



**MUNICIPAL CLASS ENVIRONMENTAL
ASSESSMENT – MASTER PLAN PROCESS
Schedule B Environment Assessment Study –
Study File Report**

Westdale Traffic Management Study
Hamilton, Ontario
Study # TPB186045

Prepared for:

The City of Hamilton

703 Highway 8, Stoney Creek ON L8E 5J6

December 2019

wood.

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List of Acronyms

AWS	All Way Stop Sign
Class EA	Municipal Class Environmental Assessment
CMP	Cycling Master Plan
<i>EA Act</i>	Ontario <i>Environmental Assessment Act</i>
Hamilton LRT EPR	Hamilton Light Rail Transit Environmental Study Report Addendum
HSR	Hamilton Street Railway
km	kilometres
LOS	Level of Service
LRT	Light Rail Transit
M	Million
MTO	Ministry of Transportation
MECP	Ministry of the Environment, Conservation and Parks
PDO	Property-Damage-Only
PIC	Public Information Centre
PMP	Pedestrian Mobility Plan
ROW	Right-of-Way
TAC	Technical Advisory Committee
TDM	Transportation Demand Management
The City	City of Hamilton
Wood	Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited

1.0 Introduction and Background

The City of Hamilton (referred to as “City” hereinafter) has initiated a Municipal Class Environmental Assessment (Class EA) for the Westdale Neighbourhood Traffic Management Study. The study limits is shown in **Figure 1-1**. The objective of this Study was to identify and recommend potential transportation-related improvements in the Westdale neighbourhood, which will benefit all road-users and reflect the Complete-Livable-Better (CLB) Streets concept of design outlined in the 2018 Hamilton Transportation Master Plan. Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited (Wood), was retained by the City to complete the Study.

The Westdale Community is located in the City and is generally bound by the King’s Highway 403 to the east, Main Street West to the south, Cootes Drive to the west and natural terrain to the north. The neighbourhood is mainly low-density residential in nature, with several schools (one (1) elementary, one (1) middle and two (2) secondary schools). McMaster University is located on the west side of the Westdale neighbourhood.

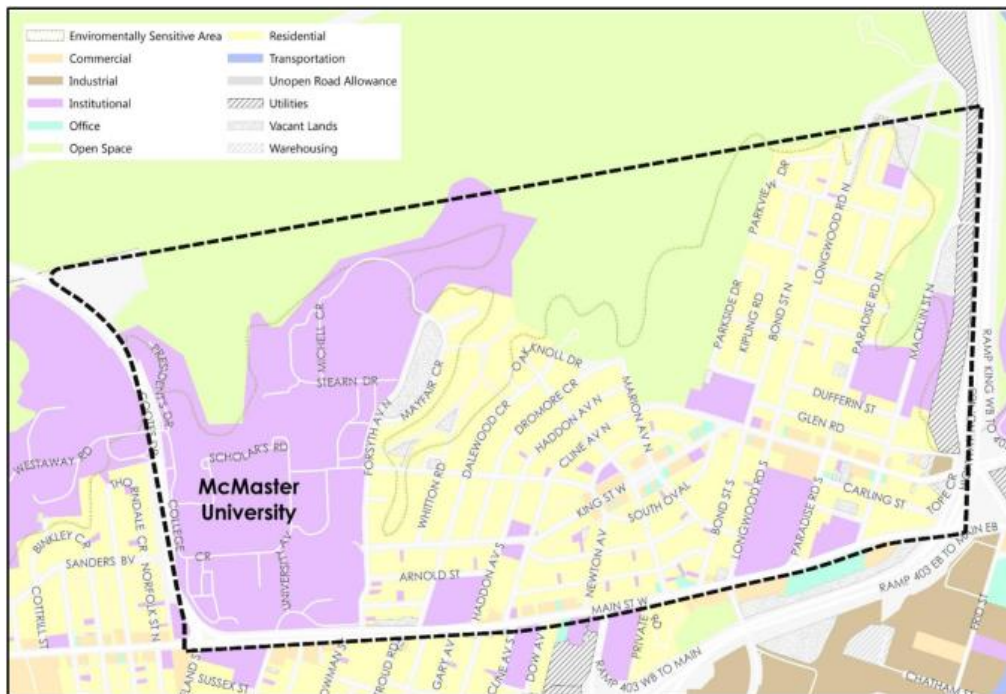


Figure 1-1: Westdale Neighbourhood Study Area

1.1 Environmental Assessment Act and Process

The Ontario *Environmental Assessment Act* (R.S.O. 1990, c. E.18; *EA Act*) was put into place to provide for the protection, conservation and wise management of the environment within the province. The *EA Act* applies to all Studies being undertaken by provincial, municipal or other public bodies within the province (unless explicitly exempted). It defines the environmental assessment works that must be completed prior

to commencement of any undertaking, as well as the proponent's obligations to consult with all affected and / or interested parties.

1.1.1 Municipal Class Environmental Assessment Process

The Class EA process is a mechanism by which planning, and approval of municipal infrastructure is provided in an efficient, timely, economical and environmentally responsible manner. It represents a consistent, streamlined and easily understood process for planning and implementing municipal infrastructure Studies / Projects. Under the *EA Act*, projects are classified as approved, subject to screening, subject to a Class Environmental Assessment, or subject to a full (Individual) Environmental Assessment. Master Plans are unique in which they do not require approval under the *EA Act*; however, it is recommended that they are reviewed every five years.

This Study, the Westdale Neighbourhood Traffic Management Study, is classified as being subject to the Master Plan process. It was conducted according to the requirements outlined in the Municipal Engineers Association document titled *Municipal Class Environmental Assessment (October 2000, as amended in 2007, 2011 & 2015)*.

1.1.2 What is a Transportation Master Plan?

A Transportation Master Plan is a long-term Study that evaluates various infrastructure improvements required due to any changes to the existing and future land use. A Master Plan is not focused on one specific project, instead considers a group of related projects dealing with a similar project specific issue. The result of the Master Plan provides an outline for future work and development.

Although there are several approaches to conducting a Master Plan, this Study is following Approach #2:

This approach involves the preparation of a Master Plan document at the conclusion of Phases 1 and 2 of the Municipal Class EA process where the level of investigation, consultation and documentation are sufficient to fulfil the requirements for Schedule B Projects. Accordingly, the final public notice for the Master Plan could become the Notice of Completion for the Schedule B Projects within it. Any Schedule C Projects, however, would have to fulfil Phases 3 and 4 prior to filing an ESR(s) for public review. The Master Plan would provide the basis for future investigations for the specific Schedule C Project identified within it.

The Study approach has been designed to meet the following objectives:

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

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

Schedule A and A+ includes projects that involve minor modifications to existing facilities. Environmental effects of these projects are generally small; therefore, the projects are considered pre-approved.

Schedule B includes project that involve improvements and minor expansion to existing facilities. There is a potential for some adverse environmental impacts and; therefore, the proponent is required to proceed through a screening process, including consultation with those affected. Schedule B projects are required to proceed through Phases 1, 2 and 5 of the Municipal Class EA process.

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

This Study is being completed under the requirements of a Schedule B Municipal Class EA. Any subsequent projects that results from the conclusions of this Study will be subject to a Schedule A, A+, B or C.

The Master Plan process only requires proponents to follow the following phases:

- **Phase 1** – Identify the problem (deficiency) or opportunity.
- **Phase 2** – Identify and evaluate alternative solutions to address the problem or opportunity by taking into consideration the existing environment, and establish the preferred solution considering public and review agency input.

Any subsequent Schedule C Projects that results from the conclusions of this Study will be subject to the following phases:

- **Phase 3** – Identify Alternative Design Concepts for the preferred solution implementation by taking into consideration the existing environment and establish the preferred design concept by considering public and review agency input.
- **Phase 4** – Document the Environmental Assessment including the design and consultation process in an Environmental Study Report for public review.
- **Phase 5** – Complete contract drawings and documents and proceed to construction and operation. Monitor construction for adherence to environmental provisions and commitments. Where special conditions dictate, also monitor the operation of the completed facility.

Depending on the nature of the future Projects, the proponent may need to revisit Phase 1 and 2 as well.

The Phases of the Municipal Class EA Master Plan process for this Study are illustrated in **Figure 1-2: Master Class Environmental Assessment Process**.

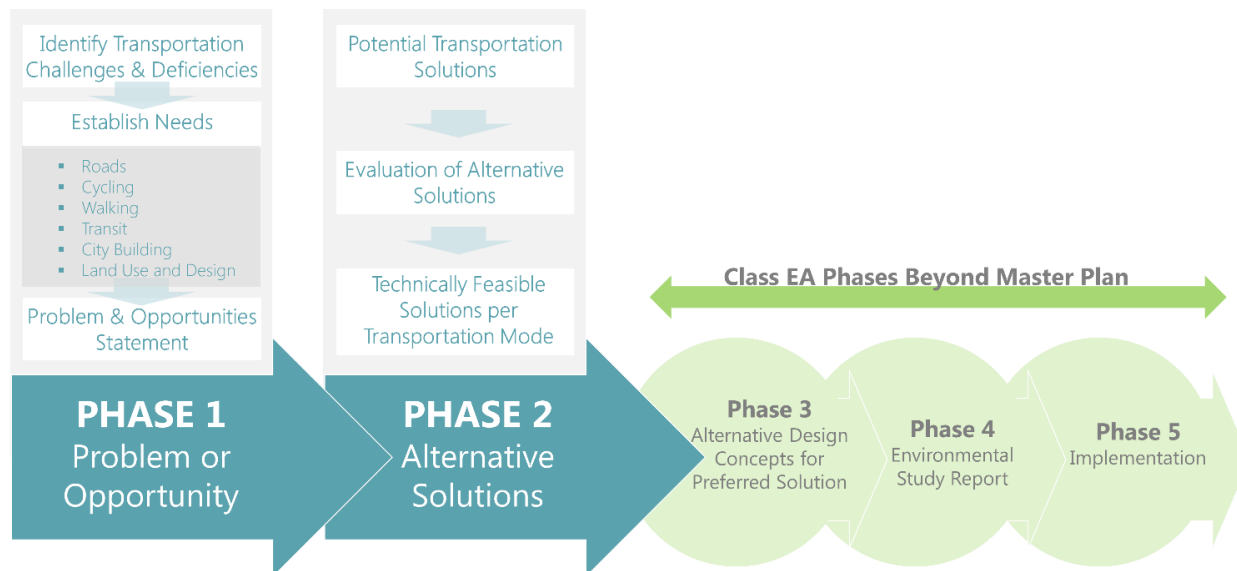


Figure 1-2: Master Class Environmental Assessment Process

1.1.2.1 Pre-Approved Recommendations

Master Plans are typically created for larger study areas, such as a Municipal boundary. This Master Plan is unique as it is focusing on a relatively smaller neighbourhood, where the recommendations are minor in nature. Minor in this case is defined as improvements that will not take great efforts to construct and may be relatively inexpensive. For this Study, the majority of the recommendations will be subject to a Schedule A or A+ of the Class EA process, or in other words, it will be considered pre-approved. Pre-approved projects are smaller, comparatively inexpensive, with ease of implementation, and is not mandated to have a consultation component or an extensive existing conditions inventory and impact assessment. There is one Schedule B project which will require construction documents and construction supervision.

1.1.3 The Traffic Management Study

1.1.3.1 Filing of the Traffic Management Study

A Notice of Study Completion will be placed in the local newspaper, the Hamilton Spectator, in accordance with the requirements of the Municipal Class EA process and the Study website.

Copies of the Traffic Management Study will be made available at the following locations:

<p>Office of the City Clerk 71 Main Street West City Hall, 2nd Floor Hamilton, Ontario L8P 4Y5 (905) 546-CITY</p> <p>Hours: Monday – Friday: 8:30 am to 4:30 pm</p>	<p>Hamilton Public Library – Westdale Branch 955 King Street West L8S 1K9 Hamilton, ON 905-546-3456</p> <p>Hours: Monday and Friday: 10:00 am to 6:00 pm Tuesday - Thursday: 10:00 am to 9:00 pm Saturday: 10:00 am to 5:00 pm</p>
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A review period of no less than thirty (30) days will be provided, during which comments will be received from stakeholders and agencies.

1.2 Study Organization

The Study Team consisted of staff from the following organizations:

Proponent:	City of Hamilton Bryan Purins, Project Manager
Prime Consultant:	Wood Environment & Infrastructure Solutions Ravi Bhim, Project Manager Joseph Gowrie, Traffic Engineer Loren Polonsky, Environmental Planner Tavia Chow, Transportation Planner

1.3 Purpose and Study Background

The intent of this Study is to identify actions and strategies to improve the safety and mobility needs of all local residents for all transportation modes in the Westdale Neighbourhood. Due to the close proximity of McMaster University, a large percentage of the neighbourhood is occupied with students, who reside alongside local residents. The Study aims to address some of the common behaviours of the occupants of the neighbourhood, including concerns of speeding and safety. Ward 1, which encompasses the Westdale neighbourhood, employs a Participatory Budget process which provides constituents with an opportunity to advise the councillor on how to spend \$1.5 million (M) on local infrastructure projects.

In summary, the Study will achieve the following objectives:

- Identify transportation-related challenges in the neighbourhood with the consideration of all types of road users (including users of Hamilton Street Railway (HSR) transit and potential Light Rail Transit (LRT) services);
- Develop feasible and context-sensitive alternative solutions to address localized concerns;
- Facilitate public consultation and stakeholder engagement to ensure a transparent and well-informed study process;
- Evaluate transportation options in a transparent manner by developing an “evaluation matrix” (i.e. a menu of tools to address traffic issues) that will clearly and transparently demonstrate the most technically preferred option; and
- Prepare a Phasing and Implementation Plan to prioritize preferred alternative solutions into short, medium and long-term solutions to accommodate City’s budgetary constraints.

1.3.1 Previous Studies / Projects and Adjacent Studies / Projects

The Study Team reviewed the following planning documents, guidelines and other reports relevant to the Study Area. The list below presents some of the key documents being referenced by the Study; however, this is not an inclusive list.

- Ainslie Wood / Westdale Neighbourhoods Transportation Master Plan 2003;
- Ainslie Wood / Westdale Walkability Assessment Report 2008;
- Pedestrian Mobility Plan 2014;
- Draft Hamilton Transportation Master Plan 2018 (*City in Motion*);
- Shifting Gears - Cycling Master Plan 2009, 2018;
- Ministry of Transportation’s (MTO) Niagara to GTA Corridor study;
- MTO’s Greater Golden Horseshoe Transportation Study;
- Metrolinx Big Move; and
- Province of Ontario, Places to Grow.

This Study considers the concepts and policies as stated in the City-Wide Transportation Master Plan (approved August 2018). Additionally, a multi-modal approach has been adopted such that the proposed alternative solutions will consider the principles of Complete-Livable-Better Streets to ensure designs are context-sensitive and balance the needs of all mode user types.

2.0 Stakeholder and Agency Consultation

2.1 Phase 1 and 2 Consultation

A Notice of Study Commencement and Public Information Centre (PIC) #1, detailing the Study Area, summarizing the Study’s objectives, providing PIC #1 details and requesting comments, was submitted to relevant stakeholders, property owners and agencies by mail, in June 2018. In addition, the Notice was published in the *Hamilton Spectator* on June 8 and 15, 2018 and the City of Hamilton website (<https://www.hamilton.ca/city-planning/master-plans-class-eas/westdale-neighbourhood-traffic-management-review>).

Similarly, Notice of PIC #2 was also advertised in the *Hamilton Spectator* on May 3, 2019. The notice was tweeted by the City of Hamilton and sent to the Councillor to distribute to their constituents.

Responses to this notice were received from several stakeholders and agencies. Copies of the newspaper advertisement, letters from and to stakeholders and agencies are contained in **Appendix A**.

Table 2-1 presents an overview of the agency and public stakeholder consultation activities.

Table 2-1: Consultation Schedule

Consultation Event	Date
Notice of Commencement and PIC #1, published in newspaper and mailed to Study Mailing List	Newspaper Advertisement: June 8 and 15, 2018 Mail-out: June 4, 2018
Technical Advisory Committee Meeting #1	April 24, 2018
Public Information Center #1	June 21, 2018
Community Meeting	March 4, 2019
Technical Advisory Committee Meeting #2	April 3, 2019
Notice of Public Information Centre No. 2 published in newspaper and mailed to Study Mailing List	Newspaper Advertisement: May 3, 2019
Public Information Center #2	May 13, 2019
Notice of Completion	December 6, 2019

Details regarding the consultation with agencies and public stakeholders are further detailed in the following sections. Meeting minutes and agenda with agencies and Study Team can be found in **Appendix A**.

2.1.1 Study Mailing List

A Study Mailing List was created by adding contacts by request, including through completion of Comment Forms at the public meetings.

2.2 Internal Agency Consultation

As part of the Class EA process, two Technical Advisory Committee (TAC) meetings were arranged in order to review materials to be presented at the PIC and to obtain feedback from the internal technical agency committee on the proposed Study. Evaluation of the planning alternatives and preferred design was discussed with input from the agencies during these two meetings. Other components of evaluation included the technical aspects, cost, and compatibility with the City-Wide Transportation Master Plan Update.

The Active Transportation Department provided additional comments, outside of the TAC meeting on the alternative assessment technical memorandum. The comments are summarized below:

- Ref # 2 – add a note to flag the need for a suitable cycling crossing – from planned Emerson bicycle lanes to where an assessment determines bicycle should “land” on campus
- Ref # 6 – do we agree that LOS is so poor? We should flag planned cycling infrastructure (and below ref # 21)
- Ref # 7 – flag the need to address a cycling connection for WB to NB
- Ref # 14 – any cycling suggestions?
- Ref # 21 – flag plans to modify the bicycle lanes south of King St – possibly a 2-way cycle track on the east side
- Ref # 22 - resolve a bicycle lane onto campus (WB)
- Ref # 26 – confirm street asphalt width available

All comments are included in **Appendix A**.

2.2.1 Technical Agency Committee Meeting #1

As part of Phase 1 consultation activities, a TAC meeting was held on April 24, 2018 at the City of Hamilton office (330 Wentworth Street North), from 9:00 am to 10:00 am. The purpose of this meeting was to provide a project overview, identify neighbourhood issues, discuss the consultation and communication strategy, review the schedule / major milestones and determine the next steps.

The following City Department's participated:

- Asset Management;
- Community Planning;
- EMS;
- Engineering Design;
- Fire;
- HSR Transit;
- LRT;
- Public Health;
- Road Operations;
- Traffic;
- Transportation Planning; and

- Waste Collection.

Meeting agenda and minutes can be found in **Appendix A**.

2.2.2 Technical Agency Committee Meeting #2

As part of Phase 2 consultation activities, a TAC meeting was held on April 3, 2019 at the City of Hamilton office (330 Wentworth Street North), from 2:00 pm to 3:00 pm. The purpose of this meeting was to review materials for the upcoming PIC, review current Study status, discuss problems, opportunities and recommendations and determine next steps.

The following City Department's participated:

- Asset Management;
- Community Planning;
- EMS;
- Engineering Design;
- Fire;
- HSR Transit;
- LRT;
- Public Health;
- Road Operations;
- Traffic;
- Transportation Planning; and
- Waste Collection.

Meeting agenda and minutes can be found in **Appendix A**.

2.3 Community Meetings

On March 4, 2019, Wood presented its progress to the Westdale Community Association. A summary of the Study to date as well as the suggested problems and opportunities throughout the neighbourhood and the proposed solutions were discussed. In addition to valuable discussions throughout the meeting, numerous individuals submitted comments to the City of Hamilton using the comment forms provided by Wood. **Table 2-2** summarizes the comments received at the meeting. The comment forms and meeting minutes can be found in **Appendix A**.

Table 2-2: Summary of Comments Received at Westdale Community Meeting

Street / Area	Issue	Suggested Solution
Forsyth Avenue	Speeding	<ul style="list-style-type: none"> • Speed limit reduction with clear signage. • Speed cushions and / or flexible bollards.
	Large trucks frequently use Forsyth Avenue despite signage indicating no trucks	<ul style="list-style-type: none"> • Increased enforcement.
Sterling Street & Forsyth Avenue N.	Busy pedestrian intersection	<ul style="list-style-type: none"> • Add pedestrian crossing or signalize for safe crossing.
Longwood Road	Lack of connectivity between existing cyclist facilities	<ul style="list-style-type: none"> • Add bike lanes in both directions from Main Street W. to Aberdeen Avenue. • Outside of our Study Area.
	Speeding	<ul style="list-style-type: none"> • In favour of speed cushions but not flexible bollards (not enough space).
Multi-Use Path along Cootes Drive	Right-of-way (ROW) for cyclists	<ul style="list-style-type: none"> • Change stop / yield signs so bicycles can ride and vehicles are required to yield. • Outside of our Study Area.
Neighbourhood	Speed Management	<ul style="list-style-type: none"> • Do not use speed humps / bumps, if possible use stop signs.
	Pedestrian Signals	<ul style="list-style-type: none"> • Give additional walk time to pedestrians before green begins for vehicles (example at King Street W. /Sterling Avenue) – Leading Pedestrian Interval.
Main Street W.	Speeding	<ul style="list-style-type: none"> • Do not lower speed limit from 60 km/h.
King Street W. & Haddon Avenue	Safety / speeding concerns	<ul style="list-style-type: none"> • Do not make AWS control too close to light at Dalewood Avenue. Will also potentially give false sense of security to pedestrians / cyclists.
Main Street W. & Emerson Street / McMaster University	Crossing is 2 to 3 stages depending on origin and destination	<ul style="list-style-type: none"> • Pedestrian scramble.
King Street W. & Dalewood Crescent	Speeding - short green phase in NB/SB direction causes vehicles to speed to catch the light from Sterling Street to King Street W. Volume issues around 4 pm when classes change. AWS sign might make queuing worse.	<ul style="list-style-type: none"> • Traffic calming measures along this section of Dalewood Crescent (from King Street W. to Sterling Street).
Main Street W. & Paisley Avenue	Trucks using Paisley Avenue	<ul style="list-style-type: none"> • Support the idea of no left-turn from Main Street W.

2.4 Public Consultation

Effective public consultation is an important part of the Master Plan process. Feedback from the public is significant as it helps identify gaps and allows the Study Team to understand the design preference. PICs provide a transparency to the EA process and gives individuals an opportunity to share their views. Two PICs were held in order to provide information about the Study and present the alternatives.

Details of the PICs are presented in **Appendix B** and **C**.

2.4.1 Public Information Centre #1

The City held a PIC on Thursday June 21, 2018 from 6:30 p.m. to 8:00 p.m. at the St. George’s Reform Episcopal Church, 134 Emerson Street, Hamilton, ON L8S 2X8. The City posted PIC Information on its Study website prior to the event (<https://www.hamilton.ca/city-planning/master-plans-class-eas/westdale-neighbourhood-traffic-management-review>).

PIC #1 included 20 poster boards displayed around the room to share information on the progress of the Study, initial findings of the traffic and transportation studies, alternatives being considered and next steps in the Study. The event was arranged as an open house drop-in format, where Study Team members were on hand to guide attendees through the information, discuss the Study and answer questions. Several interactive display boards enabled attendees to identify transportation issues and opportunities within the community. The Study Team made a 20-minute presentation to attendees, providing additional information about the Study while making time for several questions. Attendees were encouraged to sign-in and complete a comment form.

Table 2-3 provides a summary of the comments heard at PIC#1.

Table 2-3: Summary of Comments Received at PIC#1

Theme	Frequent Comment
Cycling Lanes	Consider separated cycling lanes installed in the neighbourhood (similar to those in Montreal).
	Consider extending cycling lanes down to King Street W.
	Increase enforcement for cyclists on Sterling Street.
Local Transit	There’s too much bus traffic on Sterling Street and the bus frequency needs to be reduced.
	Will the bus traffic on Emerson Street continue once light rail transit (LRT) begins to operate?
	How will LRT and buses cohabitate in the Study Area and in the rest of Hamilton?
	Keep King bus in Westdale Village.
Parking	Parking issues exist on Emerson Street.
	Several McMaster students park their cars in the neighbourhood and take a bus to campus. A large parking structure on campus would alleviate this issue.

	Does the City of Hamilton issue parking passes for their visitors so they can park for more than one hour?
	Emerson Street and all side streets have bumper to bumper parking.
Pedestrian Safety	Many pedestrians who walk by the Westdale Theatre (by the Second Cup) do not look for cars before crossing the street. This “near miss” happens once a week. Improving the lane configuration at this location would help.
	The advanced walk sign on King Street W. and Newton Avenue is great and should be applied to other locations.
	Main Street W. and Paisley Avenue crosswalk are not long enough to be able to cross safely. These areas should have signage that tell cars that they must stop if pedestrians are entering a crosswalk.
Rapid Transit	Concerned about where the LRT will operate and the location of stops.
	How will residents in this neighbourhood access Main Street W. when LRT blocks the exits?
	How many lanes of traffic will the LRT comprise?
	How will drivers be able to make a U-turn when the LRT is implemented?
	Will local bus service remain - and follow the LRT route - in order to service other areas?
Traffic Calming	Consider implementing chicanes, but not speed bumps.
	Curb extension / bulb-outs are needed in all residential neighbourhoods.
	Narrowing streets and other residual cues essential to slow cars in residential areas.
	Please clarify what a chicane is and how it will impact cycling lanes and reduce parking in the area.
	How are speed humps and monitors maintained? For example, the speed monitors on Cootes Drive do not work properly, and the speed humps are in poor condition, which results in a safety issue.
General Traffic	There is a high volume of cars on Sterling Street.
	The Sterling Street and Forsyth Avenue N. McMaster entrance should be closed.
	Marion Avenue S. is in poor condition.
	Mobility is a concern for older people in the Study Area who are forced to drive, which may become more difficult with the implementation of active transportation measures.
	Does the Study Area include Main Street W.?
The Study Process	Why is the Study being conducted right now when the LRT will impact the road network in the future? Does the Study reflect the impact of the new student residences?

Details of PIC #1 are presented in **Appendix B**.

2.4.2 Public Information Centre #2

The City held a PIC on Monday, May 13, 2019 from 7:00 p.m. to 9:00 p.m. at the St Cuthbert's Presbyterian Church, 2 Bond St N., Hamilton, ON L8S 3W1, Canada. The City posted PIC Information on its Study website prior to the event (<https://www.hamilton.ca/city-planning/master-plans-class-eas/westdale-neighbourhood-traffic-management-review>).

PIC #2 included 11 poster boards displayed around the room to share information on the progress of the Study, summary of comments received, problem and opportunities within the Study Area, evaluation criteria, proposed solutions and next steps in the Study. The event was arranged as an open house drop-in format, where Study Team members were on hand to guide attendees through the information, discuss the Study and answer questions. The Study Team made a 20-minute presentation to attendees, providing additional information about the Study while making time for several questions. Attendees were encouraged to sign-in and complete a comment form.

Table 2-4 provides a summary of the comments heard at PIC#2.

Table 2-4: Summary of Comments Received at PIC#2

Theme	Frequent Comment
Cycling	I am scared to ride a bike here. I want to see more consistency in the types of bike lanes throughout the City.
	Where are chicanes being implemented and how will they impact cycling?
Transit	LRT will be blocking off current turning lanes, which will affect the traffic in the rest of the Study Area.
	What is the long-term ramification of LRT and the future student housing? Where is everyone going to park?
Parking	Several McMaster students park their cars in the neighbourhood (King Street W and Paradise Road S. on Glen Road, Dufferin Street, etc.) and then take the bus into McMaster.
	The problem with parking on both sides of the street is that the road becomes wide enough for only 3 lanes (Marion Street). This becomes more dangerous for children and cyclists (i.e. opening care doors).
	Paradise Road should have on-street parking to help reduce speed issues.
	Dufferin Street is not wide enough for street parking. Summer months is okay to park one car but, in the winter, due to all the snow and ice, it's difficulty to find parking.
Pedestrian Safety	Likes raised intersections but has never seen any before.
	People will only stop when there is a school crossing guard at Longwood Road but otherwise, they don't stop. There is lack of education about this.
	There needs to be a button facing the sidewalk for pedestrian crosswalks because right now it's hidden.
	There are places with no sidewalks on Paradise Road.
	Sightline issues on Bond Street.

	<p>Are drivers expected to stop at the pedestrian crossover? Will the pedestrian crossover include a traffic light?</p> <p>Likes bollards.</p>
All Way Stop (AWS) Sign	<p>People tend to roll through AWS signs instead of stopping.</p> <p>Bond Street and Marion Avenue used to not be an AWS but now it is. I like AWS because it slows people down.</p> <p>Uncertainty of ROW at AWS for pedestrians vs. motorists.</p> <p>Would like to see AWS at Paradise Road and Glen Road.</p>
	<p>In favour of speed humps.</p> <p>Would like to see speed limits lowered from 50 km/hr to 30 km/hr or 40 km/hr. There are so many students and they don't follow the rules. The streets in this area are narrow and have parking on both sides, which make a 30 km/h speed limit more comfortable.</p> <p>All streets where people gather, such as Bond Street should be 40km/h.</p> <p>Locke Street could be 30km/h. Basically anywhere where there is congestion should be 30 km/h.</p> <p>Permit parking on both sides of street to encourage slower speeds.</p> <p>Please clarify what a chicane is and how it will impact cycling lanes since narrowing lanes with eliminate bike lanes. Cars will be tempted to speed up to get in front of the bikes.</p> <p>Speed bumps provide false sense of security for pedestrians. It is also bad for the environment because of all the stop and go.</p> <p>What is the difference between speed cushions vs. speed humps and has the City implemented both? Is there difference in noise level for both? Can buses go over speed cushions, like the ones on Macklin Street.</p> <p>In favour of raised intersections.</p>
	<p>Provide clarification on who has ROW when lights are flashing at pedestrian crossings.</p> <p>Is a traffic signal warranted at Sterling Street and Forsyth Avenue due to high pedestrian volumes? Does traffic volume also consider pedestrian volume? What time of the year and day are traffic counts completed?</p> <p>Pedestrian push buttons should be placed such that they are visible from both directions (i.e. should be facing sidewalk).</p> <p>Improve consistency of crossings (pavement markings, signage, etc.)</p> <p>Can we implement a pedestrian scramble? This means any intersections that is not strictly signed will allow pedestrians to go in different directions to cross (diagonal etc.). Similar to New York. Can this be implemented at an AWS?</p> <p>Continual parade of students at Sterling Street and Forsyth Avenue; traffic backs up as a result.</p>
	<p>General Traffic</p>

Details of PIC #2 are presented in **Appendix C**.

- **Complete-Livable-Better Streets** is a concept that involves designing streets in a manner that is safe for all users, regardless of age and physical ability.
- **Vision Zero** supports the goal of zero fatalities or serious injuries on the roadway. Vision Zero's target for safer streets can be achieved by addressing traffic safety holistically through education, enforcement, engineering, evaluation and engagement.

The Planning Context Report in **Appendix D** summarizes the various planning reports and its applicability to this Study.

3.3 Existing Traffic Conditions

Traffic volumes were highest on Main Street West (i.e. major arterial within the Study Area) as it provides direct connection to Highway 403 as well as the downtown Hamilton core. Traffic movement was consistent with commuter patterns with the highest volumes occurring during the AM and PM peak hours.

3.3.1 Travel Patterns and Behaviours

The general planning direction is to encourage a greater shift towards more sustainable transportation modes, including transit, walking and cycling.

Current mode splits for the neighbourhood is 64% autos, 24% transit, and 11% walking or cycling. The longest trips are made by GO transit while most trip lengths are within 20 kilometres (km) in the Study Area. Most cycling and walking trips are 3 and 4 km on average respectively and are the shortest trips observed as expected.

3.3.2 Traffic Operations

Analysis showed that the road network is currently operating with an overall acceptable level of service (LOS). LOS is defined in **Table 3-5** and is represented by a letter between 'A' and 'F', with 'F' being the longest delay.

Table 3-5: Correlation of Anticipated Vehicle Delay with Level of Service.

Level of Service (LOS)	Description of Operations
A	Little to no delay at intersections.
B	Minimal delay.
C	Some queuing and delay (<35 sec/vehicle).
D	Frequent queuing and delay (< 55 sec/vehicle).
E	Significant delay and queuing, occasionally vehicles may need to wait for a second green.
F	Intolerable delays and queues.

Critical individual movements are noted at the following intersections and have movements with LOS 'F' during both AM and PM peak hours:

- Cootes Drive at Main Street West (Northbound Left);
- Emerson Street at Main Street West (southbound left-turn and southbound through);
- Dalewood Avenue at Main Street West (southbound left-turn and southbound through); and
- Longwood Road at Main Street West (southbound through-left and through-right).

During the AM peak hour, the dominant direction of traffic is eastbound along Main Street West. Eastbound traffic generally experiences heaviest queuing at Cootes Drive, Emerson Street, and Longwood Road. During the PM peak hour, traffic distribution is fairly evenly split in the eastbound and westbound directions on Main Street West. The dominant direction of traffic movement during the PM peak hour is also generally eastbound along Main Street West. Traffic operations are impeded by bus blockages notably at westbound right movement from Main Street West onto Cootes Drive. Sterling Street and King Street West incur high volumes of traffic entering and exiting McMaster University during the peak hours.

3.3.3 Travel Speeds

Data indicates that in most instances, drivers are travelling within the posted speed limits in Westdale. Although 85th percentile speeds are satisfactory, a higher percentage of non-compliant vehicles can be observed along Longwood Road in which traffic calming measures may need to be considered.

3.3.4 Pedestrians

Sidewalks are located on both sides of all major arterials and collectors in the current network as well as the majority of local roadways, providing adequate connectivity for pedestrians. More complex pedestrian crossing facilities at major intersections along Main Street West (e.g. Emerson Street / University, Dalewood and Haddon Avenues). Pedestrian crossover treatments can be implemented and improved at minor stop-controlled street within the neighbourhood where high pedestrian activities are incurred. Generally, shorter crossing distances, clearer delineation, slower vehicular speeds and multitude of street-facing businesses and residences can elevate pedestrian experience.

3.3.5 Cyclists

Notable cyclist activities can be observed throughout the neighborhood with frequent SOBI Hamilton service users. SOBI, which stands for Social Bicycle, is City's bike sharing service. SOBI hubs are located throughout the study area alongside the curb, adjacent to the bicycle lanes and sidewalks.

Bicycle lanes are currently present on King Street West, Sterling Street, and Longwood Road. The King Street West bicycle lanes are discontinuous between Haddon Avenue and Cline Avenue wherein cyclists and motorists share a lane of travel. Longwood Road North includes a dedicated southbound bike lane and a shared lane of travel for northbound cyclists. Along Sterling Street and King Street West, bicycle racks are located along the curbside, adjacent to the bicycle lanes.

3.3.6 Transit

Multiple bus routes are present within the Study Area, providing frequent opportunities to use transit. Route 1 King, Route 5 Delaware, Route 10 B-Line Express, and Route 51 University all offer service within the neighbourhood. Headways generally range from 10 minutes to 30 minutes for these routes. Within the Study Area, transit routes are located on Main Street West, King Street West, Macklin Street and Longwood Road. In addition to HSR Transit, GO Transit (Routes 15 and 47) also services the McMaster GO Station, which is located on campus.

3.3.7 Safety

The collision analysis showed that accidents are relatively distributed in the Study Area except for Main Street West, which experienced the highest number of collisions.

During the five-year analysis period (2013-2017), there are 327 collisions recorded during the analysis period that resulted in 156 (or 48%) PDO and 171 (or 52%) injuries.

The collision-prone locations are the following:

- **Main Street West & Cootes Drive (27 collisions)**
 - 27 collisions: 12 PDO and 15 Non-fatal injury
 - Predominant impact type: rear-ends and left-turns
- **Main Street West & Emerson Street (26 collisions)**
 - 26 collisions: 11 PDO and 15 Non-fatal injury
 - Predominant impact type: rear-ends
- **Main Street West & Longwood Road (36 collisions)**
 - 36 collisions: 18 PDO and 18 Non-fatal injury
 - Predominant impact type: rear-ends and left-turns
- **Main Street West & Macklin Street (36 collisions)**
 - 36 collisions: 18 PDO and 18 Non-fatal injury
 - Predominant impact type: left-turns / sideswipes
- **Local Neighbourhood**
 - High proportion of collisions in the local neighbourhood occurred along King Street
 - Predominant impact type: Angle
 - The main casual factors for the angle collisions were due to drivers failing to yield ROW and disobeying traffic control. Vehicle clearance times should be monitored to

ensure enough amber and red times are sufficient to accommodate the high traffic volumes along King Street.

- Traffic volumes were highest on Main Street West (i.e. major arterial within the Study Area) as it provides direct connection to Highway 403 as well as the downtown Hamilton core.

4.0 Future Conditions

The Hamilton B-Line Light Rail Transit (LRT) is planned to be constructed along Main Street West, which will change the travel patterns and behaviours in the Westdale area. A traffic operational assessment was completed considering two scenarios for the 2031 horizon year; “Do-Nothing” and “With LRT”. The “Do-Nothing” option evaluated the future traffic conditions assuming that the LRT is not constructed. Conversely, the “With LRT” scenario will assess future traffic operations by considering the impact of the LRT on the road network.

The future conditions were modelled in Synchro for weekday AM and PM peak hours and utilized to develop performance metrics such as LOS, volume-to-capacity ratios, and delays. Intersections are projected to operate with an overall acceptable LOS, in both the AM and PM peak hours for both scenarios.

Based on the review of existing traffic volumes and those forecasted in the *Hamilton Light Rail Transit Environmental Study Report (Hamilton LRT EPR) Addendum*, the growth rates for the two scenarios are provided in **Table 4-5**. Traffic volumes outside of Main Street West will assume a growth rate of 2% per annum.

Table 4-5: Summary of Growth Rates

Corridor	Without LRT				With LRT			
	AM Peak		PM Peak		AM Peak		PM Peak	
	EB	WB	EB	WB	EB	WB	EB	WB
Main Street West	0.56%	-1.94%	-0.06%	0.60%	-0.21%	-2.49%	-0.78%	-1.14%
King Street West	5.70%	3.37%	-6.03%	2.29%	6.82%	1.03%	-2.78%	2.14%
All Other Areas	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%

Notes

EB – Eastbound

WB – Westbound

4.1 Do Nothing Scenario - 2031

During the AM peak period, Main Street West is expected to grow an average of 0.56% per annum in the eastbound direction and decrease by 1.94% per annum in the westbound direction. King Street West is expected to grow by an average of 5.70% per annum in the eastbound direction and 3.37% per annum in the westbound direction.

During the PM peak period, Main Street West is expected to decrease by an average of 0.06% per annum in the eastbound direction and grow by 0.60% per annum in the westbound direction. King Street West is expected to decrease by an average of 6.12% per annum in the eastbound direction and grow by an average of 2.29% per annum in the westbound direction.

4.2 Light Rail Transit Scenario – 2031

Based on the forecasted traffic volumes, during the morning peak period the traffic along Main Street West is expected to decrease by 0.21% per annum in the eastbound direction and 2.49% in the westbound direction while traffic along King Street West is expected to increase by 6.82% per annum in the eastbound direction and 1.03% per annum in the westbound direction.

During the PM peak period, the traffic along Main Street West is expected to decrease by 0.78% in the eastbound direction and 1.14% in the westbound direction. King Street West traffic is forecast to decrease by 2.78% in the eastbound direction in the afternoon peak period but increase in westbound direction by 2.14% per annum.

4.3 Analysis

All Study intersections are operating with an overall LOS of “D” or better in both the AM and PM peak hours and under both the without and with LRT scenario. It should be noted that some intersections are anticipated to reach near capacity by the 2031 horizon year.

For further detail, the Future Conditions Report can be found in **Appendix G**.

5.0 Development and Evaluation of Alternative Planning Solutions

5.1 Problem and Opportunity Statement














As a result of existing and future growth within the Westdale Neighbourhood, there is a need to improve the safety, mobility and accessibility for all residents, students and employees, whether travelling by automobile, transit, cycling or walking.




















5.2 Evaluation Criteria




As part of the initial phases of this Study the following preliminary evaluation criteria were developed to reflect the concerns of various stakeholders, as communicated through Phase one and two consultation.

Table 5-6 provides a description of the evaluation criteria used in subsequent phases of the Study:

Table 5-6: Evaluation Criteria for Alternative Assessment

Category	Criteria	Measures / Indicators	Symbol	Symbol Definition
Technical	Change in Traffic Level of Service	<ul style="list-style-type: none"> Improvements to LOS and capacity (i.e. delay and volume / capacity ratios) 		Significant Positive Impact to Traffic Operations (e.g. Delay, Capacity, LOS)
				Moderate Positive Impact to Traffic Operations (e.g. Delay, Capacity, LOS)
				No Impact to Traffic Operations (e.g. Delay, Capacity, LOS)
				Moderate Negative Impact to Traffic Operations (e.g. Delay, Capacity, LOS)
				Significant Negative Impact to Traffic Operations (e.g. Delay, Capacity, LOS)
	Supportiveness of Other Transportation Modes	<ul style="list-style-type: none"> Supportive of other transportation modes (i.e. walking, cycling, carpooling, transit etc.) Consistent with Pedestrian Mobility Plan (PMP), Cycling Master Plan (CMP), HSR Operations Plans, and Health-by-Design (Public Health) 		Significantly Improves the Ability to Use Sustainable Modes of Transportation
				Improves the Ability to Use Sustainable Modes of Transportation
				No Change
				More Difficult to Use Sustainable Modes of Transportation
				Significantly More Difficult to Use Sustainable Modes of Transportation
	Efficiency of Use of Existing Infrastructure	<ul style="list-style-type: none"> Accommodating all modes of transportation within the confines of the existing 		Enhance the Use of Facility with No Modification to Existing Infrastructure
				Enhance the Use of Facility with Minor Modification to Existing Infrastructure
				No Change to Existing Infrastructure

Category	Criteria	Measures / Indicators	Symbol	Symbol Definition
		transportation system (i.e. creation of complete streets within the limits of existing road ROW)		Requires Minor Modification to Existing Infrastructure with No Direct Enhancement of Facility.
				Requires Significant Modification to Existing Infrastructure with No Direct Enhancement of Facility.
	Safety	<ul style="list-style-type: none"> Reflective of Hamilton Road Safety Program (i.e. safety, behaviors, enforcement levels, etc.) Consistent with Vision Zero 		Improves Safety for All Road Users
				Improves Safety for Some Road Users
				No Change
				Increases the Safety Risks for Some Road Users
	Increases the Safety Risks for All Road Users			
Conformity with City's Direction / Policies	Compatibility with City Plans	<ul style="list-style-type: none"> Consistency with City policy objectives included in the Transportation Master Plan (TMP) Consistent with Complete, Liveable, Better (CLB) Streets concepts and elements 		Compatible
				--
				--
				--
				Not Compatible
	Implementation Feasibility	<ul style="list-style-type: none"> General assessment of feasibility of implementation by the City Constructability of features Impact of features on other operations (e.g. winter control, emergency service response) Compatibility with proposed LRT 		Very Easy to Implement (Requires Minimal Resources / Very Short Duration)
				Easy to Implement (Requires Some Technical Resources / Short Duration)
				--
				Difficult to Implement (Requires Some Technical Resources / Long Duration)
				Very Difficult to Implement (Requires Significant Technical Resources / Long Duration)
Estimated Costs	Estimated Costs	<ul style="list-style-type: none"> Estimated capital costs (discriminating implementation and maintenance costs) 		No Cost
				Low Cost

Category	Criteria	Measures / Indicators	Symbol	Symbol Definition
		<ul style="list-style-type: none"> Consideration of timing with other City projects / priorities to ensure efficiency in expenditures Compatibility with budget planning process 		Medium Cost
				High Cost
				Prohibitive Cost

5.3 Methodology

Transportation-related challenges and opportunities were identified and documented. Localized concerns were identified and reviewed based on technical analysis, field investigation and comments provided by local residents at the PIC. The Study Team synthesized all information for developing feasible potential alternatives for the Westdale neighbourhood.

The development of potential alternatives incorporates a multi-modal approach to ensure designs are context-sensitive and balance the needs of all mode user types. As a result, the following City guidelines and transportation demand management strategies / policies were considered in developing potential improvements:

- Traffic Calming / Management Policy;
- Complete Streets Design Guidelines;
- Pedestrian Mobility Plan;
- Strategic Road Safety Program with emphasis on intersections and vulnerable road users;
- Neighbourhood Action Plans;
- Vision Zero concept;
- City Wide Transportation Master Plan; and
- Cycling Master Plan.

5.4 Identification of Alternative

During PIC#1, residents and key stakeholders identified their transportation challenges and opportunities for the Westdale neighbourhood. Several residents identified potential alternative solutions to address the community's transportation challenges.

As part of the City-wide traffic calming and management policy, the development of alternative solutions will reflect the principles and concepts of the *Complete Liveable Streets* design approach. Both the carried forward and screened-out alternatives were documented with clear justification and explanation as to the recommendation.

Transportation alternatives were proposed along Main Street West based on existing conditions analysis findings and comments received from the local residents. Considering the future implementation of the Hamilton LRT, any medium to long-term recommendations along Main Street West will likely be reviewed and revisited by the City when further studies on the LRT are being conducted.

For ease of review and the nature of traffic calming improvements, the like-type improvements are grouped and evaluated together in the table. This method allows a pragmatic implementation approach as it is more time-efficient and cost-effective to implement like-type improvements within the community simultaneously (i.e. road rehabilitation, signage installation, etc.). In addition, a single location may have been identified with multiple issues / opportunities and, as such, may appear in more than one location.

It is also noted that if a solution is recommended that requires a significant geometric change to the area or the implementation of something new (signage, pavement markings), the City should consider adding an education piece to the implementation which would serve to ensure the public understands how to interact with the changes properly.

For further detail, the Evaluation of Alternatives Memo for Westdale can be found in **Appendix E**.

Figure 5-4 displays a location plan showing all the locations within the Westdale neighbourhood where either a problem or opportunity was identified through the Study. These locations are referenced in the same manner in **Table 5-7** that documents the proposed alternative solutions by location.

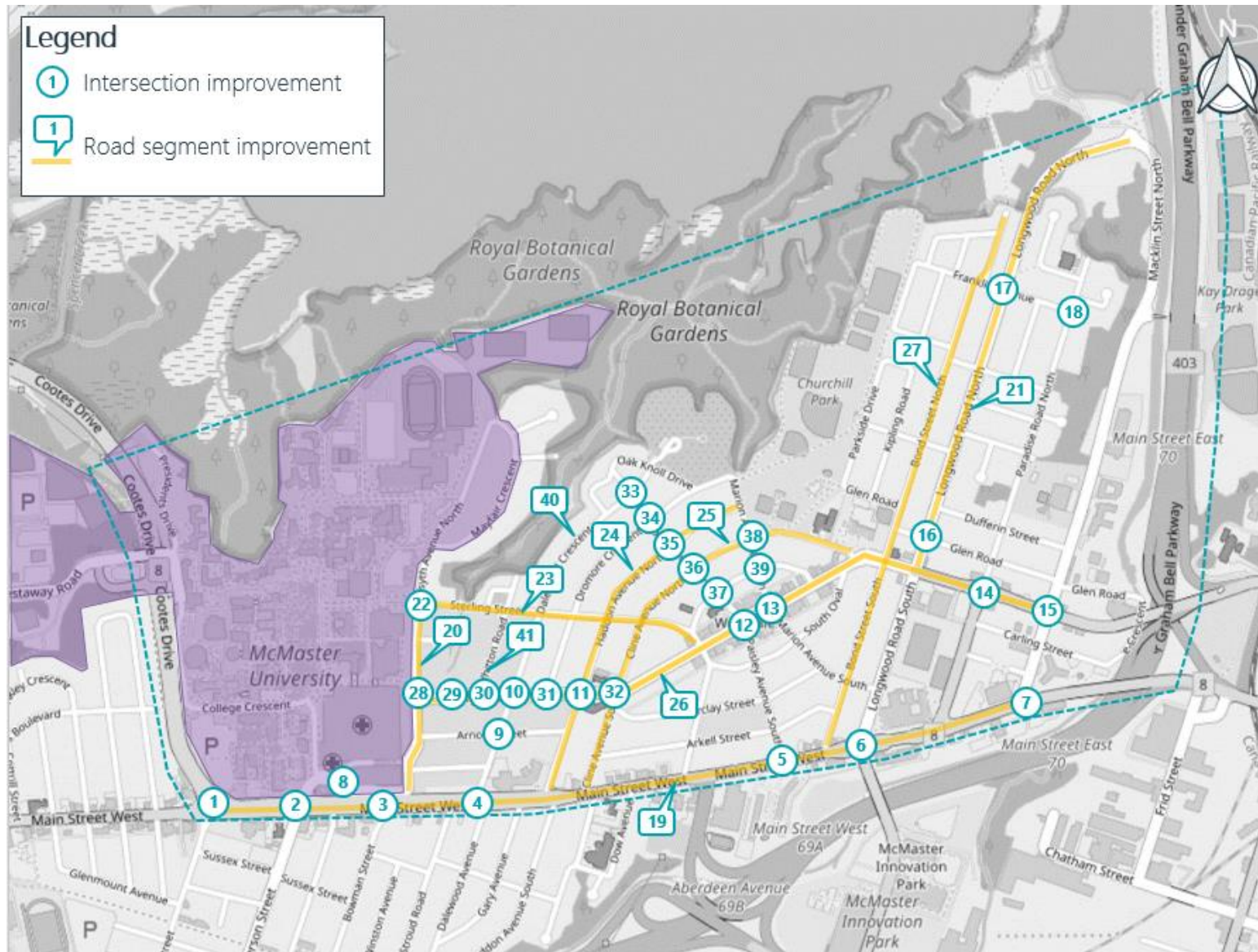


Figure 5-4: Locations of Identified Problems or Opportunities in Westdale

Table 5-7: Potential Alternative Solutions for Westdale

Reference No.	Location	Resident Issue	Potential Alternative Solutions
General	Westdale	<ul style="list-style-type: none"> • Mobility concern for elderly drivers especially with the implementation of active transportation measures. • Consider separated cycling lanes installed in the neighbourhood • Will the bus traffic on Emerson Street continue once light rail transit (LRT) begins to operate? • How will LRT and buses cohabitate in the study area and in the rest of Hamilton? • Keep King bus in Westdale Village. • The advanced walk sign on King Street West and Newton Avenue is great and should be applied to other locations. • Several McMaster students park their cars in the neighbourhood and take a bus to campus. A large parking structure on campus would alleviate this issue. • Consider implementing chicanes, but not speed bumps. • Curb extension/bulb-outs are needed in all residential neighbourhoods. • Narrowing streets and other residual cues essential to slow cars in residential areas. • Poor pavement surface conditions 	--
1	Main Street West & Cootes Drive	<ul style="list-style-type: none"> • Predominate impact types are rear-end (11 out of 27) and left-turns (8 out of 27). • Westbound right turn is channelized with a large radius resulting in high speed vehicles proceeding through two uncontrolled pedestrian crossings (pedestrians must "wait for gap"). 	<ul style="list-style-type: none"> • Alter lane designation. • Higher order pedestrian crossing treatment.

Reference No.	Location	Resident Issue	Potential Alternative Solutions
2	Main Street West & Emerson Street	<ul style="list-style-type: none"> • Southbound traffic is prohibited from making right turns on red significantly reducing capacity. • Right turns on green which conflicts with pedestrians crossing the street (location exhibits high pedestrian volumes). • Predominate impact types are rear-end (14 out of 26) followed by pedestrian (5 out of 26). • Potential illumination issues at Main Street and Emerson Street since all of the pedestrian/vehicle collisions were recorded under dark light condition. • High collision risk for vulnerable road user-related collisions. 	<ul style="list-style-type: none"> • Implement pedestrian signage • Add crosswalk markings • Improve street lighting.
3	Main Street West & Bowman Street	<ul style="list-style-type: none"> • Southbound traffic is prohibited from making right turns on red significantly reducing capacity - right turns on green which conflicts with pedestrians crossing the street (location exhibits high pedestrian volumes). • During AM peak hour, southbound-left and southbound-through movements operate at LOS F. • Predominate impact types are rear-end (14 out of 26) followed by pedestrian-related collisions (5 out of 26). 	<ul style="list-style-type: none"> • Add crosswalk markings.
4	Main Street West & Dalewood Avenue	<ul style="list-style-type: none"> • Pedestrian crossing is 3-stage and ignored. Pedestrians cross unstriped north/west leg of intersection. • Pedestrians walk down wide center median on Main St to next signal to the west. • Pavement marking and signage do not match. 	<ul style="list-style-type: none"> • Match signage with pavement markings. • Install pedestrian barriers on median. • Install pedestrian buttons to improve crossing time.
5	Main Street West & Paisley Avenue	<ul style="list-style-type: none"> • Pedestrian clearance times seem too short (too quick to cross safely). 	<ul style="list-style-type: none"> • Implement pedestrian signage. • Signal timing modification

Reference No.	Location	Resident Issue	Potential Alternative Solutions
6	Main Street West & Longwood Road	<ul style="list-style-type: none"> • High proportion of rear-end collision in eastbound direction. • LOS F for southbound-left and southbound-through. 	<ul style="list-style-type: none"> • Add signage indicating bus stops ahead in eastbound direction west of the intersection. • Prohibit vehicles from making through movement in the right lane (buses excepted). • Signal timing modification.
7	Main Street West & Macklin Street	<ul style="list-style-type: none"> • The lane reduction in west approach could be attributable to turning sideswipe collisions recorded at this intersection. 	<ul style="list-style-type: none"> • New intersection configuration.
8	Forsyth Avenue & University Avenue	<ul style="list-style-type: none"> • Perceived Pedestrian ROW on University Ave as pedestrian treatment provided. At least one student hit by car there recently. 	<ul style="list-style-type: none"> • Install higher order pedestrian crossing treatment with new signage.
9	Arnold Street & Dalewood Avenue	<ul style="list-style-type: none"> • Zebra striping on 3 approaches and faded lines on north side. • Traffic is free-flow NB/SB even though crossing is striped. 	<ul style="list-style-type: none"> • Add crosswalk markings. • All-way-stop warrant. • Implement pedestrian signage.
10	King Street West & Dalewood Avenue	<ul style="list-style-type: none"> • Traffic delay and queuing issues. 	<ul style="list-style-type: none"> • Signal warrant. • Signal timing modification.
11	King Street West & Haddon Avenue	<ul style="list-style-type: none"> • All-way stop request noted in Terms of Reference for project under "currently identified issues". 	<ul style="list-style-type: none"> • Add crosswalk markings. • All-way-stop warrant. • Raised intersection. • Implement pedestrian signage.
12	King Street West & Paisley Avenue	<ul style="list-style-type: none"> • Safety concerns with pedestrian crosswalk. 	<ul style="list-style-type: none"> • Add crosswalk markings. • Implement pedestrian signage.
13	King Street West & Marion Avenue	<ul style="list-style-type: none"> • Many pedestrians who walk by the Westdale Theatre (by the Second Cup) do not look before crossing the street. This "near miss" happens once a week. 	<ul style="list-style-type: none"> • Add crosswalk markings • Implement signage.

Reference No.	Location	Resident Issue	Potential Alternative Solutions
14	King Street West & Paradise Road	<ul style="list-style-type: none"> • Pedestrian and cycling safety issues. • Cycling lane continuity issues at King Street West and Paradise Road. • More prone to Single-Motor-Vehicle collisions with poor illumination (all collision is occurred close to or after midnight) as well as icy or wet road surface conditions being potential causal factors. 	<ul style="list-style-type: none"> • Implement pedestrian signage. • Add pavement markings. • Improve street lighting (east side of Paradise Rd N and S, west side is already illuminated).
15	King Street West & Macklin Street	<ul style="list-style-type: none"> • Predominate impact type was angle collisions (27% or 6 out of 22). 	<ul style="list-style-type: none"> • A signal clearance review demonstrated that amber and red times are currently sufficient. However, vehicle clearance times should continue to be monitored to ensure adequate amber and red times are provided for meeting the high traffic demand along King Street. No alternative solution is required at this time.
16	Glen Road & Longwood Road	<ul style="list-style-type: none"> • Inconsistent crosswalk treatments. 	<ul style="list-style-type: none"> • Add crosswalk markings. • All-way-stop warrant.
17	Franklin Avenue & Longwood Road	<ul style="list-style-type: none"> • All-way stop request noted in Terms of Reference for project under "currently identified issues". 	<ul style="list-style-type: none"> • Add crosswalk markings. • All-way-stop warrant. • Raised intersection.
18	Franklin Avenue & Paradise Road	<ul style="list-style-type: none"> • Stop compliance issues. 	<ul style="list-style-type: none"> • Add crosswalk markings. • Raised intersection. • Implement Speed humps.
19	Main Street West	<ul style="list-style-type: none"> • Speeding concerns. 	<ul style="list-style-type: none"> • Reduce speed limit.
20	Forsyth Avenue	<ul style="list-style-type: none"> • Speeding concerns. 	<ul style="list-style-type: none"> • Implement flexible bollards along centerline. • Implement speed humps. • Reduce speed limit.

Reference No.	Location	Resident Issue	Potential Alternative Solutions
21	Longwood Road	<ul style="list-style-type: none"> Low speed limit compliance (21%) along Longwood Road. Traffic calming measures may need required. 	<ul style="list-style-type: none"> Install flexible bollards along centerline Implement speed monitoring system Implement chicanes or speed humps
22	Forsyth Avenue & Sterling Street	<ul style="list-style-type: none"> Potential closure of North McMaster entrance. 	<ul style="list-style-type: none"> McMaster’s transportation plan has a goal of a vehicle-free core campus. One of the plan’s policy directions is to eliminate vehicle access on Sterling Street west of Stearn Drive (with the exception of emergency and university vehicles). Such closure will require further studies and discussion with McMaster University.
23	Sterling Street	<ul style="list-style-type: none"> High traffic volumes on Sterling Street. 	<ul style="list-style-type: none"> High traffic volumes due to trips entering and exiting McMaster University as Sterling Street is the main access from the east. Potential closure of the north entrance (see location 23) will reduce traffic volumes on Sterling Street.
24	Haddon Avenue	<ul style="list-style-type: none"> Speeding concerns raised by the public. 	<ul style="list-style-type: none"> Issue is further validated through field surveys which indicated 80% of vehicle are speed compliant. No alternative solution is required.
25	Cline Avenue	<ul style="list-style-type: none"> Speeding concerns raised by the public. 	<ul style="list-style-type: none"> Issue is further validated through field surveys which indicated 96% of vehicle are speed compliant. No alternative solution is required.

Reference No.	Location	Resident Issue	Potential Alternative Solutions
26	King Street West	<ul style="list-style-type: none"> The King Street West bicycle lanes are discontinuous between Haddon Avenue and Cline Avenue wherein cyclists and motorists share a lane of travel. 	<ul style="list-style-type: none"> Consider extending cycling lanes down to King Street West.
27	Bond Street	<ul style="list-style-type: none"> Speeding concerns raised by the public. 	<ul style="list-style-type: none"> Issue is further validated through field surveys which indicated 92% of vehicle are speed compliant. No alternative solution is required.

5.5 Preferred Alternative

Table 5-9 provides an overview of the preferred alternative. A more detailed analysis of the preferred alternative can be found in **Appendix E**.

Table 5-8: Preferred Alternative

Type of Improvement	Location	Location ID	Details	Change in Traffic Level of Service	Supportiveness of other Transportation Modes	Efficiency of Use of Existing Infrastructure	Safety	Compatibility with City Plans	Implementation Feasibility	Estimated Costs	Recommendations	Implementation / Phasing Strategy
Signal Timing Modification	Main Street West & Paisley Avenue	5	Review Signal Clearance	Overall clearance times are sufficient but Flash Don't Walk should be changed from 15 secs to 17 seconds.								Short Term (1-3 Years)
	King Street West and Dalewood Avenue / Dalewood Crescent	4	Signal Is Currently Pre-Timed. Actuation for The North Approach Is Recommended									Short Term (1-3 Years)
	King Street West and Macklin Street	15	Review Signal Clearance	Clearance Times are Sufficient. Signal Timing is Optimized in its Current State.								No Action (Compliance Check)
Implement Signage	University Avenue and Forsyth Avenue South	8	Add Signage to Make It More Obvious That Pedestrians Have The ROW									Short Term (1-3 Years)
	Arnold Street and Dalewood Avenue	9	Implement "Vehicles Yield to Pedestrians" Sign on North Approach.									
	King Street West and Paisley Avenue	12	"Yield to Pedestrian" Signage for WB Traffic in The Right Lane (Turning Right onto Paisley Ave)									

Type of Improvement	Location	Location ID	Details	Change in Traffic Level of Service	Supportiveness of other Transportation Modes	Efficiency of Use of Existing Infrastructure	Safety	Compatibility with City Plans	Implementation Feasibility	Estimated Costs	Recommendations	Implementation / Phasing Strategy
	King Street West and Marion Avenue	13	Add Signage to Direct Pedestrians to North Leg Pedestrian Crossing of Intersection									
	King Street West and Haddon Avenue	11	Add Signage Indicating That Peds Do Not Have ROW for Crossing King St									
	King Street West and Paradise Road ¹	14	Add Signage to Indicate That Pedestrians Must Wait for A Gap in Traffic To Safely Cross At Designated Locations									
	King Street West and Macklin Street	15	Add Signage Indicating Which Lanes Exit to Main St And Which Lane Continues on King St									
Add Pavement Markings	King Street West and Paradise Road ¹	14	Add Zebra Striping Where Pedestrians Should Cross to Increase Pedestrian Visibility / Driver Awareness									Short Term (1-3 Years) Funding can be Allocated from "Minor Rehab" in City's Budget for 2019-2027
	Arnold Street and Dalewood Avenue	9	For Consistency, Add Zebra Striping to North Cross Walk									Short Term (1-3 Years) Funding can be Allocated from "Minor Rehab" in

Type of Improvement	Location	Location ID	Details	Change in Traffic Level of Service	Supportiveness of other Transportation Modes	Efficiency of Use of Existing Infrastructure	Safety	Compatibility with City Plans	Implementation Feasibility	Estimated Costs	Recommendations	Implementation / Phasing Strategy
	King Street West and Paisley Avenue	12	Add Zebra Striping for Both E-W Crossings to Increase Visibility									City's Budget for 2019-2028 -
	King Street West and Haddon Avenue	11	For Consistency, Add Zebra Striping to East Cross Walk									
	Longwood Road North and Franklin Avenue	17	Add Pedestrian Crossing Treatment (I.E. Zebra Striping) For Crossing Franklin Ave									
	Longwood Road North and Glen Road	16	For Consistency, Add Zebra Striping to East Cross Walk									
	Paradise Road North and Franklin Avenue (Stop Compliance Issues Included in Terms of Reference)	18	Add Zebra Striping on All Approaches to Further Indicate That the Intersection Is Stop Controlled									
All-Way Stop Control (See Completed Warrants)	Arnold Street and Dalewood Avenue	9	All-Way Stop Control Warrant - Not Warranted According to Hamilton Policy									-
	Longwood Road North and Franklin Avenue (Identified in Terms of Reference)	17										

Type of Improvement	Location	Location ID	Details	Change in Traffic Level of Service	Supportiveness of other Transportation Modes	Efficiency of Use of Existing Infrastructure	Safety	Compatibility with City Plans	Implementation Feasibility	Estimated Costs	Recommendations	Implementation / Phasing Strategy
	King Street West and Haddon Avenue (Identified in Terms of Reference)	11										
	Longwood Road North and Glen Road	16										
	Paradise Road North and Glen Road	-		AWSC Request from Councillor / Stakeholder Groups								
Signal Warrant	King Street West and Dalewood Avenue / Dalewood Crescent	10	Currently Signalized	Currently Signalized. According to the Signal Warrant as Noted in OTM Book 12, as Signal is still Required.								
General	All	-	General Request to Consider Lowering Speed Limits Through the Neighbourhood									Short Term (1-3 Years)
Introduce Speed Monitoring System	Longwood Road	21	Speed Indication Display (And Consider Camera Enforcement)									
Install Higher Order Pedestrian Treatment	Main Street West and Cootes Drive ²	1	WBR Crossing Combine Two Pedestrian Crossing Areas and Implement PXO Type C.									

Type of Improvement	Location	Location ID	Details	Change in Traffic Level of Service	Supportiveness of other Transportation Modes	Efficiency of Use of Existing Infrastructure	Safety	Compatibility with City Plans	Implementation Feasibility	Estimated Costs	Recommendations	Implementation / Phasing Strategy		
	University Avenue and Forsyth Avenue South (and Bowman Street)	8	Improve the Mid-Block Crossing Treatment at University Ave/ Forsyth Ave											
Raised Intersection	King Street West and Haddon Avenue	11	-											
	Longwood Road North and Franklin Avenue	17												
Curb Bump-outs	Longwood Road North and Franklin Avenue	17	South East and South West Quadrants										Medium Term (3-5 Years)	
	Oakwood Place and Sterling Street	29	North West Quadrant											Short Term (1-3 Years)
	Whitton Road and Sterling Street	30	North East and West Quadrants											
	Dalewood Crescent and Sterling Street	10												
	Dromore Crescent & Sterling Street	31												
	Haddon Avenue & Sterling Street	11												

Type of Improvement	Location	Location ID	Details	Change in Traffic Level of Service	Supportiveness of other Transportation Modes	Efficiency of Use of Existing Infrastructure	Safety	Compatibility with City Plans	Implementation Feasibility	Estimated Costs	Recommendations	Implementation / Phasing Strategy
	Cline Avenue & Sterling Street	32	North West and South East Quadrants									
	Paisley Avenue North & Dalewood Crescent	33										
	Paisley Avenue North & Dromore Crescent	34										
	Paisley Avenue North & Haddon Avenue North	35										
	Paisley Avenue North & Cline Avenue North	36										
	Paisley Avenue North & North Oval	37										
	Marion Avenue & Cline Avenue North	38		North East Quadrants								
	Marion Avenue & North Oval	39	North West and South East Quadrants									
	Physical Chicanes	Longwood Road	21	Traffic Calming Measure								
General		-										

Type of Improvement	Location	Location ID	Details	Change in Traffic Level of Service	Supportiveness of other Transportation Modes	Efficiency of Use of Existing Infrastructure	Safety	Compatibility with City Plans	Implementation Feasibility	Estimated Costs	Recommendations	Implementation / Phasing Strategy	
Speed Cushions	Longwood Road	21											
	Paradise Road North & Franklin Avenue	18	Traffic Calming Measure										
	Forsyth Drive	20	Traffic Calming Measure										
	Dalewood Crescent	40	Traffic Calming Measure. Two Cushions Between Sterling Street and Paisley Avenue North.										
	Whitton Road	41	Traffic Calming Measure. Two Cushions Between King Street West and Sterling Street.										
	Cline Avenue North	25	Traffic Calming Measure. One Cushion Between Marion Avenue North and King Street West.										
Street Narrowing	General	-										-	
Flexible Bollards	Longwood Road	21	Traffic Calming Measure										Short Term (1-3 Years)
	Forsyth Drive	20											
Pavement Re-surfacing	General	-	Throughout Neighbourhood										

Type of Improvement	Location	Location ID	Details	Change in Traffic Level of Service	Supportiveness of other Transportation Modes	Efficiency of Use of Existing Infrastructure	Safety	Compatibility with City Plans	Implementation Feasibility	Estimated Costs	Recommendations	Implementation / Phasing Strategy
New Intersection Configuration	King Street West & Paradise Road	14	Change Intersection Configuration for Cyclist Safety									Long Term (> Years)
Signal Timing Modification	Main Street West & Cootes Drive ³	1	-	Signals are already optimized along Main St. Not feasible to improve timing if LRT will change all timings in the near future.								-
	Main Street West & Emerson Street	2	-	Signals are already optimized along Main St. Not feasible to improve timing if LRT will change all timings in the near future.								
	Main Street West & Dalewood Avenue	4	-	Signals are already optimized along Main St. Not feasible to improve timing if LRT will change all timings in the near future.								
Implement Signage	Main Street West & Emerson Street	2	Add Signage for Pedestrians to Wait for A Gap to Cross the Channelized WBR									Short Term (1-3 Years)
	Main Street West & Dalewood Avenue	4	Match Signage with Pavement Markings (Lane Movements Do Not Match)									
	Main Street West & Longwood Road South	6	Add Signage Indicating Busses Stop Ahead in EB Direction West of The Intersection									
	Main Street West & Paisley Avenue South	5	Add Yield to Pedestrian Signage for Left Turning Vehicles from Paisley Ave									

Type of Improvement	Location	Location ID	Details	Change in Traffic Level of Service	Supportiveness of other Transportation Modes	Efficiency of Use of Existing Infrastructure	Safety	Compatibility with City Plans	Implementation Feasibility	Estimated Costs	Recommendations	Implementation / Phasing Strategy
	University & Forsyth	8	Add Signage to Make It More Obvious That Pedestrians Have The ROW								- Already complete	
Add Pavement Markings	Main Street West & Dalewood Avenue	4	Match Pavement Markings with Signage For Which Lanes Are For Which Movements									Short Term (1-3 Years)
	Main Street West & Emerson Street	2	Increase Visibility of Crossing (I.E. Zebra Striping)									
Add Crosswalk Markings	Main Street West & Bowman Street	3										
Alter Lane Designation	Main Street West & Cootes Drive	1	Convert EB Shared Through/Left Lane to A Dedicated Left Lane On Main Street West									Long Term (>5 Years)
Decrease Speed Limit	Main Street West	19	Decrease Speed Limit From 60 km/H To 50km/H									
Pedestrian Barriers	Main Street West & Dalewood Avenue	4	To Dissuade Pedestrians from Walking On The Centre Median									Short Term (1-3 Years)
Roadside Lighting	Main Street West & Emerson Street	2	Add Luminaire on Median Near Intersection									Long Term (>5 Years)
	King Street West & Paradise Road N/S	14	Improve Street Lighting on The East Side									

Type of Improvement	Location	Location ID	Details	Change in Traffic Level of Service	Supportiveness of other Transportation Modes	Efficiency of Use of Existing Infrastructure	Safety	Compatibility with City Plans	Implementation Feasibility	Estimated Costs	Recommendations	Implementation / Phasing Strategy
Turn Prohibitions	Main Street West and Paisley Avenue South	5	Prohibit Vehicles from Making Through Movement In The Right Lane (Buses Excepted)									Short Term (1-3 Years)
New Intersection Configuration	Main Street West and Macklin Street South	7	Intersection Will Be Reconfigured During LRT Implementation. LT Signal from Paradise onto Main West									Long Term (>5 Years)
Cycling Network	King Street West between Haddon Avenue and Cline Avenue	26	Extend Cycling Lane at This Section to Improve Cycling Network Connectivity									
Reduce Curb Radius	Sterling Street at Oakwood Place	29	Reduce Curb Radius in Northeast Corner of The Intersection									Short Term (1-3 Years)
	Sterling Street at Whitton Avenue	30	Reduce Curb Radius in Southwest Corner of The Intersection									
	Sterling Street at Dromore Crescent	31										

Recommendations: Carried Forward: Screened Out:

Notes:

- 1 – This location will be getting two Type D PXOs on the channels and Type B PXO on the north side.
- 2 – Type D currently exists but will be replaced with Type C.
- 3 – During study lifecycle, EBL protected phase was added at Main Street West & Cootes Drive intersection.

6.0 Preliminary Cost Estimate / Phasing and Implementation Plan

As there are many combinations of requested and / or potential improvements to address the deficiencies, an implementation plan was developed to identify the timing and phasing of implementing these improvement (short, medium and long-term solutions). The timeframe for implementation was established based on a number of factors including; capital budget, complexity of solutions, coordination efforts and neighbourhood consultation.

Table 6-9: Summary of Phasing and Costing for Each Improvement

Improvement	Costing	Phasing
All-Way Stop Control	<\$25,000	1 - 3 years
Bump Outs	\$25,000-\$50,000	3 - 5 years
Chicanes	\$25,000-\$100,000	3 - 5 years
Flexible Bollards	<\$25,000	1 - 3 years
Higher Order Pedestrian Treatment	\$25,000-\$100,000	3 - 5 years
Intersection Configuration	>\$100,000	>5 years
Lane / Direction Signage	<\$25,000	1 - 3 years
Pavement Markings	<\$25,000	1 - 3 years
Pedestrian Crossover	\$25,000-\$100,000	3 - 5 years
Pedestrian Signage	<\$25,000	1 - 3 years
Raised Intersections	>\$100,000	>5 years
Reduce Speed Limit	<\$25,000	1 - 3 years
Signal Timing Modifications	<\$25,000	1 - 3 years
Speed Cushions	<\$25,000	1 - 3 years
Speed Monitoring System	<\$25,000	1 - 3 years

7.0 Conclusion

7.1 Transportation Master Plan Recommendations

The Hamilton Transportation Master Plan review and update was endorsed by the City Council in August 2018, which occurred during the life cycle of this study. As such, several updates and recommendations were put forth in the 2018 TMP that may not have been covered in this study, but that should be considered. These include (but are not limited to):

- Planned bike lanes on Longwood Road South (Main Street to Aberdeen Avenue)
- Planned signed bike route on Marion Avenue North (North of King Street) and Macklin Street South from Main Street to King Street

7.2 Next Steps

The Westdale Neighbourhood Traffic Management Review Study follows Approach #2 of the Municipal Class EA process which fulfills the requirements of Schedule A+, A and B projects. Projects that fall within the A+ and A classifications are pre-approved through this document, while Schedule B projects require contract documents and the monitoring of the construction project. The reconfiguration of the King Street / Paradise Road North intersection is a Schedule B project from this Study.

Following the mandatory 30-day public review period, all comments will be addressed, and the Study will be formally filed with the Ministry of Environment, Conservation and Parks.

After Approval of the NTMR, budget will need to be allocated by Council (or Staff) for each of the recommendations of the Report. Given that the recommendations are primarily Schedule A+ and A type improvements, there is also the potential to include these recommendations into already approved and scheduled neighbourhood projects as no additional approvals or studies are required for implementation.

Should any of these recommendations be considered for implementation, they will be subject to further traffic engineering review and design prior to construction / implementation by the City.

Appendix A

Public and Agency Consultation



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Appendix B
Public Information Summary #1 Report





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Appendix C

Public Information Summary #2 Report





Appendix D
Planning Context Report



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Appendix E
Evaluation of Alternatives Memo





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Appendix F
Existing Conditions Report



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Appendix G
Future Conditions Report



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Limitations



Limitations

1. The work performed in the preparation of this report and the conclusions presented are subject to the following:
 - a. The Standard Terms and Conditions which form a part of our Professional Services Contract;
 - b. The Scope of Services;
 - c. Time and Budgetary limitations as described in our Contract; and
 - d. The Limitations stated herein.
2. No other warranties or representations, either expressed or implied, are made as to the professional services provided under the terms of our Contract, or the conclusions presented.
3. The conclusions presented in this report were based, in part, on visual observations of the Site and attendant structures. Our conclusions cannot and are not extended to include those portions of the Site or structures, which are not reasonably available, in Wood's opinion, for direct observation.
4. The environmental conditions at the Site were assessed, within the limitations set out above, having due regard for applicable environmental regulations as of the date of the inspection. A review of compliance by past owners or occupants of the Site with any applicable local, provincial or federal bylaws, orders-in-council, legislative enactments and regulations was not performed.
5. The Site history research included obtaining information from third parties and employees or agents of the owner. No attempt has been made to verify the accuracy of any information provided, unless specifically noted in our report.
6. Where testing was performed, it was carried out in accordance with the terms of our contract providing for testing. Other substances, or different quantities of substances testing for, may be present on-site and may be revealed by different or other testing not provided for in our contract.
7. Because of the limitations referred to above, different environmental conditions from those stated in our report may exist. Should such different conditions be encountered, Wood must be notified in order that it may determine if modifications to the conclusions in the report are necessary.
8. The utilization of Wood's services during the implementation of any remedial measures will allow Wood to observe compliance with the conclusions and recommendations contained in the report. Wood's involvement will also allow for changes to be made as necessary to suit field conditions as they are encountered.
9. This report is for the sole use of the party to whom it is addressed unless expressly stated otherwise in the report or contract. Any use which any third party makes of the report, in whole or the part, or any reliance thereon or decisions made based on any information or conclusions in the report is the sole responsibility of such third party. Wood accepts no responsibility whatsoever for damages or loss of any nature or kind suffered by any such third party as a result of actions taken or not taken or decisions made in reliance on the report or anything set out therein.
10. This report is not to be given over to any third party for any purpose whatsoever without the written permission of Wood.
11. Provided that the report is still reliable, and less than 12 months old, Wood will issue a third-party reliance letter to parties that the client identifies in writing, upon payment of the then current fee for such letters. All third parties relying on Wood's report, by such reliance agree to be bound by our proposal and Wood's standard reliance letter. Wood's standard reliance letter indicates that in no event shall Wood be liable for any damages, howsoever arising, relating to third-party reliance on Wood's report. No reliance by any party is permitted without such agreement.