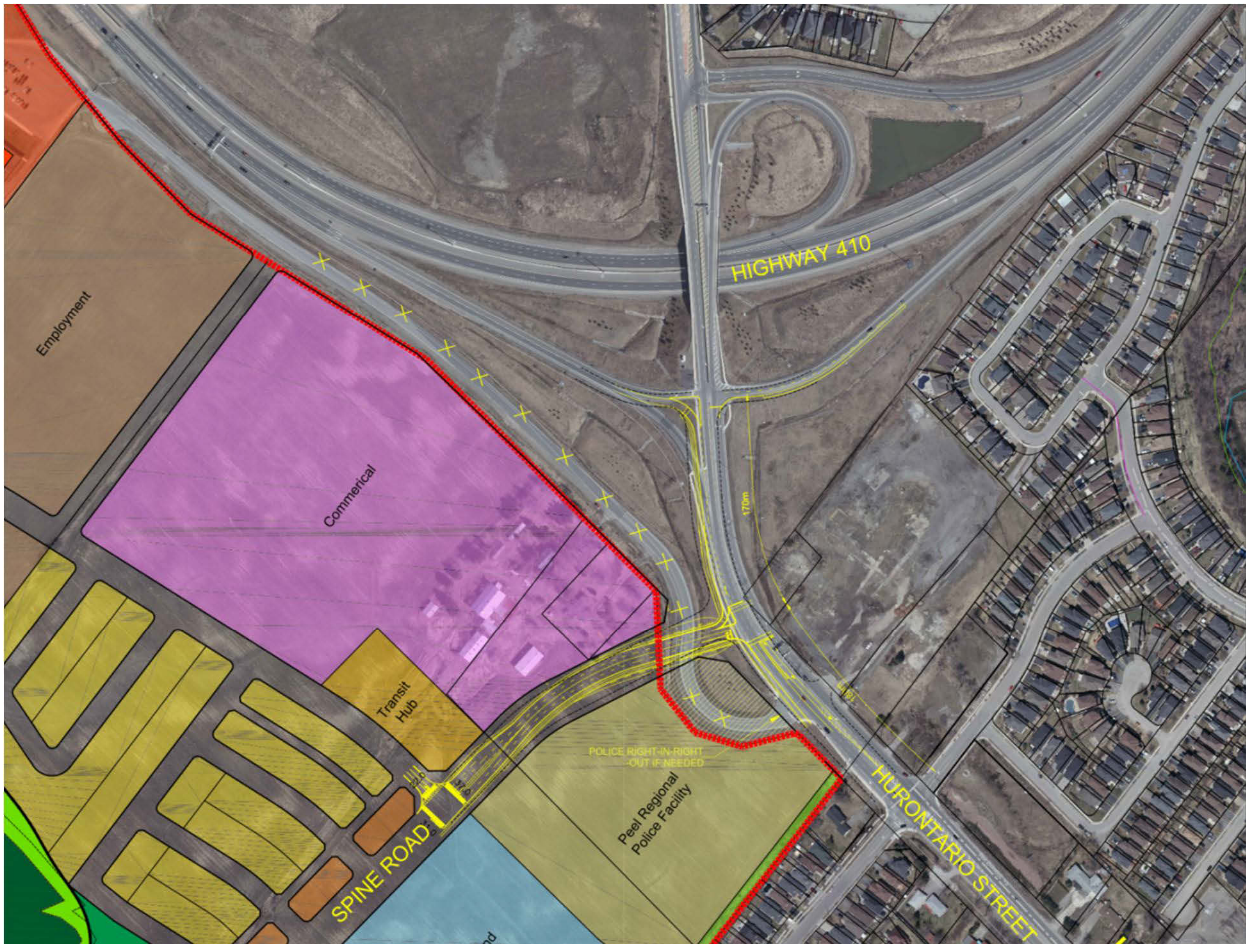


Figure 22: Scenario 1: With Spine Road Connection

This scenario has been considered for evaluation as it serves a number of objectives:

(i) It connects the Mayfield West Phase 2 Secondary Plan Area to the Highway 410/Hurontario interchange;

(ii) With the uncertainty of the timing of the GTA West corridor and/or future extension of Highway 410 north of Mayfield Road, this option provides a practical and cost-effective solution that could be implemented in the short term and allow full Stage 1 and Stage 2 Mayfield West Phase 2 development to occur, without being delayed by the future decisions involving the GTA West corridor and extension of Highway 410.

(iii) The proposed modifications would not preclude any future reconfiguration or modifications to the Hurontario/Highway 410 interchange.

5.2 ASSESSMENT OF "SPINE ROAD CONNECTION"

Analyses performed for the Spine Road connection justify the following additional improvements:

- Traffic signals at:
  - Valleywood / Hurontario interchange off-ramp terminals;
  - the new Spine Road / Hurontario intersection;
- A master traffic signal controller potentially connecting the off-ramp terminals to the intersections up to Collingwood Avenue;
- Free-flow right-turn on the southbound approach of the new Spine Road and Hurontario Street intersection.

Given the above improvements, **Table 9** shows the level of service and intersection capacity utilization (ICU) evaluated at signalized intersections during the weekday morning peak hour for the exiting conditions and under Stage 1 and Stage 2 traffic forecasts. The analysis demonstrates that off-ramp terminal signalized intersections at the Hurontario Street interchange, as well of the new signalized Spine Road intersection, are expected to perform well while the intersections of Hurontario Street with Mayfield Road and Old School Road are expected to operate close to capacity.

Intersection	Existing			Scenario "With Spine Road Connection" Stage 1			Stage 2		
	Vol	LoS	ICU	Vol	LoS	ICU	Vol	LoS	ICU
Old School / Hurontario	2,684	B	0.68	4,073	D	1.09	4,266	E	1.12
Exit Ramp Hwy 410 N / Hurontario	787	A	0.23	1,478	A	0.47	1,474	A	0.46
Exit Ramp Hwy 410 S / Hurontario	1,418	A	0.49	2,381	A	0.66	2,324	B	0.69
Spine Road / Hurontario	-	-	-	2,294	B	0.61	2,235	B	0.62
Collingwood / Highwood / Hurontario	1,629	A	0.40	1,899	C	0.74	1,903	C	0.67
Mayfield / Chinguacousy	1,636	B	1.03	3,643	D	0.88	3,346	C	0.92
Mayfield / McLaughlin	1,803	B	0.76	3,455	C	0.72	3,557	C	0.79
Mayfield / Hurontario	3,070	D	0.80	4,699	C	0.81	4,786	D	0.81
Mayfield / Kennedy	2,502	B	0.70	6,131	F	1.30	6,252	F	1.45
Mayfield / Heart Lake	2,005	B	0.44	5,174	D	0.93	5,315	D	0.94
Exit Ramp Hwy 410 S / Mayfield	2,807	B	0.52	3,873	A	0.81	3,905	A	0.83
Exit Ramp Hwy 410 N / Mayfield	1,612	B	0.52	4,826	C	0.81	4,900	C	0.83
Mayfield / Dixie	2,719	C	0.56	5,712	D	0.98	5,776	D	1.10
Sandalwood Pwy / Chinguacousy	3,177	C	0.89	4,202	D	0.93	4,233	D	0.93
Sandalwood Pwy / McLaughlin	3,682	D	0.88	3,810	C	1.01	3,903	C	1.03
Sandalwood Pwy / Hurontario	4,400	D	0.98	5,423	F	1.40	5,443	F	1.37
Sandalwood Pwy / Kennedy	3,576	D	0.94	5,042	E	1.33	4,902	D	1.24
Sandalwood Pwy / Heart Lake (Hwy410 S)	4,127	D	0.93	4,519	D	0.94	4,609	D	0.96
Exit Ramp Hwy 410 N / Sandalwood Pwy	2,937	B	0.49	3,572	C	0.57	3,666	C	0.55
Sandalwood Pwy / Dixie	4,906	C	0.93	4,424	D	0.99	4,453	D	0.95
Wanless / Chinguacousy	1,223	B	0.60	2,799	D	1.11	2,686	C	1.07
Wanless / McLaughlin	1,114	B	0.50	3,012	B	0.82	3,153	B	0.93
Wanless / Hurontario	2,341	C	0.67	3,478	D	0.96	3,609	D	1.00

Table 9: Intersection Capacity Utilization at Arterial Intersections – AM Peak Hour

The capacities issues experienced under existing conditions on the Sandalwood Road corridor are expected to continue, with volumes reaching or exceeding theoretical capacities. As shown in **Table 5** above, however, much of the growth impact is due to significant growth outside of Mayfield West Phase 2, and is not associated with the new site trips.

The levels of service of individual movements are summarized in **Figure 23** and **Figure 24** for Stage 1 and Stage 2, respectively.

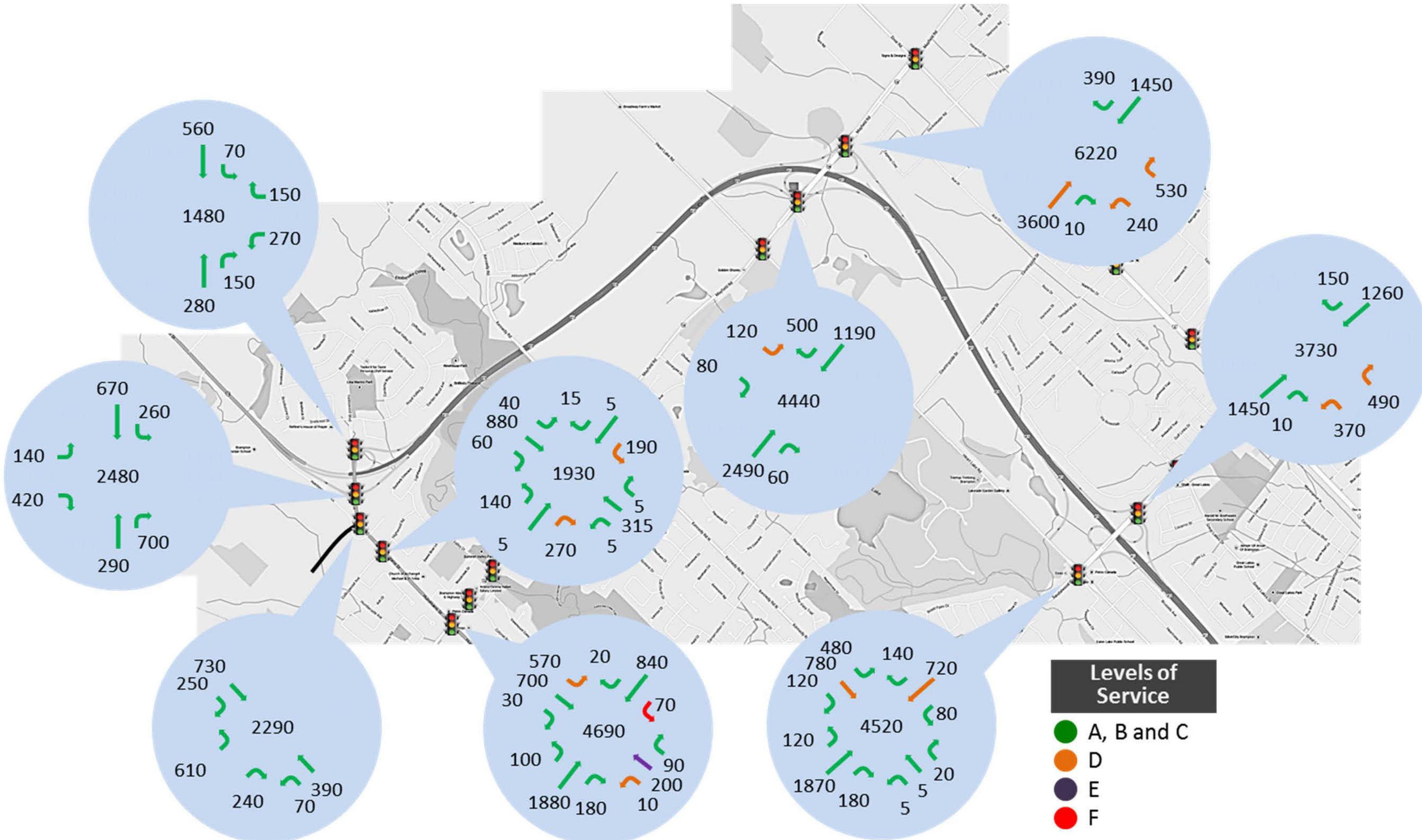


Figure 23: Stage 1 Traffic with Spine Road Connection - AM Peak Hour / Turning Movement Volumes and LoS

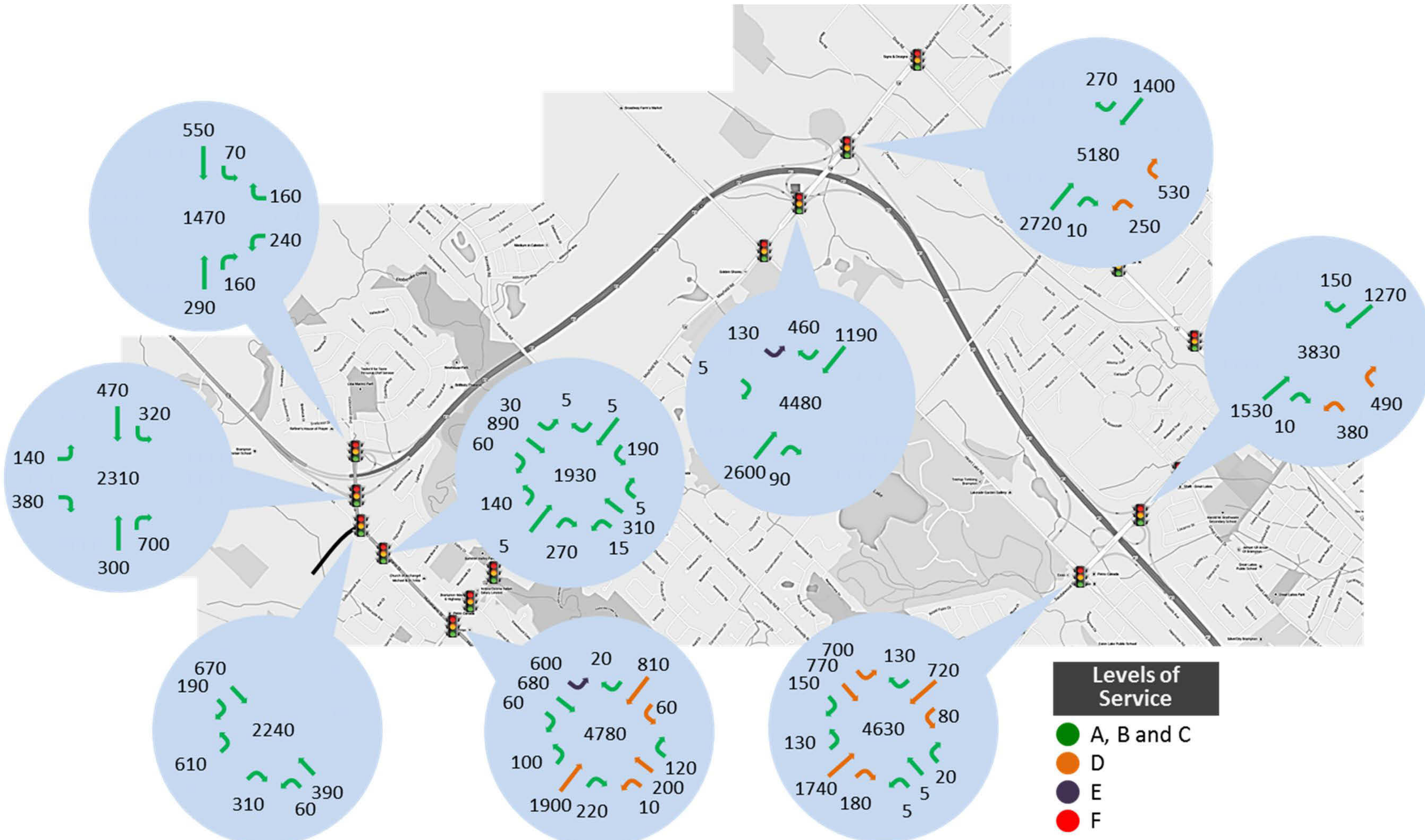


Figure 24: Stage 2 Traffic with Spine Road Connection - AM Peak Hour / Turning Movement Volumes and LoS

Evening Peak Hour

No transportation model was built for the evening peak period. For this reason, the "mirror effect" is assumed for the new trips generated in the evening compared to the morning (i.e. where the turning movement volume growth in the morning becomes the growth of the opposite movement in the evening).

In addition, given that a commercial development (661,000 ft² gross floor area) is planned, additional volumes are added to the volumes initially forecasted, since it is assumed that the "mirror effect" assumption described previously underestimates travel demand in an area with significant commercial activities. The 9th edition of the ITE Trip Generation Manual estimates that about 2,100 vehicular trips (48% in and 52% out) should be generated by a shopping center with similar characteristics, so given the fact that discretionary trips attracted in the evening are 48% above discretionary trips produced in the morning (see **Figure 6**), **Table 10** shows the volume added in the evening to take into account trips generated with commercial purpose. The trip distribution is according to existing turning movement volumes in the evening.

Generator	Total	In	Out
Shopping Center	1,024	491	532

Table 10: Additional vehicular trips generated by commercial area

The assumptions discussed should be considered conservative since they might tend to overestimate the travel demand forecasted in the evening. However, this seems acceptable in the current conditions since it implies that the most critical case is considered.

Figure 25 and **Figure 26** show the forecasted turning movement volumes and levels of service during the weekday evening peak hour at signalized intersections adjacent to the development area, for Stage 1 and Stage 2, respectively. The turning movement figures highlights that off-ramp terminal signalized intersections at the Hurontario Street interchange, as well of the new signalized Spine Road intersection, are expected to perform well.

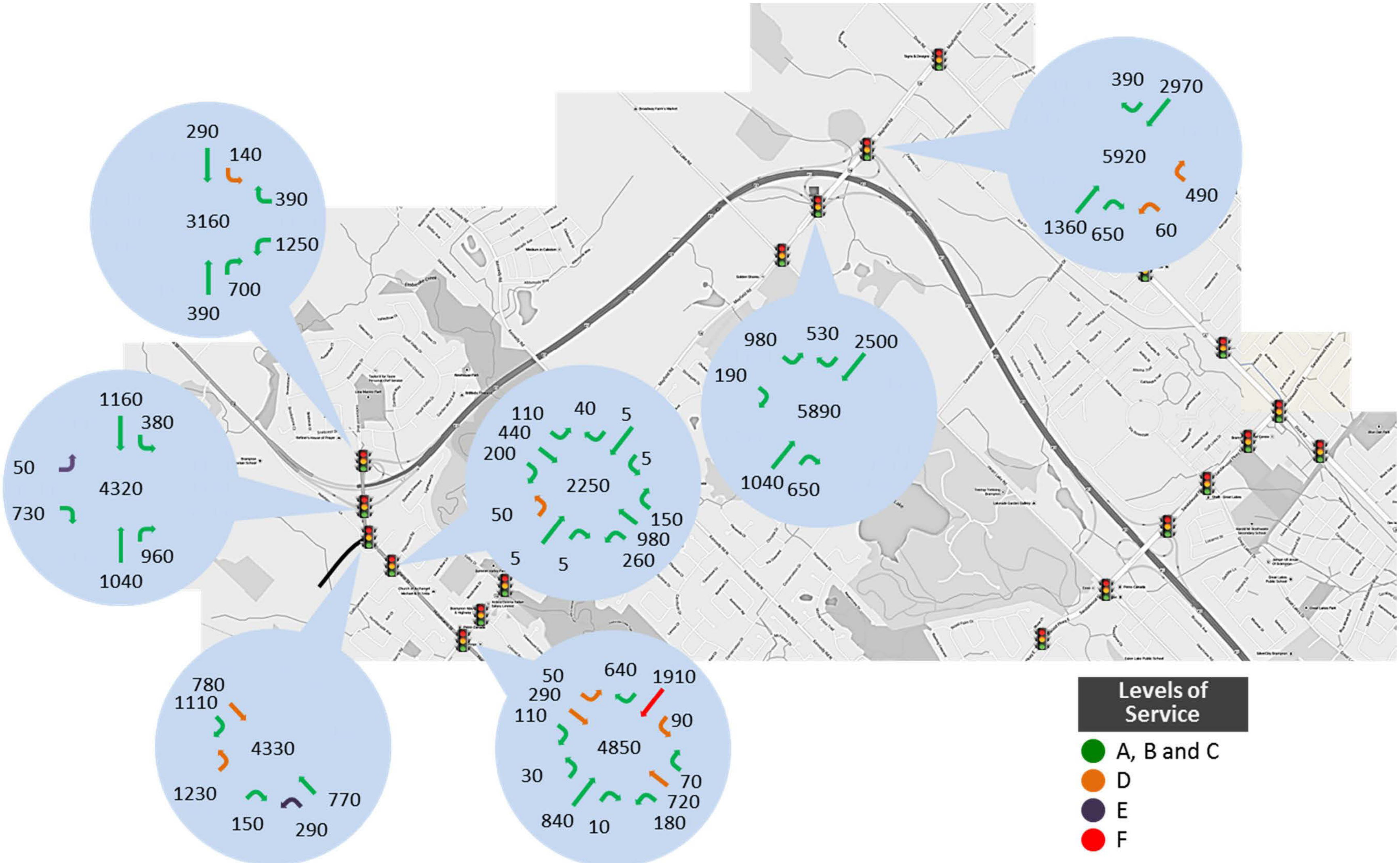


Figure 25: Stage 1 Traffic with Spine Road Connection - PM Peak Hour / Turning Movement Volumes and LoS

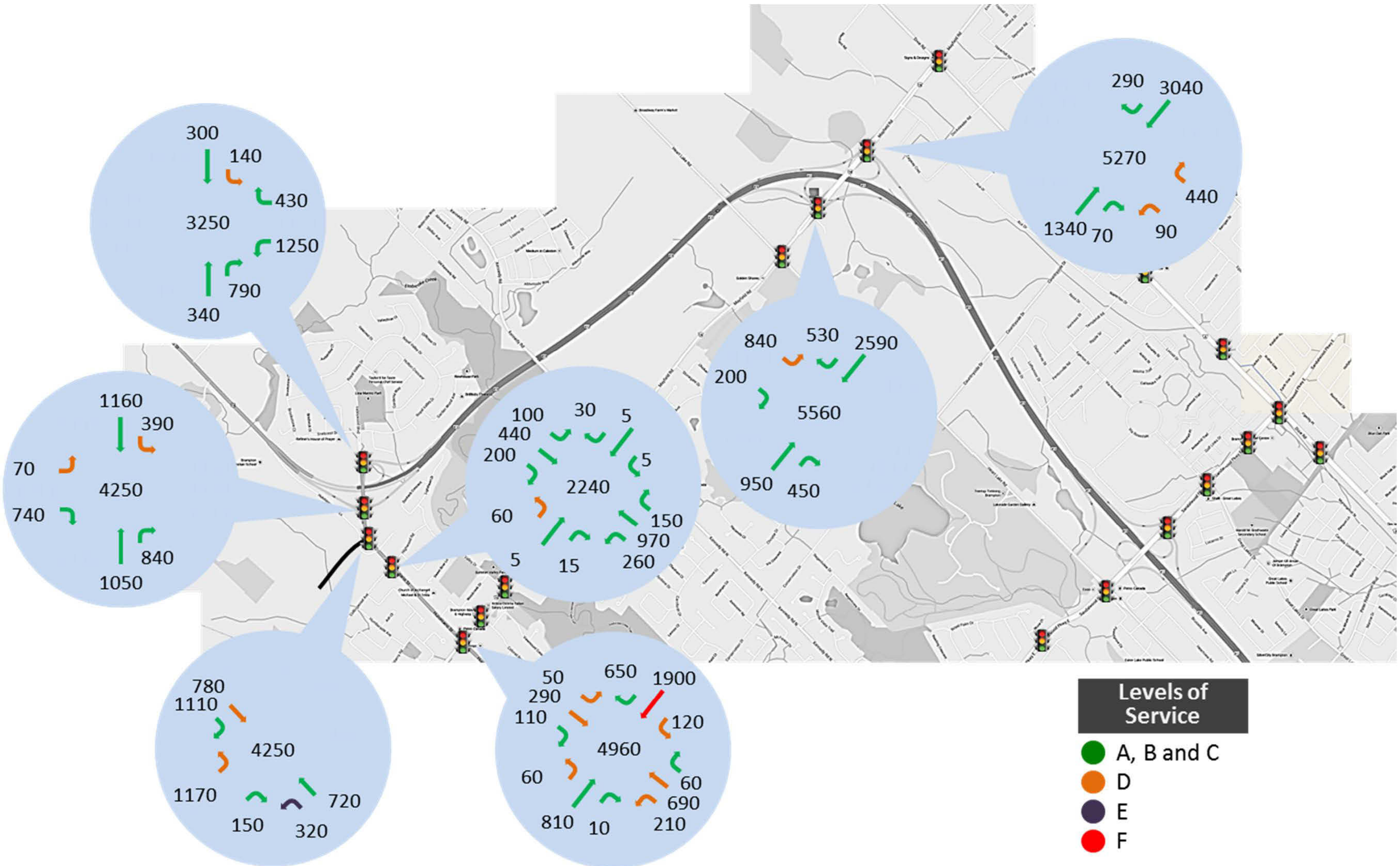


Figure 26: Stage 2 Traffic with Spine Road Connection - PM Peak Hour / Turning Movement Volumes and LoS

Highway 410/Valleywood Off-Ramp Terminals

Table 11 presents measures of effectiveness assessed for the off-ramp terminals when traffic signals are optimized according to the vehicle trip forecasts. It demonstrates that traffic conditions will be satisfactory for highway users exiting at the Valleywood / Hurontario interchange during the morning and evening peak hours (in accordance with MTO standards), under Stage 1 and Stage 2 traffic conditions.

Valleywood / Hurontario Interchange												
Scenario	Year	Peak Hour	SB Off Ramp					NB Off Ramp				
			Vol	Delay (s)	V/C	Queue (m)		Vol	Delay (s)	V/C	Queue (m)	
						Avg	95th				Avg	95th
Existing	2014	AM	427	29.1	0.09	-	2.3	129	11.6	0.19	-	5.4
		PM	357	80.6	0.40	-	11.9	781	70.2	1.09	-	140.1
Stage 1	2031	AM	559	23.3	0.49	15.7	14.4	434	22.0	0.44	14.6	22.4
		PM	419	47.4	0.49	29.9	41.8	1,644	25.4	0.75	123.6	123.6
Stage 2	2031	AM	528	22.5	0.50	19.5	16.5	399	22.3	0.42	13.4	21.4
		PM	811	47.2	0.50	31.9	57.1	1,687	25.2	0.75	123.9	123.7

Mayfield Interchange												
Scenario	Year	Peak Hour	SB Off Ramp					NB Off Ramp				
			Vol	Delay (s)	V/C	Queue (m)		Vol	Delay (s)	V/C	Queue (m)	
						Avg	95th				Avg	95th
Existing	2014	AM	207	7.6	0.11	5.5	11.7	714	13.3	0.45	22.6	53.5
		PM	45	11.4	0.03	1.4	4.5	1,235	13.8	0.57	42.2	73.9
Stage 1	2031	AM	196	52.2	0.43	15.1	24.6	776	51.7	0.75	66.2	87.4
		PM	1,170	33.7	0.77	107	114.1	548	52.9	0.75	58.9	80.3
Stage 2	2031	AM	127	52.3	0.43	15.4	24.6	781	52.7	0.75	66.3	88.1
		PM	1,034	36.9	0.75	94.6	102.7	526	60.1	0.74	39.5	67.3

Table 11: Measures of Effectiveness at Off-Ramp Terminals with the Spine Road Connection

6 CONCLUSION AND RECOMMENDATIONS

1. Traffic counts in the study area were updated to reflect current conditions. Under existing traffic conditions there is residual traffic capacity in the Mayfield West Phase 2 area. However, some intersections along Sandalwood Parkway and along Mayfield Road are operating close to, or at, capacity.

2. A Spine Road connection to Hurontario Street and associated Highway 410/Valleywood interchange modifications has been developed for analysis. This proposed road connection has a number of benefits:

   (i) It connects the Mayfield West Phase 2 Secondary Plan to the Highway 410/Hurontario interchange;

   (ii) With the uncertainty of the timing of the GTA West corridor and/or future extension of Highway 410 north of Mayfield Road, this option provides a practical and cost-effective solution that could be implemented in the short term and allow the full Stage 1 and Stage 2 development of Mayfield West Phase 2 to occur, without being delayed by the future decisions involving the GTA West corridor and extension of Highway 410;

   (iii) The proposed modifications would not preclude any future reconfiguration or modifications to the Hurontario/Highway 410 interchange.

3. A very comprehensive transportation analysis has been undertaken to assess the interchange modification in relation to the development of the Mayfield West Phase 2 Secondary Plan and regional traffic growth. The methodology utilizes up-to-date traffic volumes, the latest Peel Region traffic model, and a mesoscopic “Aimsum” model for the operational assessment of an extended study area road network (see **Figure 1**).

4. Analysis results show that the Stage 1 and Stage 2 development of the Mayfield West Phase 2 Secondary Plan area can be accommodated by the proposed Spine Road connection and modifications to the Highway 410/Valleywood interchange.

Appendix A
List of Turning Movement Counts

Intersection	Date	Source
Old School and Highway 10	26,Nov 14	LEA
Mayfield and Chingacousy	Nov-12,13	Peel
Mayfield and McLaughlin	7-Nov-13	Peel
Mayfield and Highway 10	8-May-13	Peel
Hwy 410 and Sandalwood Pkwy East	6-Jun-13	MTO
Hwy 410 and Sandalwood Pkwy West(Heart Lake)	6-Jun-13	MTO
Hwy 410 and Mayfield East	29-May-13	MTO
Hwy 410 and Mayfield West	29-May-13	MTO
Hwy 410 and Valleywood East	23-Apr-13	MTO
Hwy 410 and Valleywood West	23-Apr-13	MTO
Hurontario St and Collingwood Ave / Highwood Rd	25-Nov-14	LEA
Mayfield Rd and Kennedy Rd	8-May-13	Peel
Mayfield Rd and Hear Lake Rd	25-Nov-14	LEA
Mayfield Rd and Dixie Rd	13-Jun-13	Peel
Wanless Dr and Chinguacousy Rd	11-Sep-13	Brampton
Wanless Dr and McLaughlin Rd	29-Jan-13	Brampton
Wanless Dr and Hurontario St	19-Sep-13	Brampton
Sandalwood Pkwy and Chinguacousy Rd	15-Nov-12	Brampton
Sandalwood Pkwy and McLaughlin Rd	26-Nov-14	LEA
Sandalwood Pkwy and Hurontario St	2-Oct-13	Brampton
Sandalwood Pkwy and Kennedy Rd	26-Nov-14	LEA
Sandalwood Pkwy and Dixie Rd	25-Nov-14	LEA
410 ON Ramp and Mayfield EB to 410 NB	14-Nov-12	MTO
410 ON Ramp and Mayfield EB to 410 SB	14-Nov-12	MTO
Dixie Rd and Countryside Rd	10-Sep-14	Region
Sandalwood Pkwy and Great Lakes Dr	10-Oct-13	Brampton
Sandalwood Pkwy and Conestoga Dr	22-Oct-14	Brampton

Appendix B
Response to MTO Comments

September 24, 2014

Project No. **8619**	Phase **226**	Date **February 11 2015**
From **François Tomeo**	To **John Koke**	C.C. **Terry Wallace** **Emanuel Nicolescu**

Subject **Reponses to MTO comments on the Draft MW2 Transportation Master Plan received on September 24 2014**

This technical memorandum aims to respond to comments submitted by email on September 24 2014 by the Ministry of Transportation to the City of Caledon regarding the Draft Mayfield West Phase 2 Transportation Master Plan issued by Paradigm Transportation Solutions Ltd.

Question/Comment	Response
1. As per the report, the analysis, findings and recommendations contained in Mayfield Phase 2 Traffic impact studies A and B are used for preparation of this transportation master plan. The Traffic Impact Reports for Part A (existing conditions) and Part B (Future Conditions) were prepared in 2009 and 2010 on the basis of 2007 & 2008 volumes and data. Since 2010, many changes are occurred within the study area and volumes are changed significantly. The Ministry has previously submitted comments related to those studies. Please incorporate those comments in the TIS's and update this report accordingly.	• The input data used for the transportation of the analysis are the following: – Turning Movement Counts at arterial intersections or off-ramp terminals performed no later than 2012; – TTS 2011 travel demand statistics; – Latest update of the Peel Region's Emme Model; – Travel time surveys performed on key major arterials in Fall 2014. • To be able to adequately respond to any questions that may arise, the chosen approach considers a wider road network (extended study area) bounded by Dixie Rd, Old School Rd, Chinguacousy Rd and Sandalwood Pkwy. In addition, the use of the Peel Region's Emme travel demand forecasting model allows the consideration of growth (population and employment) at a regional level.
2. Please carryout analysis of Highway 410 interchange off-ramp terminals at Valleywood and present the results within the report.	• The road network modelled at a mesoscopic level (using the software Aimsun) includes Hwy 410 as well as the following (full) interchanges: – Valleywood Blvd / Hurontario Rd; – Mayfield Road; – Sandalwood Pway. In addition, capacity analyses at intersections will be performed on the Synchro software based on vehicular trip forecasted from the mesoscopic model.
3. Please also include Highway 410 interchange at Mayfield Drive within the study area and present the analysis results in the report	• As mentioned in point 2, this interchange is part of the updated analyses. One of the reasons we chose to use the software AIMSUN (the other being that it's a software package recognized by the Ministry) is that it allows relatively easy integration between mesoscopic and microscopic simulations. We plan to estimate queue lengths based on microsimulation results.

ADM 15

	Question/Comment	Response
4.	More detailed analysis including Micro-simulation modeling is required to assess the proposed Valleywood Interchange modification option and the impact of additional traffic to be generated by the Mayfield West Phase 2 on the adjacent ministry highway network.	• Agreed. See answer in Question 3.
5.	Please explain in detail method for future forecasting and how growth factors are calculated to establish future background traffic estimates.	• The retained approach is to use the Peel Region Emme model to evaluate the number of vehicular trips generated according to population and employment growth scenarios. The Emme model also distributes the vehicular demand forecasted at a regional level by estimating trip origins and destinations. Given the results obtained from the Peel Region Emme model, trips are reassigned on the extended study area (see response to Question 1) at a mesoscopic level using the software Aimsun. This new assignment (during the 3hr AM Peak) allows accurately estimating turning movement volumes and travel times on the extended study area.
6.	Increased peak hour traffic may have significant impacts on Highway 410 traffic flow. Please conduct detailed analysis to identify impacts on travel times and speeds, and recommend if any improvement is required on the highway.	• The development of an integrated meso / micro model over a 3 hour period during the AM Peak allows to answer this question.
7.	For the year 2031 PM total traffic scenario, the proposed Spine Road and Hurontario Street intersection will operate at v/c ratio equals to 0.92 with SBT move approaching at capacity (v/c = 0.99). The SB traffic at the intersection will most probably backs up to the North Bound off-ramp terminal. Therefore, it is recommended to carryout Sim Traffic analysis and the result of 95th percentile queue lengths are to be presented in the report.	• The V/C ratio of 0.92 was evaluated based on the previous travel forecast presented in the TMP. The forecast have now changed with the integrated approach used as well as the geometry proposed on the Southbound (SB) approach at the Hurontario/Spine Roads intersection, where a free flow right turn is proposed for users coming from the highway and going to Spine Road. The V/C estimated (on Synchro) during the PM Peak is now 0.67 for the SB Right Turn and 0.36 for the SB Through Movement.
8.	2008 volume counts used in the study are too old to demonstrate the current traffic conditions/ patterns within the area. Moreover, it will give erroneous results if used to forecast future horizon year volumes. Therefore, it is recommended to please carryout latest Turning Movement Counts and revised the analysis accordingly.	• The input data used for the transportation of the analysis are the following: – Turning Movement Counts at arterial intersections or off-ramp terminals performed no later than 2012; – TTS 2011 travel demand statistics; – Latest update of the Peel Region's Emme Model; – Travel time surveys performed on key major arterials in Fall 2014.

Question/Comment	Response
9. Please follow MTO traffic impact guidelines for analysis of intersections/ramp terminals within and adjacent to the ministry highway network. As per the guidelines, v/c ratio of 0.75 for off-ramps and 0.85 for other moves, are deemed critical for the operations, and geometric improvements may be considered.	• See Table 1 on Page 4.
10. Traffic analysis is required to justify the report recommendation that some initial developments could occur without impacting the 410 Valleywood interchange operations.	• According to our analysis, the complete reconfiguration of the interchange is not requireda at full build out of Phase 2 of the Mayfield West development. Only a new arterial road (Spine Rd) that connects to Hurontario Rd is necessary, including the following improvements: – Installation of traffic signals at the Valleywood/Hurontario interchange off-ramp terminals; – Installation of traffic signals at the new Spine / Hurontario Rds intersection with a master controller connected to the off-ramps terminals to avoid queues. – Free-flow right turn on the SB approach of the new Spine / Hurontario Rds intersection. • The updated travel forecast assigns a significant portion of vehicular trips on Highway 410 but also on Mayfield Rd and Sandelwood Pkwy or on Hurontario and McLaughlin Roads, which is why the complete reconfiguration is not ultimately recommended.
11. Please submit digital Synchro files with the revised reports for review	• The Synchro analyses performed based on the new vehicular trip forecast will be provided.

Table 1 Measure of effectiveness for Off-Ramps at Valleywood / Hurontario Interchange

Valleywood / Hurontario Interchange												
Scenario	Year	Peak Hour	SB Off Ramp					NB Off Ramp				
			Vol	Delay (s)	V/C	Queue (m)		Vol	Delay (s)	V/C	Queue (m)	
						Avg	95th				Avg	95th
Existing	2014	AM	427	29.1	0.09	-	2.3	129	11.6	0.19	-	5.4
		PM	357	80.6	0.4	-	11.9	781	70.2	1.09	-	140.1
With Spine connection Signalized	2031	AM	616	12.4	0.69	35.3	31.7	461	35.8	0.75	75.1	95.4
		PM	350	12.8	0.45	17.9	32.3	1250	25	0.74	118.8	115.7

Mayfield Interchange												
Scenario	Year	Peak Hour	SB Off Ramp					NB Off Ramp				
			Vol	Delay (s)	V/C	Queue (m)		Vol	Delay (s)	V/C	Queue (m)	
						Avg	95th				Avg	95th
Existing	2014	AM	207	7.6	0.11	5.5	11.7	714	13.3	0.45	22.6	53.5
		PM	45	11.4	0.03	1.4	4.5	1235	13.8	0.57	42.2	73.9
With Spine connection	2031	AM	629	48.1	0.77	73.2	87.0	879	45.7	0.80	75.8	125.4
		PM	325	53.0	0.65	36.8	49.4	1125	42.3	0.81	82.1	107.2

Appendix C
Response to Peel Region Comments

Comments from Peel Region <u>Related to the Valleywood/Highway 410 Interchange</u>:

From: *Detaramani, Tina*
Sent: *September 2, 2014 1:27 PM*
To: *Maestre, Jennifer*
Subject: *Transportation Division Comments on MW2 Draft TMP*

Hi Jen

Transportation Division staff have reviewed the above noted study and are pleased to provide the following comments:

<u>Specific Comments</u>

-
- *p. 30 The report states that: "… Analysis of future background traffic conditions was undertaken as part of the analyses and concluded that the Highway 410 / Valleywood interchange would not be able to support traffic increases associated with the development of the lands located west of Highway 10 without requiring significant geometric improvements and/or reconstruction of the interchange which would be subject to a future EA Study…." Both this statement and the analysis demonstrate that the geometric improvement / reconstruction of the Hwy 410 interchange is imperative to the Mayfield West II development. One of the worst case scenarios is the delay/cancellation of improvements. Unless MTO can provide certainty, an analysis should be able to evaluate this scenario and inform how the development (number and/or schedule) and the road network deficiency (i.e. Mayfield road widening and its construction schedule) would be impacted.*
- *P. 31-33 The 'existing' traffic volumes in in Fig 6.1, 6.2, and 6.3 are based on 2008 volumes which are now six years old; can these volumes be updated to more recent counts?*
-
-
-
-

RESPONSE:

The comprehensive analysis in this report provides an assessment of a viable alternative to the previously proposed MTO improvements at the Valleywood/Highway 410 interchange. The proposed Spine Road connection to Hurontario Street and associated interchange modifications has been demonstrated to operate at an acceptable level of service while accommodating full development of the Mayfiled West Secondary Plan Phase 2 community. The methodology, findings and conclusions are presented in the report.

Traffic volumes were updated for the above analysis and are documented in the report.

Appendix D
Response to MTO Comments

August 24, 2015

From: Francois Tomeo
Sent: Friday, September 25, 2015 4:43 PM
To: Bill O'Brien (billobrien@cogeco.ca); 'Tim Manley' (tim.manley@caledon.ca)
Cc: Jason Afonso (jasona@gsai.ca); Terry Wallace; Emanuel Nicolescu
Subject: 8619 FW: Meeting Notes from July 23 2015 Meeting with Caledon

Hi Tim,

See below our responses to the last questions from the Ministry.
Please let us know if you need clarification.

Source	Question / Comment	LEA's Response
MTO	1. There is an existing signalized intersection (Hurontario-Collingwood Ave) present approx. 150m south of the proposed Spine road intersection currently providing access to the Mayfield West developed area. Instead of having a new signalized intersection (which is not acceptable as per the HAM guidelines), it is recommended that consultant explore possibilities to use this intersection to provide access for new trips to the subdivision.	Collingwood Avenue is a local street and would not be an appropriate primary connection to MW2. It is bordered by numerous single-family homes built relatively recently with each one having their own driveway. Hence, changing the road function is not an option. The connection of this local street to MW2 would generate important traffic volume increases that could not coexist with the current configuration, reducing safety significantly. The City of Brampton, for which Collingwood Avenue is under its jurisdiction, is not in agreement with a change of function of this road.
	2. Analysis of Collingwood & Hurontario Street signalized intersection is not present in the report. Please carryout analysis of the intersection and present results in the report.	Analysis was carried out. Results will be included in the revised report.
	3. As per the report, during AM peak hour, major percentage of the trips to be generated by the area will be destined towards Toronto and will probably use Highway 410. But as per Table-6 of the report, there will be an negligible annual growth of 0.4% on Highway 410. Please justify.	Our assessment of travel demand based on the 2011 TTS Survey demonstrates that most of the current trips (~70) generated by the area under consideration (which extends to Bovaird Drive to the South, Old School Road to the North, Dixie Road to the East and Chinguacousy Road to the West) stay within Caledon and Brampton. In addition, it highlights that most of the trips generated outside of Caledon and Brampton use public transit, of which 2/3 destined to downtown Toronto use public transit. The Peel Region Emme Model is consistent with those observations. In addition, significant employment is projected within the region and specifically in Bolton (East Caledon). For those reasons, the distribution of new travel demand results in the assignment of vehicular trips on the arterial road network (Mayfield and McLaughlin Roads Among Others) and not just on the highway network. We'll add content to our report to better reflect this analysis.

	4. At Highway 410 and Mayfield interchange, during the PM peak hour, future horizon year (stage-1) off-ramp volumes will decrease from the existing volumes (NBL from 677 to 575 and NBR from 558 to 475). Only volume on Mayfield Road will increase (twice from existing volumes) . Please provide justification for reduction in off-ramp volumes.	It is important to note that the dynamic nature of the mesoscopic model we developed (on Aimsun) for the study area (which extends to Sandelwood Parkway to the South, Old School Road to the North, Dixie Road to the East and Chinguacousy Road to the West) implies reassignment of vehicular travel demand in relation to capacity constraints. For this reason, in the future scenario, the significant increase of volumes on Mayfield Road, which is supported by the additional lanes built on this road and reduces capacity for off-ramp movements, implies that the most optimal way to get to destination from Highway 410 is no more by using the Mayfield interchange, but rather the adjacent ones. We'll add content to our report to make the demonstration.
	5. The intersection of Old school road and Hurontario will operate above capacity with stage 1 scenario, please provide recommendations for improvements within the report.	We carried out the analysis and find that the north-south through movements are critical and widening of Hwy 10 may be required. Any improvement recommended is conditional on the final plan for the Hurontario / Valleywood interchange connection as well as the GTA West corridor plan. The latter will have significant impact on the operation of the Old School Road and Hurontario Road Intersection.
	6. Please correct existing volume numbers in Fig 10. Some of the moves volumes presented in the figure (e.g. NBL at Sandalwood) are not correct.	We will correct and incorporate in the revised report.
	7. Please submit digital AIMSUM and SYNCHRO models for the ministry review.	The files were sent already. We can send them again if required.

Regards

François Tomeo, P.Eng. | Manager | Traffic & Transportation Planning | **LEA Consulting Ltd.**
Suite 900, 625 Cochrane Drive, Markham, Ontario L3R 9R9
T: 905.470.0015 Ext. 266 | **C:** 416.779.3943 | **F:** 905.470.0030 | **E:** ftomeo@lea.ca | www.LEA.ca

Appendix E

Cross-Sections and Plan View

Mayfield West Phase 2

Spine Road - Conceptual Design
Project: TP110115

Scale:	Date:	Drawing Number
NTS	February 2014	1
Drawn by: J.S.	Checked by: D.S.	

ROAD DESIGN NOTES (7 JULY, 2014)

The recommended road cross-sections and right of way requirements are outlined in the following tables, based on the following assumptions:

- Lane widths for arterial and collector roads are based on curb lane widths of 3.5 m, second through lane widths of 3.25 m, left turn lanes at intersections to consist of 3.0 m left turn lane with 2.0 m median and right turn lane widths of 3.50 m. This does not include provision for parking on street or for bike lanes.

- Roadway rights of way widths accommodate left turn lanes except where noted.

- Bike lane widths are 2.0 m on Spine Road between Collector Rd F and Collector Rd D. On other sections of the Spine Road, McLaughlin Rd and Chinguacousy Rd, bike lane widths are 1.8 m. On collector roads with bike lanes or widened pavement, the width of the bike lane or widening is 1.5 m.

- Bike lanes will not be provided on the Spine Road east of Collector Rd F. Bike lanes should be provided on the local street between Collector Rd F and the Police lands, parallel to the Spine Rd. (NOTE: This is subject to having bike lanes and a bike/pedestrian crossing of Hwy 10 on Collector Rd A extension.)

- Revised cross-sections are based on Town of Caledon standards with changes as noted. Right of way widths are recommended based on rounding up to the next even metre. All cross-sections should provide 4.0 m for the boulevard, curb & gutter and at least 0.5 m between the sidewalk and property line.

- A 2.0 m sidewalk to be provided along the south side of the Spine Road from west of Mclaughlin to Collector Rd F

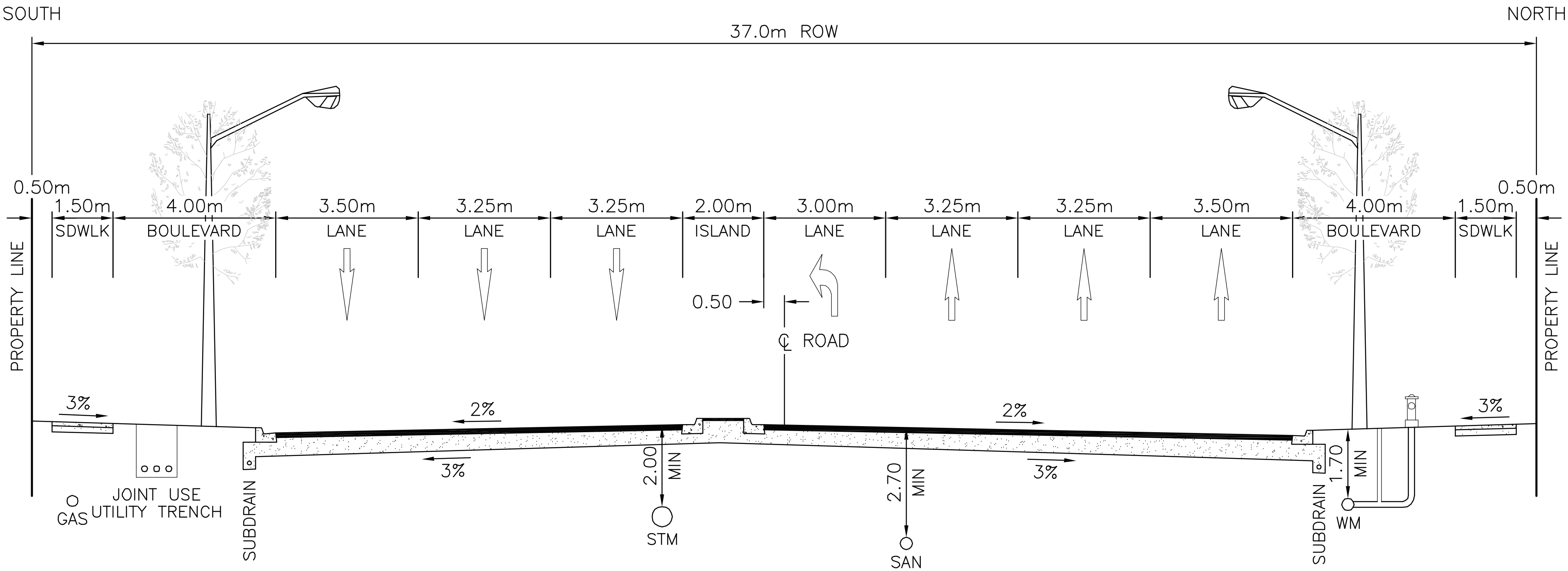
- 2.5 m parking bays will be provided adjacent to live-work units in village centre on Spine Rd & McLaughlin

- m = metre, PL = property line, CL = centre line, s/w = sidewalk

Road Section (approx limits)	**Requirements**	**Cross-Section**	**Recommended Right of Way Width**
Spine Rd (Hurontario – Commercial Entrance)	Arterial, 6 thru lanes, continuous centre median with EB and WB left turn lanes. No bike lanes or parking. Min 1.5 m sidewalk and 4.0 m blvd each side. ***(no bike lanes with Coll A crossing of Hwy 10)***	From PL to CL of road: 0.5+1.5+4.0+3.5+3.25+3.25+half 5.0 = 18.5 m	37 m right of way required, including provision for left turn lanes.
The Spine Road (Comm Ent – Collector Rd F)	Arterial, 4 thru lanes, left turn lane & centre median at intersections, Min 1.5 m sidewalks and 4.0 m blvd. WB right turn lane at Coll F	From PL to CL of road: 0.5+1.5+4.0+3.5+3.25+half 5.0 = 15.25 m (+3.5 for WB RT lane at Coll Rd F)	31 m right of way required. Widen to 34 m at Coll Rd F for WB RT lane
The Spine Road (Coll Rd F to HS Entrance)	Arterial, 4 thru lanes, left turn lane & centre median at intersections, 1.5 m s/w north side, 2.0 m s/w on south side, 2.0 m bike lanes each side.	From PL to CL of Road: 0.5+1.5+4.0+2.0+3.5+3.25+half 5.0 = 17.25 m (+ add 0.5 m for south s/w)	35 m right of way required. (Provision required at Rail Line for E-W Trail connections)
The Spine Road (HS Entrance to Collector Rd D)	Arterial, 2 thru lanes, left turn lanes & centre median at intersections, EB RT lane at McLaughlin & HS Ent.) 1.5 m s/w north side, 2.0 m s/w south side, 2.0 m bike lanes each side.	From PL to CL road: 0.5+1.5+4.0+2.0+3.5+half 5.0 = 14 m (+ add 0.5 for south s/w)	29 m right of way required. Widen to 32 M at McLaughlin and HS Entrance for EB RT lane Widen by 2.5 m adjacent to live-work block (north side, west of McLaughlin)
The Spine Road (Collector Rd D to Chinguacousy)	Arterial, 2 thru lanes, left turn lanes & centre median at intersections, 1.5 m s/w each side, 1.8 m bike lanes each side.	From PL to CL of road: 0.5+1.5+4.0+2.0+3.5+half 4.0 = 13.5 m	27 m right of way required
McLaughlin Rd (Mayfield – Spine Road)	Arterial, 4 thru lanes, left turn lane & centre median at intersections, 1.8 m bike lanes, 1.5 m sidewalks, no parking.	From PL to CL of road: 0.5+1.5+4.0+1.8+3.5+3.25+half 5.0 = 17.05 m	35 m right of way required

Road Section (approx limits)	**Requirements**	**Cross-Section**	**Recommended Right of Way Width**
McLaughlin Rd (Spine Rd – Collector Rd A)	Arterial, 4 thru lanes, left turn lane & centre median at intersections, 1.8 m bike lanes, 1.5 m sidewalks, no parking.	From PL to CL of road: 0.5+1.5+4.0+1.8+3.5+3.25+half 5.0 = 17.05 m	35 m right of way required Widen by 2.5 m adjacent to live-work block (west side, north of Spine Rd)
McLaughlin Rd (Collector Rd A – north limit)	Arterial, 2 thru lanes, 1.8 m bike lanes, 1.5 m sidewalks each side, no parking on street, no intersections, roundabout at north limit.	From PL to CL of road: 0.5+1.5+4.0+1.8+3.5= 11.3 m	24 m right of way required Widen to 28 m at Coll Rd A for SB LT
Chinguacousy Rd (Mayfield – north limit of MW2)	Arterial, 2 thru lanes, provision for future widening to 4 lanes, turn lanes & centre median at intersections, 1.8 m bike lanes, 1.5 m sidewalks. (maintain 4 Lanes for possible future connection to GTA West and west side development)	From PL to CL of road: 0.5+1.5+4.0+1.8+3.5+3.25+half 5.0 = 17.05 m	35 m right of way required
Collector Rd F (Spine Rd – Comm Entrance)	Collector, 4 lanes with left turn lanes, 1.5 m bike lanes, 1.5 m s/w	From PL to CL of road: 0.5+1.5+4.0+1.5+3.5+3.25+ half 5.0 = 16.75	34 m right of way required Final configuration subject to TIS for Commercial block
Collector Rd F (Comm Ent – Coll A)	Collector, 2 lanes + left turn lanes, 1.5 m bike lanes, 1.5 m s/w	From PL to CL of road: 0.5+1.5+4.0+1.5+3.5+half 5.0=13.5 m	27 m right of way required Final configuration subject to TIS for Commercial block

Road Section (approx limits)	**Requirements**	**Cross-Section**	**Recommended Right of Way Width**
Collector Roads A, B, C, D, E, F (south),G (No Parking)	Collector, 2 thru lanes, bus route, 1.5 m sidewalk, 1.5 m bike lanes/widening, no parking, widen for left turn lane & median at arterial intersections.	Mid-block PL to PL: 0.5+1.5+4.0+1.5+3.5+3.5+1.5+4.0+1.5+0.5= 22.0 m	22 m right of way required. Widen right of way to 27 m at arterial intersections.
Collector Roads A, B, C, D, E, F (south),G (With parking one side)	Collector, 2 thru lanes, 1.5 m sidewalks, no bike lanes, bus route, parking on one side. Left turn lane & median at arterial intersections only.	Mid-block PL to PL: 0.5+1.5+4.0+5.0+5.0+4.0+1.5+0.5=23.0 m	22 m right of way required. Widen right of way to 27 m at arterial intersections (left turn lane, no parking)
Designated multi-use trails off road	3.0 m path with 1.5 m clear area on each side.		8 m right of way where required
Local streets	2 thru lanes, no bus routes, 1.5 m sidewalks, no bike lanes.	Use Caledon Standard 203 or 202 depending on parking needs.	20 m or 18 m right of way



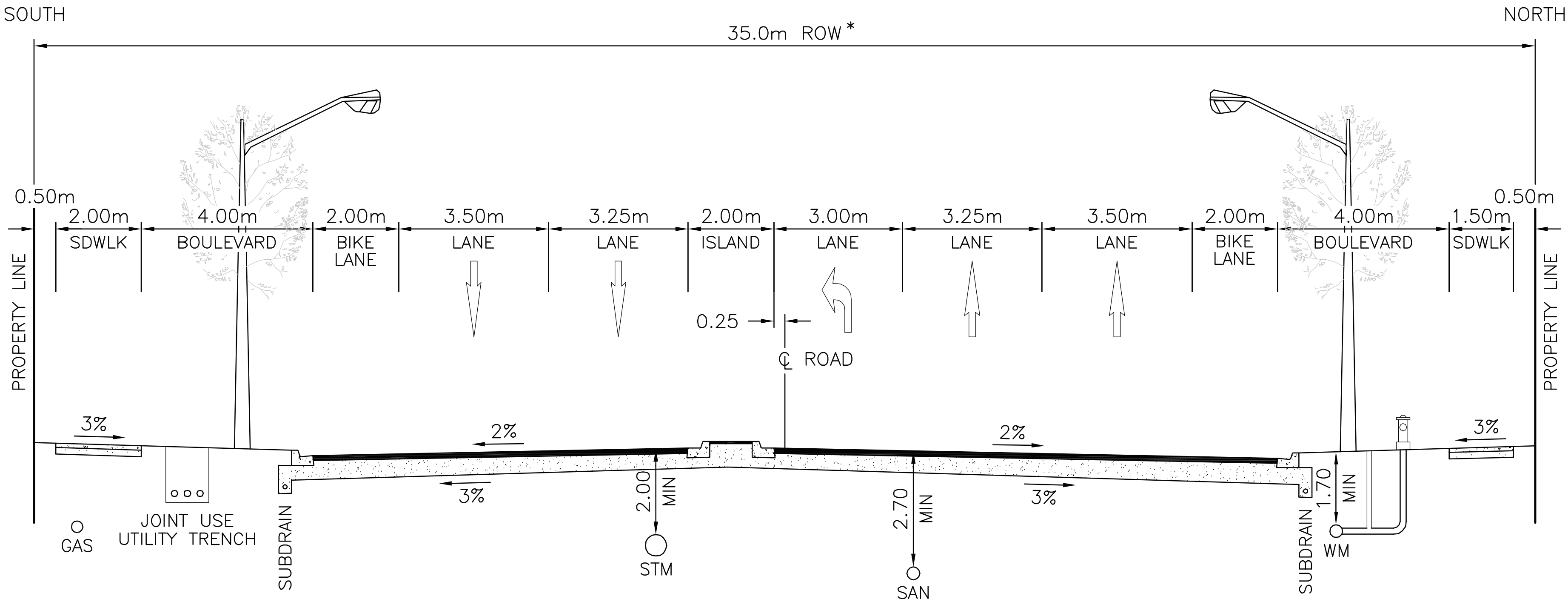
NOTES:

1. UTILITY TRENCH TO HAVE A MINIMUM COVER OF 0.9m.
2. WATERMAIN TO HAVE MINIMUM COVER OF 1.7m.
3. BOULEVARDS REQUIRE A MINIMUM OF 300mm OF TOPSOIL AND NURSERY SOD.
4. TREES TO BE PLACED IN LOCATIONS PER APPROVED LANDSCAPE PLAN.
5. STREETLIGHT FIXTURE PER APPROVED TOWN STANDARD.
6. FULL LENGTH MINIMUM 100mm DIA. SUBDRAINS C/W FILTERCLOTH SHALL BE INSTALLED AS PER TOWN OF CALEDON APPROVED STANDARDS NO. 219.
7. WHERE POSSIBLE, MANHOLE LIDS TO BE LOCATED OUT OF TIRE LANE OF TRAFFIC.
8. STORM AND SANITARY SEWERS TO HAVE A MINIMUM COVER OF 2.0m AND 2.7m RESPECTIVELY.

TYPICAL SECTION
SPINE ROAD (Hurontario St - Commercial Entrance)
6 THROUGH LANES
37.0m ROAD ALLOWANCE

MAYFIELD WEST PHASE 2
TRANSPORTATION MASTER PLAN

Project No.	TP110115
Date	June 2014
Scale	1:150
Figure No.	1



*AN ADDITIONAL 6.0m OF ROW IS REQUIRED WHERE THE MULTI–USE TRAIL IS ADJACENT TO THE SPINE ROAD

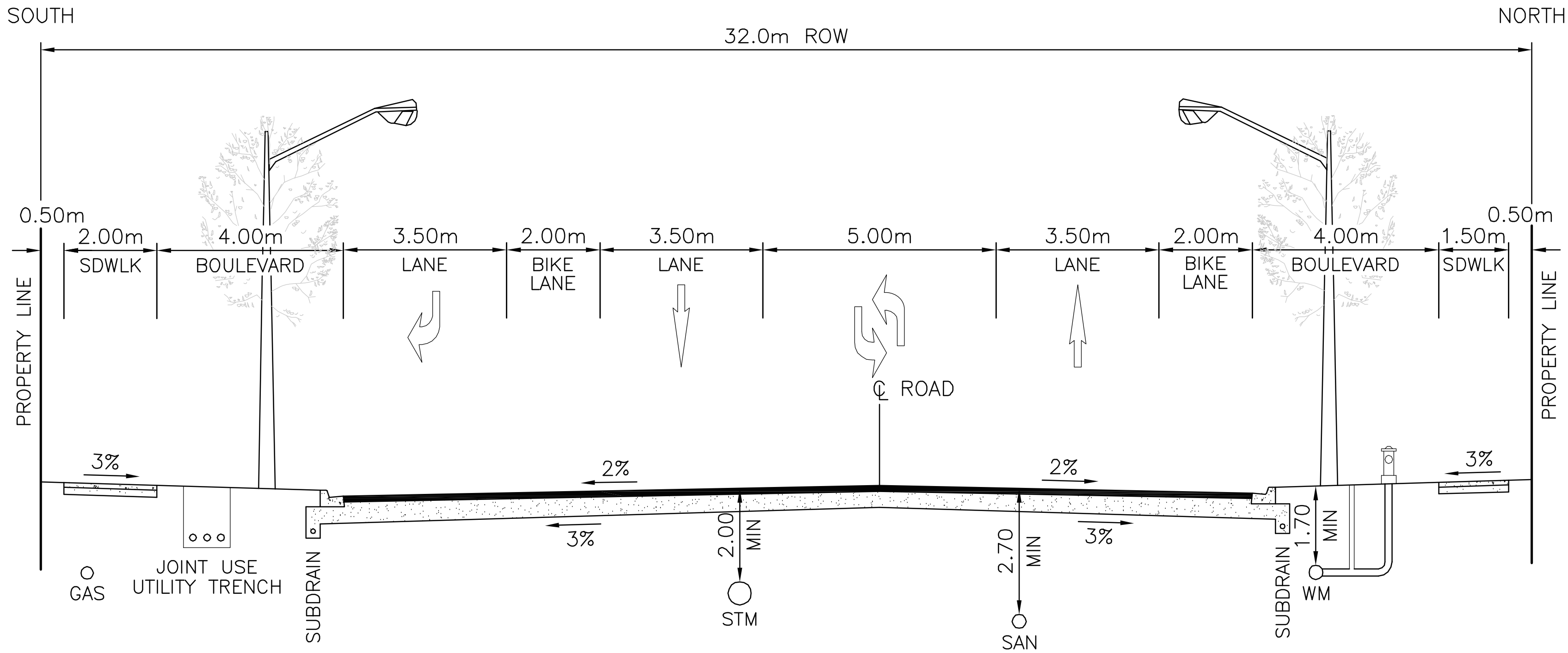
NOTES:

1. UTILITY TRENCH TO HAVE A MINIMUM COVER OF 0.9m.
2. WATERMAIN TO HAVE MINIMUM COVER OF 1.7m.
3. BOULEVARDS REQUIRE A MINIMUM OF 300mm OF TOPSOIL AND NURSERY SOD.
4. TREES TO BE PLACED IN LOCATIONS PER APPROVED LANDSCAPE PLAN.
5. STREETLIGHT FIXTURE PER APPROVED TOWN STANDARD.
6. FULL LENGTH MINIMUM 100mm DIA. SUBDRAINS C/W FILTERCLOTH SHALL BE INSTALLED AS PER TOWN OF CALEDON APPROVED STANDARDS NO. 219.
7. WHERE POSSIBLE, MANHOLE LIDS TO BE LOCATED OUT OF TIRE LANE OF TRAFFIC.
8. STORM AND SANITARY SEWERS TO HAVE A MINIMUM COVER OF 2.0m AND 2.7m RESPECTIVELY.

TYPICAL SECTION
SPINE ROAD (Collector Rd 'F' - High School Entrance)
4 THROUGH LANES
35.0m ROAD ALLOWANCE

MAYFIELD WEST PHASE 2
TRANSPORTATION MASTER PLAN

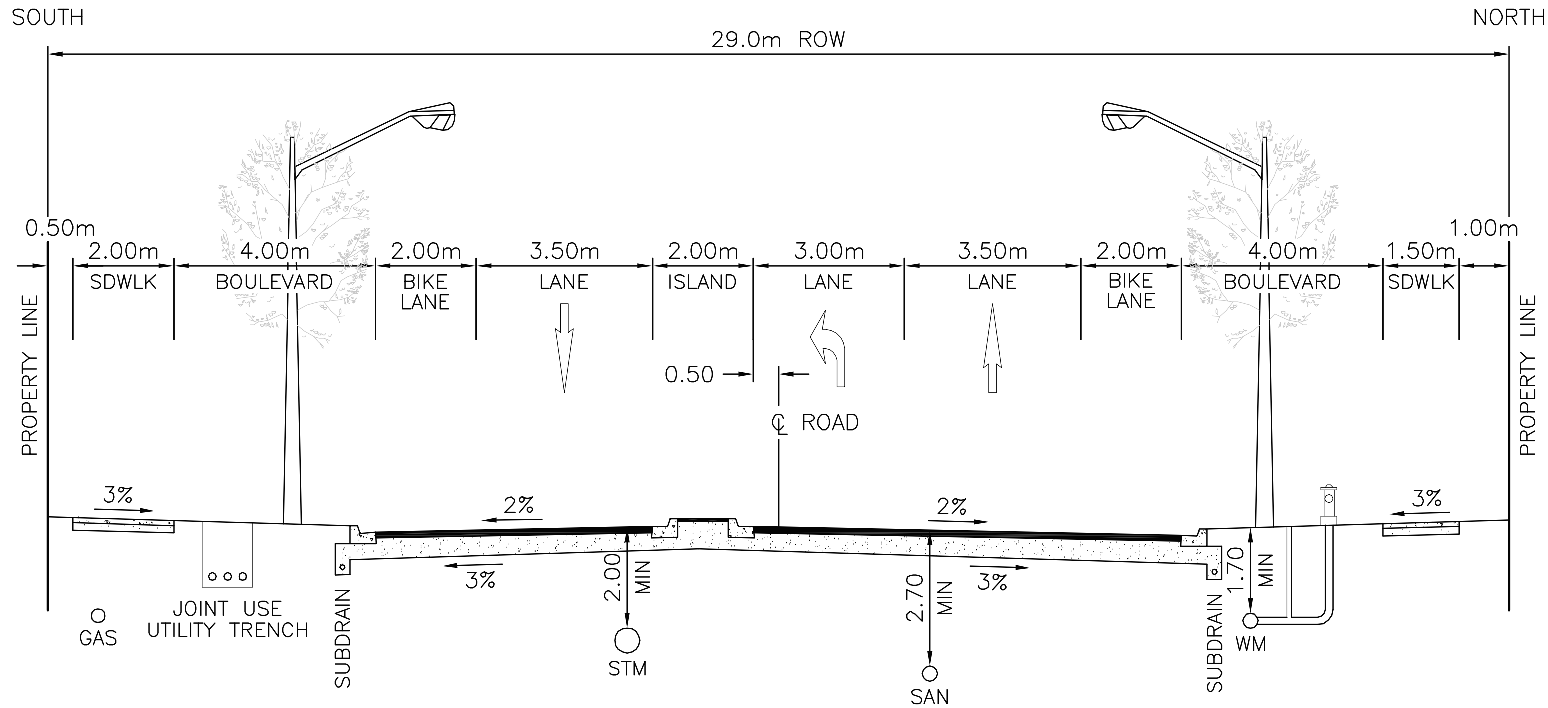
Project No.	TP110115
Date	June 2014
Scale	1:150
Figure No.	2



NOTES:

1. UTILITY TRENCH TO HAVE A MINIMUM COVER OF 0.9m.
2. WATERMAIN TO HAVE MINIMUM COVER OF 1.7m.
3. BOULEVARDS REQUIRE A MINIMUM OF 300mm OF TOPSOIL AND NURSERY SOD.
4. TREES TO BE PLACED IN LOCATIONS PER APPROVED LANDSCAPE PLAN.
5. STREETLIGHT FIXTURE PER APPROVED TOWN STANDARD.
6. FULL LENGTH MINIMUM 100mm DIA. SUBDRAINS C/W FILTERCLOTH SHALL BE INSTALLED AS PER TOWN OF CALEDON APPROVED STANDARDS NO. 219.
7. WHERE POSSIBLE, MANHOLE LIDS TO BE LOCATED OUT OF TIRE LANE OF TRAFFIC.
8. STORM AND SANITARY SEWERS TO HAVE A MINIMUM COVER OF 2.0m AND 2.7m RESPECTIVELY.

TYPICAL SECTION SPINE ROAD (West of High School Entrance) 2 THROUGH LANES 33.0m ROAD ALLOWANCE	MAYFIELD WEST PHASE 2 TRANSPORTATION MASTER PLAN	Project No.	TP110115
		Date	June 2014
		Scale	1:150
		Figure No.	3



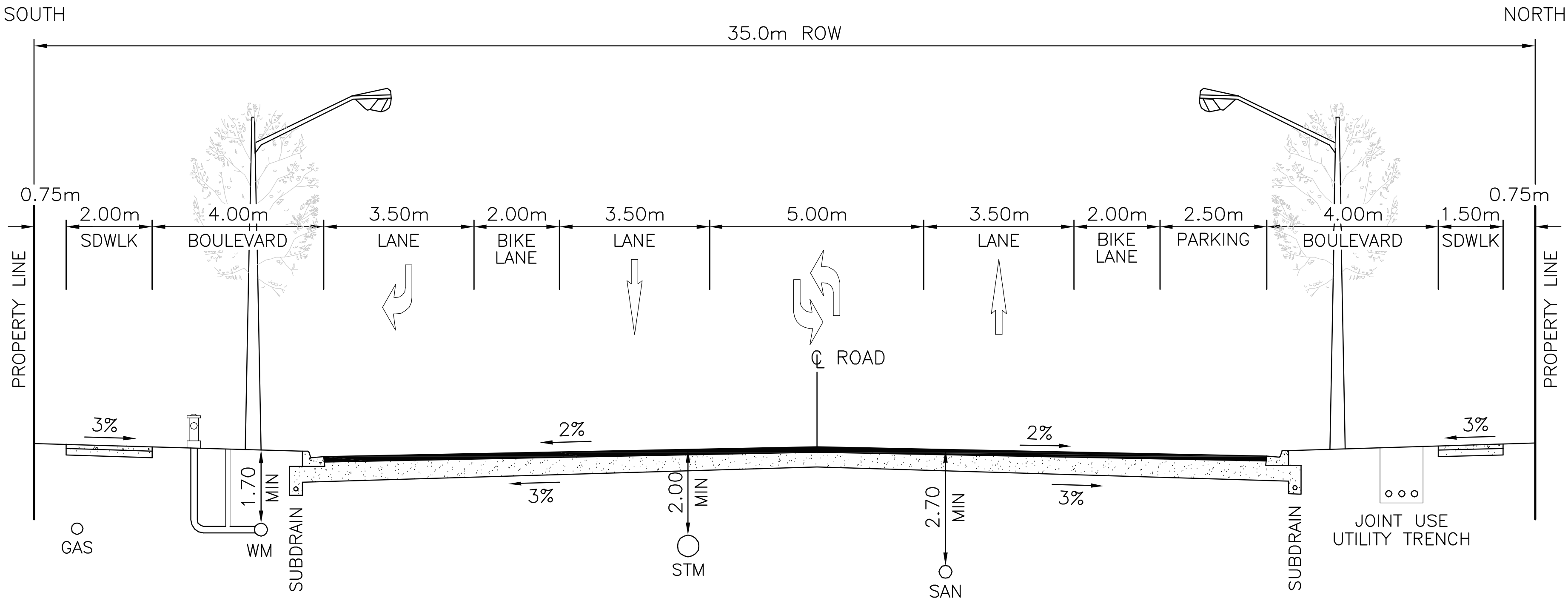
NOTES:

1. UTILITY TRENCH TO HAVE A MINIMUM COVER OF 0.9m.
2. WATERMAIN TO HAVE MINIMUM COVER OF 1.7m.
3. BOULEVARDS REQUIRE A MINIMUM OF 300mm OF TOPSOIL AND NURSERY SOD.
4. TREES TO BE PLACED IN LOCATIONS PER APPROVED LANDSCAPE PLAN.
5. STREETLIGHT FIXTURE PER APPROVED TOWN STANDARD.
6. FULL LENGTH MINIMUM 100mm DIA. SUBDRAINS C/W FILTERCLOTH SHALL BE INSTALLED AS PER TOWN OF CALEDON APPROVED STANDARDS NO. 219.
7. WHERE POSSIBLE, MANHOLE LIDS TO BE LOCATED OUT OF TIRE LANE OF TRAFFIC.
8. STORM AND SANITARY SEWERS TO HAVE A MINIMUM COVER OF 2.0m AND 2.7m RESPECTIVELY.

TYPICAL SECTION
SPINE ROAD (East of McLaughlin Road)
2 THROUGH LANES
29.0m ROAD ALLOWANCE

MAYFIELD WEST PHASE 2
TRANSPORTATION MASTER PLAN

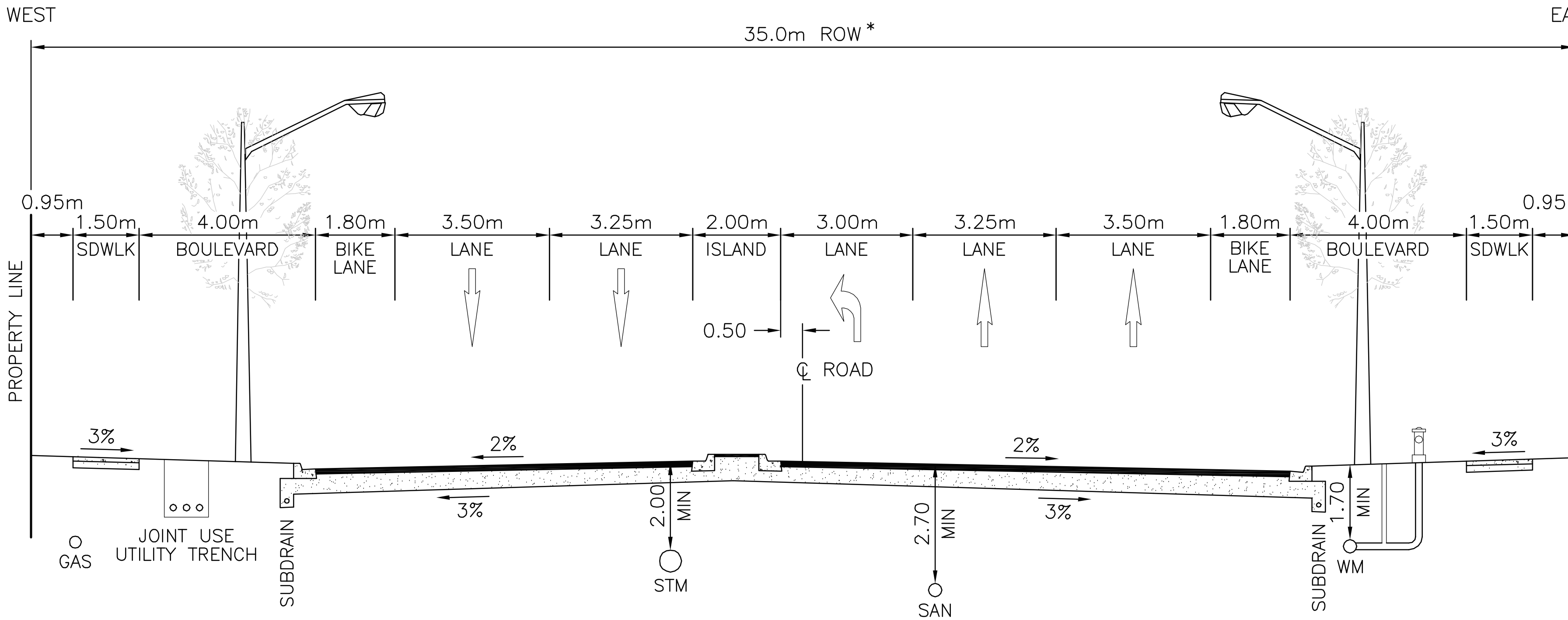
Project No.	TP110115
Date	June 2014
Scale	1:150
Figure No.	4



NOTES:

1. UTILITY TRENCH TO HAVE A MINIMUM COVER OF 0.9m.
2. WATERMAIN TO HAVE MINIMUM COVER OF 1.7m.
3. BOULEVARDS REQUIRE A MINIMUM OF 300mm OF TOPSOIL AND NURSERY SOD.
4. TREES TO BE PLACED IN LOCATIONS PER APPROVED LANDSCAPE PLAN.
5. STREETLIGHT FIXTURE PER APPROVED TOWN STANDARD.
6. FULL LENGTH MINIMUM 100mm DIA. SUBDRAINS C/W FILTERCLOTH SHALL BE INSTALLED AS PER TOWN OF CALEDON APPROVED STANDARDS NO. 219.
7. WHERE POSSIBLE, MANHOLE LIDS TO BE LOCATED OUT OF TIRE LANE OF TRAFFIC.
8. STORM AND SANITARY SEWERS TO HAVE A MINIMUM COVER OF 2.0m AND 2.7m RESPECTIVELY.

TYPICAL SECTION SPINE ROAD (West of McLaughlin Road) 2 THROUGH LANES 34.0m ROAD ALLOWANCE	MAYFIELD WEST PHASE 2 TRANSPORTATION MASTER PLAN	Project No.	TP110115
		Date	June 2014
		Scale	1:150
		Figure No.	5

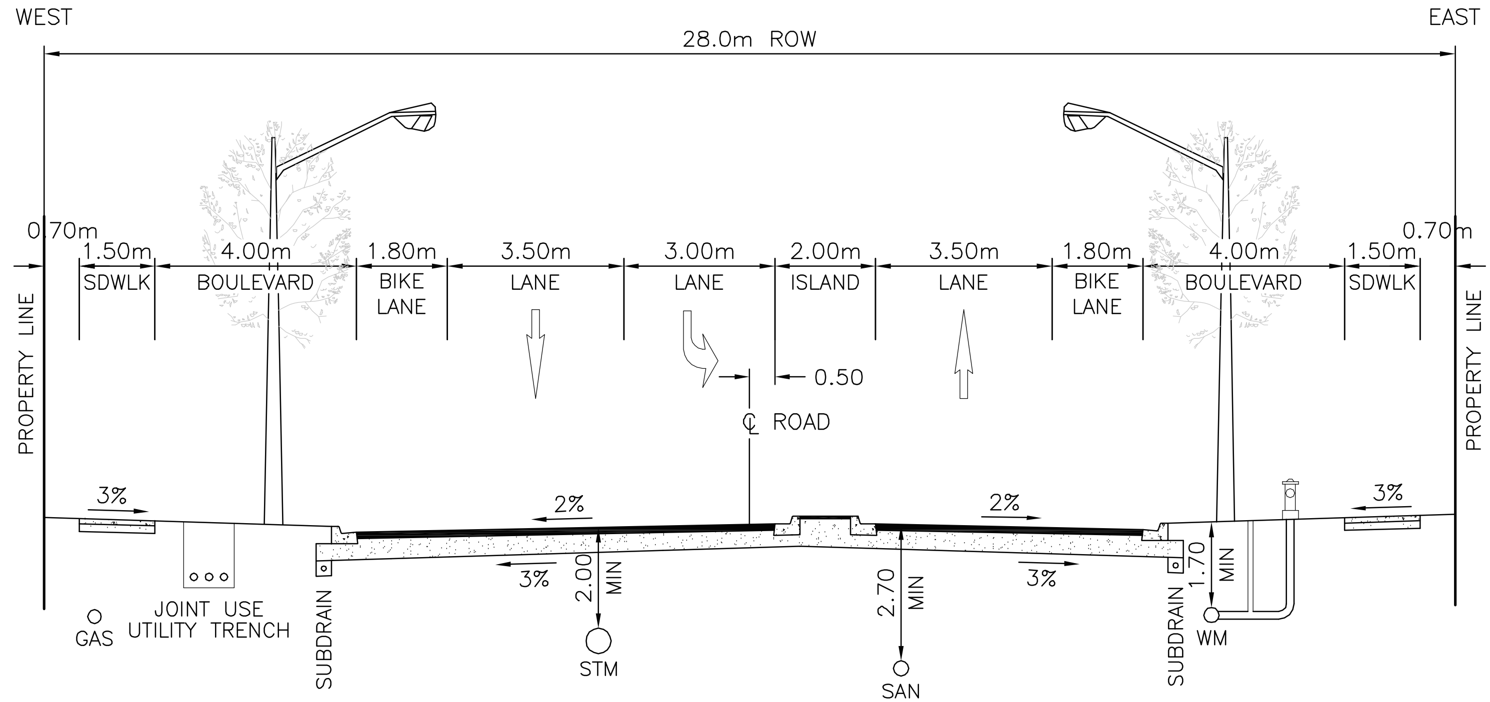


*AN ADDITIONAL 2.5m OF ROW IS REQUIRED ADJACENT TO LIVE/WORK BLOCK OR ON STREET PARKING

NOTES:

1. UTILITY TRENCH TO HAVE A MINIMUM COVER OF 0.9m.
2. WATERMAIN TO HAVE MINIMUM COVER OF 1.7m.
3. BOULEVARDS REQUIRE A MINIMUM OF 300mm OF TOPSOIL AND NURSERY SOD.
4. TREES TO BE PLACED IN LOCATIONS PER APPROVED LANDSCAPE PLAN.
5. STREETLIGHT FIXTURE PER APPROVED TOWN STANDARD.
6. FULL LENGTH MINIMUM 100mm DIA. SUBDRAINS C/W FILTERCLOTH SHALL BE INSTALLED AS PER TOWN OF CALEDON APPROVED STANDARDS NO. 219.
7. WHERE POSSIBLE, MANHOLE LIDS TO BE LOCATED OUT OF TIRE LANE OF TRAFFIC.
8. STORM AND SANITARY SEWERS TO HAVE A MINIMUM COVER OF 2.0m AND 2.7m RESPECTIVELY.

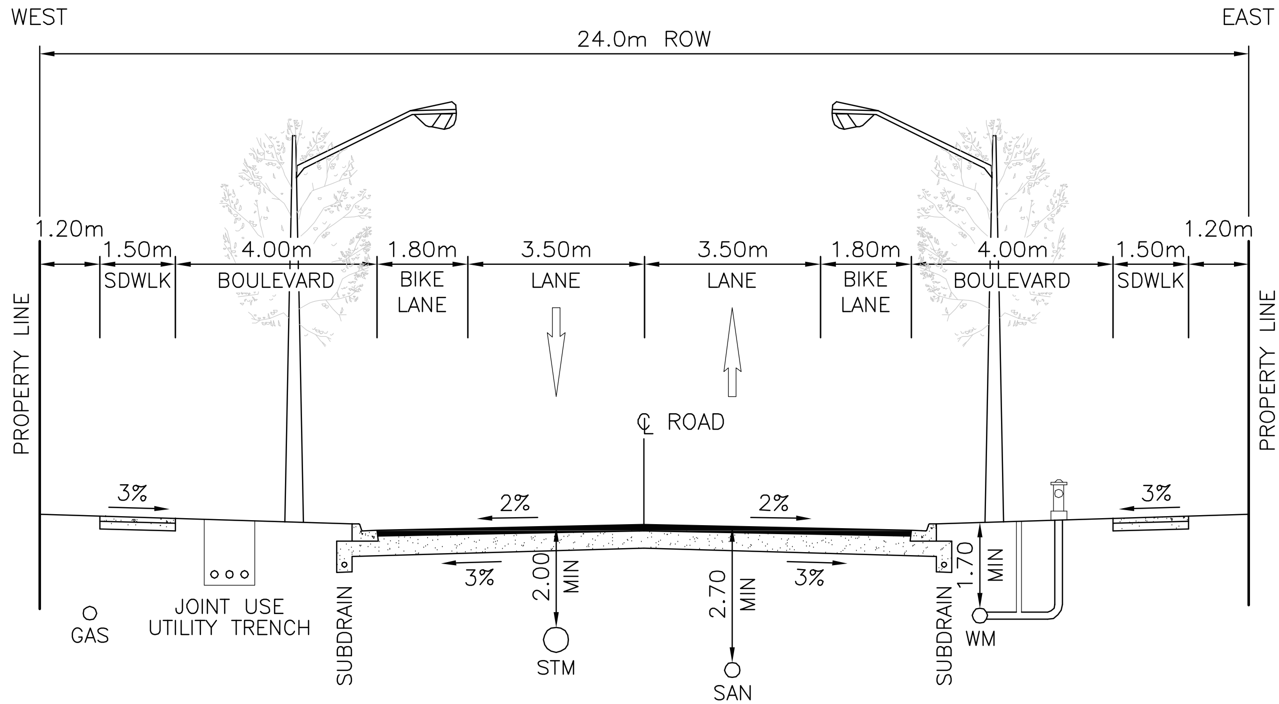
TYPICAL SECTION McLAUGHLIN ROAD (Mayfield Rd - Collector Rd 'A') 4 THROUGH LANES 35.0m ROAD ALLOWANCE	MAYFIELD WEST PHASE 2 TRANSPORTATION MASTER PLAN	Project No.	TP110115
		Date	June 2014
		Scale	1:150
		Figure No.	6



NOTES:

1. UTILITY TRENCH TO HAVE A MINIMUM COVER OF 0.9m.
2. WATERMAIN TO HAVE MINIMUM COVER OF 1.7m.
3. BOULEVARDS REQUIRE A MINIMUM OF 300mm OF TOPSOIL AND NURSERY SOD.
4. TREES TO BE PLACED IN LOCATIONS PER APPROVED LANDSCAPE PLAN.
5. STREETLIGHT FIXTURE PER APPROVED TOWN STANDARD.
6. FULL LENGTH MINIMUM 100mm DIA. SUBDRAINS C/W FILTERCLOTH SHALL BE INSTALLED AS PER TOWN OF CALEDON APPROVED STANDARDS NO. 219.
7. WHERE POSSIBLE, MANHOLE LIDS TO BE LOCATED OUT OF TIRE LANE OF TRAFFIC.
8. STORM AND SANITARY SEWERS TO HAVE A MINIMUM COVER OF 2.0m AND 2.7m RESPECTIVELY.

TYPICAL SECTION McLAUGHLIN ROAD (North Side of Collector Rd 'A' Intersection) 2 THROUGH LANES 28.0m ROAD ALLOWANCE	MAYFIELD WEST PHASE 2 TRANSPORTATION MASTER PLAN	Project No.	TP110115
		Date	June 2014
		Scale	1:150
		Figure No.	7



NOTES:

1. UTILITY TRENCH TO HAVE A MINIMUM COVER OF 0.9m.
2. WATERMAIN TO HAVE MINIMUM COVER OF 1.7m.
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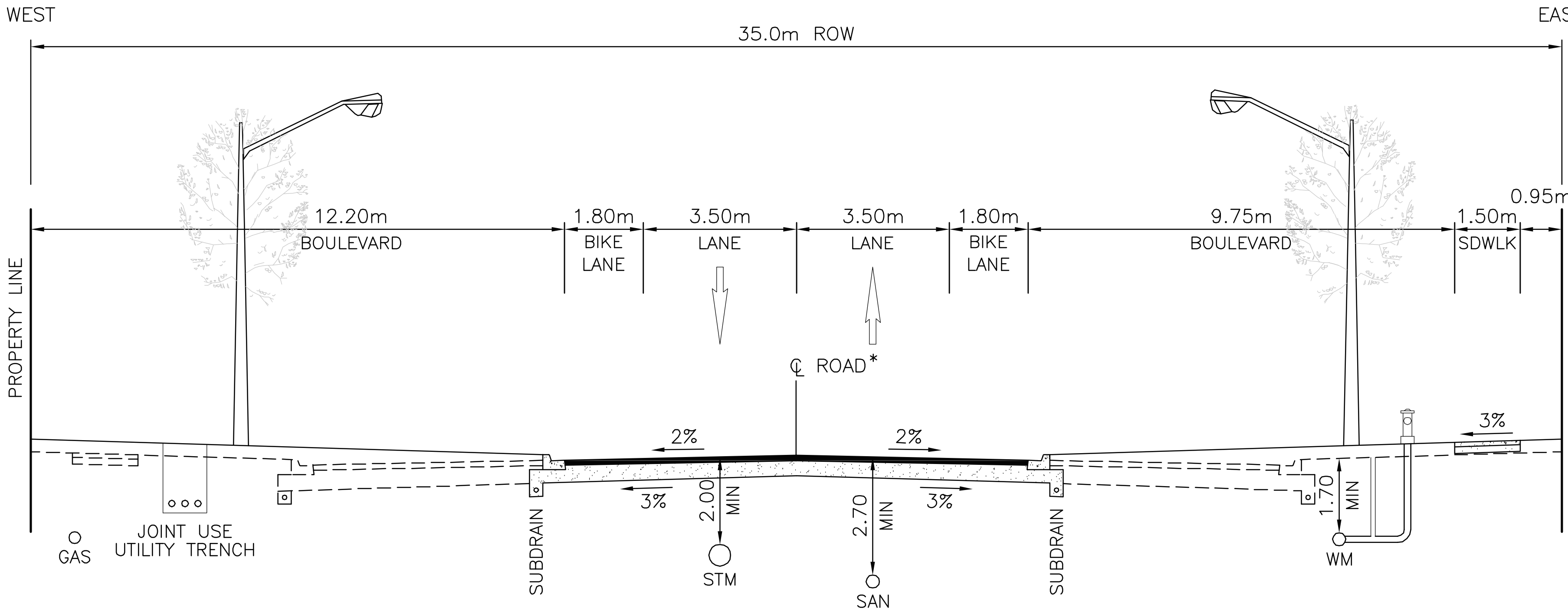
7. WHERE POSSIBLE, MANHOLE LIDS TO BE LOCATED OUT OF TIRE LANE OF TRAFFIC.
8. STORM AND SANITARY SEWERS TO HAVE A MINIMUM COVER OF 2.0m AND 2.7m RESPECTIVELY.

TYPICAL SECTION
McLAUGHLIN ROAD (North of Collector Rd 'A' - North Limit)
2 THROUGH LANES
24.0m ROAD ALLOWANCE

MAYFIELD WEST PHASE 2
TRANSPORTATION MASTER PLAN

Project No.	TP110115
Date	June 2014
Scale	1:150
Figure No.	8

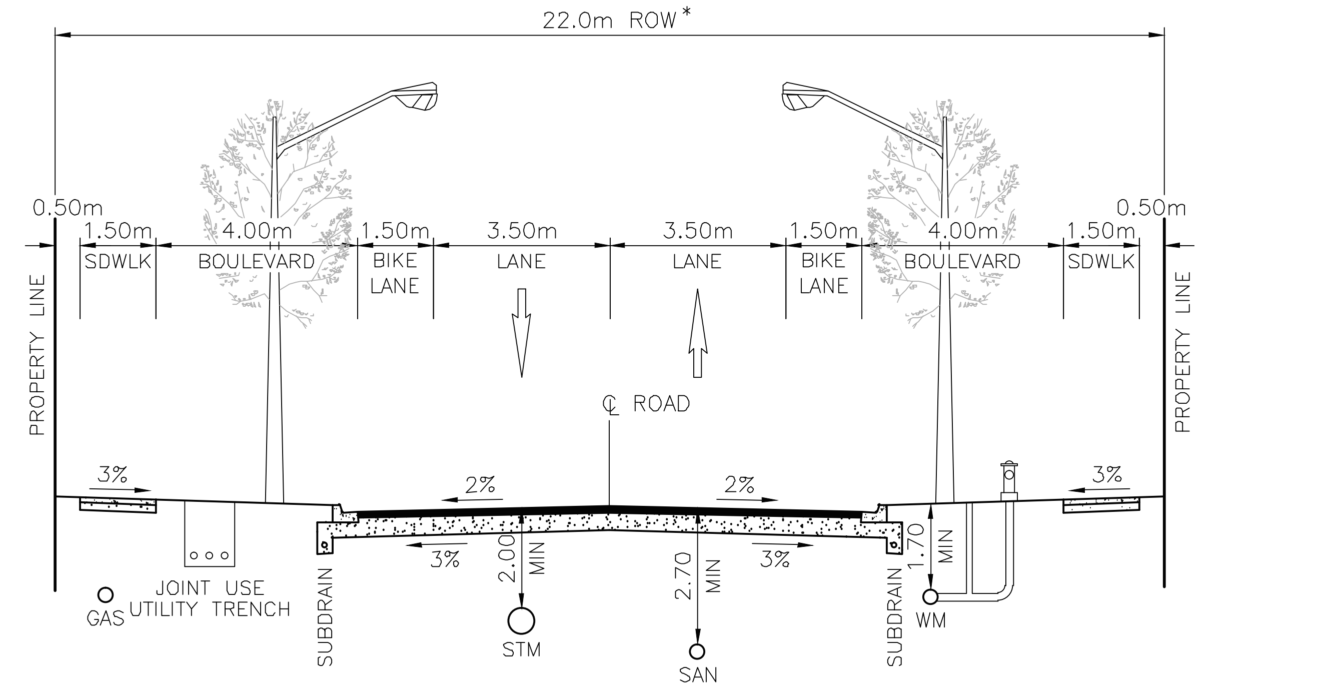


*PROVIDE 3.0m SOUTHBOUND LEFT TURN LANE AT INTERSECTIONS

NOTES:

1. UTILITY TRENCH TO HAVE A MINIMUM COVER OF 0.9m.
2. WATERMAIN TO HAVE MINIMUM COVER OF 1.7m.
3. BOULEVARDS REQUIRE A MINIMUM OF 300mm OF TOPSOIL AND NURSERY SOD.
4. TREES TO BE PLACED IN LOCATIONS PER APPROVED LANDSCAPE PLAN.
5. STREETLIGHT FIXTURE PER APPROVED TOWN STANDARD.
6. FULL LENGTH MINIMUM 100mm DIA. SUBDRAINS C/W FILTERCLOTH SHALL BE INSTALLED AS PER TOWN OF CALEDON APPROVED STANDARDS NO. 219.
7. WHERE POSSIBLE, MANHOLE LIDS TO BE LOCATED OUT OF TIRE LANE OF TRAFFIC.
8. STORM AND SANITARY SEWERS TO HAVE A MINIMUM COVER OF 2.0m AND 2.7m RESPECTIVELY.

TYPICAL SECTION CHINGUACOUSY ROAD (Mayfield Rd - North Limit) 2 THROUGH LANES - 4 LANES FUTURE 35.0m ROAD ALLOWANCE	MAYFIELD WEST PHASE 2 TRANSPORTATION MASTER PLAN	Project No.	TP110115
		Date	June 2014
		Scale	1:150
		Figure No.	9



* WIDEN TO 27.0m FOR LEFT TURN LANE AND MEDIAN AT ARTERIAL INTERSECTIONS

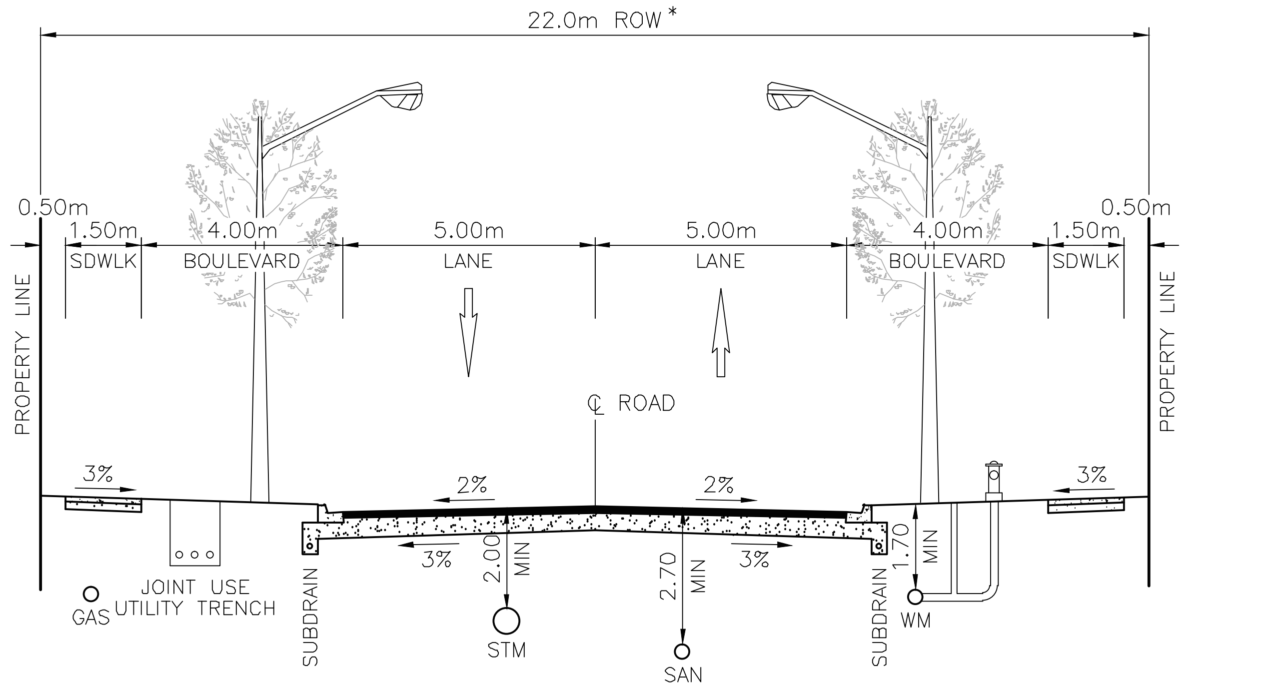
NOTES:

1. UTILITY TRENCH TO HAVE A MINIMUM COVER OF 0.9m.
2. WATERMAIN TO HAVE MINIMUM COVER OF 1.7m.
3. BOULEVARDS REQUIRE A MINIMUM OF 300mm OF TOPSOIL AND NURSERY SOD.
4. TREES TO BE PLACED IN LOCATIONS PER APPROVED LANDSCAPE PLAN.
5. STREETLIGHT FIXTURE PER APPROVED TOWN STANDARD.
6. FULL LENGTH MINIMUM 100mm DIA. SUBDRAINS C/W FILTERCLOTH SHALL BE INSTALLED AS PER TOWN OF CALEDON APPROVED STANDARDS NO. 219.
7. WHERE POSSIBLE, MANHOLE LIDS TO BE LOCATED OUT OF TIRE LANE OF TRAFFIC.
8. STORM AND SANITARY SEWERS TO HAVE A MINIMUM COVER OF 2.0m AND 2.7m RESPECTIVELY.

TYPICAL SECTION
COLLECTOR ROADS ('A','B','C','D','E','F'(south),'G')
2 THROUGH LANES WITH BIKE LANES
22.0m ROAD ALLOWANCE

MAYFIELD WEST PHASE 2
TRANSPORTATION MASTER PLAN

Project No.	TP110115
Date	June 2014
Scale	1:150
Figure No.	10



* WIDEN TO 27.0m FOR LEFT TURN LANE AND MEDIAN AT ARTERIAL INTERSECTIONS

NOTES:

1. UTILITY TRENCH TO HAVE A MINIMUM COVER OF 0.9m.
2. WATERMAIN TO HAVE MINIMUM COVER OF 1.7m.
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8. STORM AND SANITARY SEWERS TO HAVE A MINIMUM COVER OF 2.0m AND 2.7m RESPECTIVELY.

TYPICAL SECTION COLLECTOR ROADS ('A','B','C','D','E','F'(south),'G') 2 THROUGH LANES 22.0m ROAD ALLOWANCE	MAYFIELD WEST PHASE 2 TRANSPORTATION MASTER PLAN	Project No.	TP110115
		Date	June 2014
		Scale	1:150
		Figure No.	11

Street	**Location**	**Turn Lane**	**Storage Req't (metres)**	**Taper Req't (metres)**	**Notes**
Spine Road	West of Hurontario	EB left	115 m	70 m	Incl in 37 m ROW (Fig 1)
Spine Road	East of Commercial Access	WB left	35 m	70 m	Incl in 37 m ROW (Fig 1)
Spine Road	East of Commercial Access	WB right	continuous lane	n/a	Incl in 37 m ROW (Fig 1)
Spine Road	West of Commercial Access	EB left	45 m	70 m	31.0 m ROW (similar to Fig 2 less bike lanes)
Spine Road	East of Collector F	WB left	15 m	70 m	As above plus widening for WB right (below)
Spine Road	East of Collector F	WB right	30 m	45 m	Widen ROW to 34 m on north side for WB right
Spine Road	West of Collector F	EB left	15 m	70 m	Incl in 35 m ROW (Fig 2)
Spine Road	Collector Rd F - HS Entrance	several lefts	15 m	70 m	Incl in 35 m ROW (Fig 2)
Spine Road	West of HS Entrance	EB right	30 m	45 m	Incl in 32 m ROW (Fig 3)
Spine Road	West of HS Entrance	EB left	15 m	70 m	Incl in 32 m ROW (Fig 3)
Spine Road	East of McLaughlin	WB left	135 m	70 m	Incl in 29 m ROW (Fig 4)
Spine Road	West of McLaughlin	EB right	30 m	45 m	Incl in 35 m ROW (Fig 5) for length of EB right only
Spine Road	West of Village Centre	several lefts	15 m	70 m	28 m ROW req't (Collector D to Chinguacousy)
McLaughlin Rd	North of Mayfield	SB left	110 m	70 m	Incl in 35 m ROW (Fig 6)
McLaughlin Rd	North of Collector G	SB left	15 m	70 m	Incl in 35 m ROW (Fig 6)
McLaughlin Rd	South of Collector B	NB left	15 m	70 m	Incl in 35 m ROW (Fig 6)
McLaughlin Rd	North of Collector B	SB left	25 m	70 m	Incl in 35 m ROW (Fig 6)
McLaughlin Rd	South of Spine Rd	NB left	45 m	70 m	Incl in 35 m ROW (Fig 6)
McLaughlin Rd	North of Spine Rd	SB left	35 m	70 m	Incl in 35 m ROW (Fig 6)
McLaughlin Rd	South of Collector A	NB left	25 m	70 m	Incl in 35 m ROW (Fig 6)
McLaughlin Rd	North of Collector A	SB left	20 m	70 m	Incl in 28 m ROW (Fig 7) for length of SB left only
McLaughlin Rd	100 m north of Colector A	no turns			24 m ROW (Fig 8)
Collector F	Spine Rd to Collector A	to be determined			Assume 34 m ROW, subject to TIS for Comm Centre
All other Collector Roads	At approaches to arterial intersections	left turn lane	15 m	60 m	27 m ROW at intersections, reduced to 22 m 75 m from intersection (Fig 10 & 11)

Appendix F

Railway Crossing Cross Product Review

Memorandum

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TO: FILE NO. 101380

FROM: KAYLAN EDGCUMBE, C.E.T.

DATE: JUNE 17, 2014

RE: MAYFIELD WEST PHASE 2 TRANSPORTATION MASTER PLAN OBRY CROSS-PRODUCT

Further to the request of June 5, 2014, a detailed literature review was undertaken in order to confirm grade crossing warning requirements of the OBRY (Orangeville Brampton Railway) at the Spine Road and Collector Road A.

BACKGROUND RAIL INFO

Based on the discussion of Tuesday June 17, 2014 with Mr. Steve Gallagher, Manager of the OBRY railway (currently under contract with the Town of Orangeville) it is noted that the OBRY is owned by the Town of Orangeville. The 55-kilometre rail line passes through both the City of Brampton and Town of Caledon with the primary purpose of servicing industry in Orangeville and Brampton. Currently, freight trains make twice weekly scheduled round trips between Orangeville and Mississauga (Tuesday and Friday), equivalent to four crossings per week.

On occasion, OBRY operates extra freight trains to meet specific needs of customers. There are also scheduled maintenance train trips (up to twice a week) plus additional infrequent maintenance trips (i.e. infrastructure repair).

Excursion trains (Credit Valley Explorer) generally operate on weekends (one round trip per day) and on occasion, may offer weekday round trips during peak summer and fall seasons (equivalent to approximately 14 crossings per week during peak season). The excursion trains runs approximately 10 trips annually with higher frequency in September and October. The excursion train runs from Orangeville to Mayfield Road then returns to Orangeville.

Overall, rail traffic averages approximately two crossing per day over the course of the year. Orangeville Brampton Railway does not expect any significant increase in rail traffic in the short-term (5-year period) and is not able to predict longer term operations at this time.

It is noted that the current speed limit if 25 mph but it was noted that in the future, the rail line may be upgraded to a Class 3 railway, permitting speeds of up to 45 mph.

FUTURE TRAFFIC FORECASTS

Projected 2031 future peak hour traffic volumes are summarized as follows:

- The Spine Road - 22,600 AADT
- Collector Road "A" – 2,000 AADT

LITERATURE REVIEW

The following industry documents were reviewed as part of this exercise:

- *RTD 10: Road/Railway Grade Crossings (DRAFT)*, Transport Canada (October 24, 2002);
- *Canadian Railway-Roadway Grade Crossing Standards (CRRGCS) DRAFT*, Transport Canada (January 10, 2012); and
- *Canadian Road/Railway Grade Crossing Detailed Safety Assessment Field Guide*, Transport Canada (April 2005).

The literature review concluded that the Draft Canadian Railway-Roadway Grade Crossing Standards (CRRGCS) replaces the RTD 10 document and is enforceable; requiring both railway companies and road authorities to comply with the CRRGCS. However, it is noted that the cross-product warrant thresholds contained in the CRRGCS are consistent with the values contained in RTD 10. No changes in warrant thresholds pertaining to warning systems, gates or grade-separation have been noted.

CROSS-PRODUCT REVIEW

The resulting cross-product as per the future forecast 2031 traffic volumes and anticipated rail traffic are summarized as follows:

Location	Projected AADT (veh/day)	# of Trains (trains/day)	Cross-Product
The Spine Road	22,600	2	45,200
Collector Road "A"	2,000	2	4,000

As summarized in **Section 11 – Grade Crossing Warning Systems** "Unrestricted grade crossings for vehicular use shall have a grade crossing warning system if the forecast cross-product is 1,000 or more; or if the grade crossing includes a sidewalk and the maximum railway operating speed exceeds 60 mph."

Section 12 – Gates indicates that in locations where grade crossing warning systems are installed, gates shall be included if "the forecast cross-product is 50,000 or more; or the maximum railway operating speed is 50 mph or more; or if there are two or more tracks where trains may be passing one another."

FINDINGS

The findings of cross-product analysis are summarized as follows:

Location	Grade Crossing Warning System (>1,000)	Gates (>50,000)	Grade Separation (>200,000)
The Spine Road	Warranted	Not Warranted	Not Warranted
Collector Road "A"	Warranted	Not Warranted	Not Warranted

The analysis confirms that neither a grade-separated crossing nor gates are warranted at the Spine Road or Collector Road "A" rail crossings based on projected future traffic volumes. Should future traffic volumes and/or rail operations increase (i.e. 4 train crossings per day), detailed engineering studies shall be undertaken in order to review the need for gates and/or grade-separated crossings.

Recognizing that the current cross-product estimate falls below the threshold for gates at the Spine Road, it is noted that even a marginal increase in either vehicular traffic or train traffic would satisfy the requirement for gates. In addition, the location of this particular crossing is considered somewhat sensitive in terms of its close proximity to the commercial node, secondary school and high levels of associated pedestrian and cyclist traffic**. As such, it is recommended that given the uncertainty in estimating traffic demands for the 2031 horizon, and sensitive characteristics of the adjacent land use, that provision for gates be maintained.**

In terms of Pedestrian and Cycling facilities, the CRRGCS notes that a grade crossing warning system is warranted under the following conditions:

- The maximum railway operating speed exceeds 60 mph; or
- The maximum railway operating speed exceeds 15 mph and there are two or more tracks at the grade crossing where trains may be passing one another.

At this time the maximum railway operating speed is anticipated to be less than 60 mph (≠96 km/hr) which would indicate that a grade crossing warning system is not likely to be warranted where the multi-use trails cross the rail line. **Warning signage and bollards are anticipated to satisfactory in terms of providing protection and advance warning when approaching the rail line.** If the railway operating speed increases in the future, or should rail operations be expanded and an additional track be provided, the need for pedestrian and cyclist path protection will need to be examined.

End.

Transportation Planning

Transit Planning

Traffic Engineering

Parking Planning

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TO: FILE NO. 101380

FROM: KAYLAN EDGCUMBE, C.E.T.

DATE: DECEMBER 11, 2013

RE: MAYFIELD WEST PHASE 2 TRANSPORTATION MASTER PLAN ASSESSMENT OF SPECIFIC ISSUES

Further to the Project Meetings of November 12, and December 3, 2013, in which the draft transportation plans and proposed cross sections for Mayfield West Phase 2 were discussed; a number of specific roadway issues warranting further assessment were identified:

1. Assess and identify the extent of future development which may be accommodated without triggering the need for improvements to the Highway 410 interchange;

2. Assess the impacts associated with a potential extension of Collector Road "A" to Highway 10. More specifically, determine if an extension of Collector Road "A" would reduce the need for a 6-lane cross section of the Spine Road from Hurontario Street to the proposed Commercial access;

3. Examine the need for a future grade-separated rail crossing at both the Spine Road and Collector Road "A";

4. Assess the implications of eliminating the Collector Road "E" connection to Mayfield Road; and

5. Identify alternative cross section arrangements at the intersection of the Spine Road and McLaughlin Road in attempts to minimize right-of-way requirements throughout the urban core area.

Each of the above-noted issues is discussed in further detail below:

1. Amount of development which could be accommodated without triggering the need for improvements to the Highway 410 / Valleywood Boulevard interchange.

Based on a review of our current PM traffic forecast which projects approximately 700 inbound vehicle trips to Mayfield West Phase 2, the resulting capacity analysis estimates that the signalized intersection of Mayfield Road at Hurontario Street is anticipated to operate at capacity under future 2031 PM peak hour traffic conditions. Specifically, the intersection is anticipated to operate at level of service (LOS) E with an intersection capacity utilization of 101%.

As a result, it is anticipated that the current Highway 410/Valleywood interchange could potentially accommodate development equivalent to approximately 700 inbound PM peak hour trips without requiring the need for significant infrastructure improvements. Such development would be limited to the lands located immediately north of Mayfield Road and would most likely include the proposed low and medium density residential lands associated with Traffic Analysis Zones (TAZ) 8, 13, 14, 9, 16, 26 and 25; as well as the associated commercial lands located in TAZ 13, and proposed Elementary School located in TAZ 17.

This level of development would consist of a population of approximately 3,500 people (equivalent to approximately 1,100 residential units) and a commercial parcel approximately 2,850 m^2 in size, as well as the proposed elementary school. The resulting PM peak hour trip generation is summarized in **Table 1** and the potential area of development is highlighted in **Figure 1** for further reference.

Table 1: PM Peak Hour Trip Generation Equivalent to 700 Trips

Traffic Zone	Proposed Land Use	PM Peak Hour Vehicle Trips		
		Inbound	Outbound	Total
8	LD Residential	98	58	156
13	MD Residential	23	11	34
14	LD / MD Residential	124	68	192
9	LD / MD Residential	87	48	135
16	LD / MD Residential	122	69	191
26	LD Residential	116	68	184
25	LD Residential	37	22	59
13	Commercial	33	35	68
17	Elementary School	52	54	106
	TOTAL	***692***	***433***	***1,125***

Alternatively, the commercial and elementary school lands could be omitted from the development, along with the low-density residential lands in TAZ 25, which would then permit development of the residential lands located in TAZ 18, accommodating a population of approximately 4,000 people (equivalent to approximately 1,100 residential units), which results in similar traffic impacts to the adjacent road network.

Conclusion: Approximately 1,100 residential units could be developed within the lands located immediately north of Mayfield Road without triggering the need for significant improvements to the adjacent road network, including the Highway 410/Valleywood interchange.

2. If Collector Road "A" was extended to intersect with Highway 10, what impact would the redistribution of traffic have on the Spine Road? Specifically, would the extension of Collector Road "A" reduce the need for a 6-lane cross section of the Spine Road from Hurontario Street to the proposed Commercial Access?

A potential extension of Collector Road "A" could intersect with Highway 10, creating a standard 4-leg intersection operating under traffic signal control. The intersection could potentially be aligned with Snelcrest Drive (assuming some minor roadway realignment), thereby providing a secondary point of access to the Valleywood Subdivision and marginally minimizing the impact to Old School Road as a result of redistributing site-generated traffic.

In order to determine what impact this extension may have on the surrounding road network, a sensitivity analysis was undertaken which examined the reassignment of trips from TAZ 3, 2, 6 and 5 to the extension of Collector Road "A". Capacity analysis was undertaken and indicated that under this scenario, the intersection of Hurontario Street at the Spine Road would operate at LOS E with an intersection capacity utilization of 100%, allowing for a 5-lane cross section (two through lanes in each direction with turning lanes). It is noted that the primary traffic constraint relates to the projected westbound through volume which impacts available green time to other movements.

In terms of potential problems, the proposed new intersection would be located within the area of influence of the Highway 410 / Valleywood interchange and may be constrained due to the location of existing interchange ramps. There are also a number of design challenges associated with the proposed extension and creation of a new signalized intersection, namely the fact that Highway 10 is a four-lane high-speed rural highway. The extension of Collector Road "A" would provide for additional Mayfield West Phase 2 access, as well as providing a valuable secondary connection into the Valleywood Subdivision. However, there are some concerns related to a new intersection at this location on Highway 10. The intersection would be located in an area where the mainline roadway experiences higher traffic speeds, and would be located relatively close to the Highway 410 / Valleywood interchange.

The Highway 410 / Valleywood interchange would still need to be upgraded, or potentially reconstructed, in order to accommodate the Spine Road connection. As such, the creation of a new intersection of Collector Road "A" and Highway 10 may be difficult to accommodate. Highway 10 is under the jurisdiction of the Ministry of Transportation of Ontario (MTO) and the construction of a new Collector Road "A" intersection with Highway 10 would be subject to MTO approval and permits. Therefore, there are some significant challenges with this roadway connection and the feasibility is uncertain.

Given the constraints detailed above, one potential alternative would be to examine the extension of Collector Road "A" to Hurontario Street, but limit access to right-in / right-out moves only. This would provide for additional site access to the lands north of the Spine Road without significantly impacting traffic operations or safety along Highway 10. However, this alternative would not significantly reduce traffic demands along the Spine Road, nor would it achieve the goal of reducing the right-of-way along the Spine Road west of Hurontario Street. Providing access to Highway 10 would require further discussion with the MTO which has not been undertaken as part of this assessment.

Conclusion: The potential extension of Collector Road "A" would result in a reduced right-of-way along the Spine Road (reduction from a 6-lane cross section to a 5-lane cross section), but would result in potential traffic operations and safety concerns associated with providing a new connection to Highway 10, as well as impacts associated with its close proximity to the Highway 410 / Valleywood interchange and potential for impeded traffic flow. It is noted that further discussion with the MTO would be required as Highway 10 is currently under the Ministry's jurisdiction.

3. Assess the need for provision of future grade-separated rail crossings of the Spine Road and Collector Road "A".

Based on previous discussions with the rail operator (March, 2009), the Orangeville Brampton Railway is owned by the Town of Orangeville. The 55-kilometre rail line passes through both the City of Brampton and Town of Caledon with the primary purpose of servicing industry in Orangeville and Brampton. Currently, freight trains make twice weekly round trips between Orangeville and Mississauga (equivalent to four crossings per week).

Excursion trains (Credit Valley Explorer) generally operate on weekends (one round trip per day) and on occasion, may offer weekday round trips during peak summer and fall seasons (equivalent to approximately 14 crossings per week during peak season). Overall, rail traffic averages approximately two crossing per day over the course of the year. Orangeville Brampton Railway does not expect any significant increase in rail traffic in the short-term (5-year period) and is not able to predict longer term operations at this time.

In order to determine if grade-separated crossings are warranted under future 2031 traffic conditions, industry standard cross-product warrants were reviewed. Historically, a cross product (I.e., daily road traffic times daily train crossings) of 200,000 is used as an indicator that a grade-separation may be warranted, and that a detailed engineering study should be undertaken. It should be noted that many at-grade crossings with considerably higher cross-products are operating safely in Canada.

As summarized in **Table 2**, the cross-product analysis confirms that grade-separated crossings at either the Spine Road or Collector Road "A" are not likely to be warranted under future traffic conditions. However, it is noted that a cross-product of 50,000 or more warrants the installation of gates as part of the crossing warning system (as per RTD 10). The analysis would indicate that the rail crossing of the Spine Road would warrant gates as part of the crossing warning system.

Table 2 – Cross Product Warrant for Grade Separation

Location	Projected AADT (veh/day)	# of Trains (trains/day)	Cross-Product
The Spine Road	25,000	2	50,000
Collector Road "A"	3,500	2	7,000

The requirement for a railway grade-separated crossing at Mayfield Road was studied as part of the Mayfield Road EA and it was concluded that a grade-separated crossing was not required based on forecast future traffic volumes. Mayfield Road is an important Regional arterial roadway whereas the Spine Road is designated as an arterial road which will operate under the jurisdiction of the Town of Caledon. The lack of a grade-separated crossing on Mayfield Road is a further indication that the need for a future grade-separated crossing of the Spine Road is unlikely.

Should future rail operations increase significantly (i.e. at least 8 crossings per day), the grade separation cross-product of 200,000 would be met and detailed engineering studies would be warranted in order to determine if a grade-separated crossing would be required at the Spine Road.

If deemed necessary, additional right-of-way would be required in order to accommodate the grade separation structure, side slopes and temporary detour around the existing roadway alignment. It is estimated that a right-of-way width of approximately 80 metres at the road – rail junction (based on a review of grade-separated crossings in Burlington) would be required to accommodate a grade-separated crossing. The use of retaining walls may minimize right-of-way impacts, but a temporary detour around the mainline would still be required during construction.

Conclusion: The current level of rail traffic falls well below the level that would warrant consideration of a road – rail grade separation. If future rail operations were to change significantly (i.e. increase to 8 trains per day or more), the need for a grade-separated crossing of the Spine Road may be warranted. Right-of-way provisions protecting for future grade-separated crossings are desirable, but would require dedication of a considerable amount of land for future construction and this provision is not warranted in our opinion.

4. Assess the implications of eliminating the proposed connection between Collector Road "E" and Mayfield Road to determine what impact, if any, this would have to the surrounding road network.

At the meeting of December 3, 2013 it was suggested by the land use planning consultant that the proposed Collector Road "E" may not align well with existing Van Kirk Drive south of Mayfield Road due to potential issues relating to securing property north of Mayfield Road. Under current geometric conditions, the intersection of Mayfield Road at Van Kirk Drive operates under minor street stop control (northbound approach stop controlled). Although the intersection currently operates at acceptable levels of service, a review of the Mayfield Road EA document confirms that the intersection will require signalization under both the 2021 and 2031 horizons.

In the event that Collector Road "E" can not be aligned with Van Kirk Drive, PTSL was asked to investigate what level of impact the elimination of this intersection would have on the surrounding road network, specifically Collector Road "G" and its intersection with McLaughlin Road, as well as the intersection of McLaughlin Road at Mayfield Road.

A review of the Council endorsed land use concept indicates that TAZ 8 and 13 would reasonably utilize Collector Road "E" as the primary access to Mayfield West Phase 2. Additionally, a portion of both TAZ 14 and 9 could be expected to utilize Collector Road "E". The resulting site-generated traffic forecast estimates that during the PM peak hour, approximately 175 inbound vehicles and 100 outbound vehicles would utilize Collector Road "E". If this connection were to be eliminated, it is assumed that traffic volumes would increase at the intersections of both Mayfield Road at McLaughlin Road and Collector Road "G" at McLaughlin Road.

In terms of intersection operations, it is anticipated that the surrounding road network can satisfactorily accommodate the increase in traffic as a result of the elimination of Collector Road "E". However, from a network connectivity perspective, Collector Road "E" provides a valuable north/south connection into Mayfield West which serves a substantial residential block. It is noted that this connection is also identified as a potential future transit route. Elimination of this connection would put additional pressures on McLaughlin Road and Collector Road "G".

Given that the proposed location of Collector Road "G" is approximately 200 (+/-) metres north of Mayfield Road, the intersection of McLaughlin Road and Collector Road "G" would not be a good candidate location for traffic signals should they be required under future traffic conditions.

Furthermore, the increase in traffic volumes being shifted to the intersection of Mayfield Road and McLaughlin Road, specifically the westbound right turn movement, may result in interference with driveway operations at the commercial block located in the north east quadrant of the intersection.

Conclusion: In our opinion it is both advantageous and desirable from a traffic operations and safety perspective to maintain the connection of Collector Road "E" with Mayfield Road given that this intersection will operate under traffic signal control in the future. All attempts should be made to secure this connection to Mayfield Road.

5. Review the feasibility of reducing lane requirements along the Spine Road at McLaughlin Road in attempts to minimize right-of-way requirements throughout the urban core area.

At the meeting of December 3, 2013 the issue was raised by both the land use planning consultant and the respective land owners groups as to whether the proposed 5-lane cross section at the intersection of the Spine Road at McLaughlin Road (two through lanes in each direction with left-turn lanes) could be reduced to only one through lane in each direction in attempts to minimize right-of-way requirements and support the urban design vision.

Given the high volume of east-west traffic forecasted along the Spine Road, particularly the high volume of westbound left and right-turns during the PM peak hour, the feasibility of reducing the cross section to two-lanes is limited as the east and west intersection approaches require exclusive turning lanes, thereby resulting in 3 approach lanes, consistent with the original 5-lane cross section scenario.

However, it was noted that opportunity may exist to transition from a four-lane cross section along McLaughlin Road to a two-lane cross section north of the Spine Road. As such, a sensitivity analysis was undertaken based on the following lane arrangements:

<u>NB on McLaughlin Road</u>
- Exclusive LT Lane
- Through Lane
- Exclusive RT Lane

<u>SB on McLaughlin Road</u>
- Exclusive LT Lane
- Shared Through/Right Lane

<u>EB on Spine Road</u>
- Exclusive LT Lane
- Through Lane
- Shared Through/Right Lane

<u>WB on Spine Road</u>
- Exclusive LT Lane
- Through Lane
- Shared Through/Right Lane

The results of the sensitivity analysis confirm that under the lane configuration noted above, the intersection will operate with an overall LOS C and an intersection capacity utilization of 80%.

Conclusion: In our opinion, based on the findings of the sensitivity analysis, the Spine Road requires a five-lane cross section at McLaughlin Road (two through lanes in each direction with exclusive left-turn lanes at the intersection). However, opportunity exists to reduce the right-of-way of McLaughlin Road, north of the Spine Road, thereby achieving the goal of reducing the overall road right-of-way within the Village Centre.

End.