Community Planning, Regulation and Mobility Committee Meeting
Agenda

Date: October 31, 2023
Time: 9:30 a.m. and 6:30 p.m. (if required)
Location: Hybrid meeting- virtual and Council Chambers, City Hall

Contact: Committee Clerk, Jo-Anne.rudy@burlington.ca, 905-335-7600, x7413

Pages

1. **Declarations of Interest:**

2. **Statutory Public Meetings:**

   Statutory public meetings are held to present planning applications in a public forum as required by the Planning Act.

   2.1 Proposed Major Transit Station Area (MTSA) Official Plan Amendment and Draft Community Planning Permit (CPP) By-law public release (PL-59-23) — 1 - 521

   Note: Appendices A to D can be accessed at events.burlington.ca

   Direct the Director of Community Planning to consider Council, agency, development partner and community feedback received as part of this statutory public meeting, prior to bringing forward a subsequent staff report recommending adoption of Official Pan Amendment No. 2 and Community Planning Permit By-law in December 2023; and

   Receive and file the technical documents completed as of October 31, 2023 (Appendices C-D) as follows:

   - Transportation Assessment (September, 2023), as prepared by Dillon Consulting, and contained in Appendix C of community planning department report PL-59-23;
   - Functional Servicing Study (July, 2023), as prepared by WSP, and contained in Appendix D of community planning department report PL-59-23.

3. **Delegation(s):**

   Standing committee and City Council meetings are held using a hybrid model,

allowing members of Council, city staff and the public the option of participating remotely or in-person at city hall, 426 Brant St.

Requests to delegate to this hybrid meeting can be made by completing the online delegation registration form at www.burlington.ca/delegate, by submitting a written request by email to the Office of the City Clerk at clerks@burlington.ca or by phoning 905-335-7600, ext. 7481 by noon the business day before the meeting is to be held. It is recommended that virtual delegates include their intended remarks, which will be circulated to all members in advance, as a backup to any disruptions in technology issues that may occur.

If you do not wish to delegate, but would like to submit correspondence, please email your comments to clerks@burlington.ca. Any delegation notes and comments will be circulated to members in advance of the meeting and will be attached to the minutes, forming part of the public record.

4. Consent Items:

Reports of a routine nature, which are not expected to require discussion and/or debate. Staff may not be in attendance to respond to queries on items contained in the Consent Agenda.

5. Regular Items:

5.1 Integrated Mobility Plan final report (TS-07-23) 522 - 810

Note: Appendix A can be accessed at events.burlington.ca

Direct the Director of Transportation Services or designate to file a Notice of Completion for the Master Plan; and

Approve the Preferred Integrated Network identified in Section of 6.4 (Figure 6-7) of the Integrated Mobility Plan, listed as Appendix A in transportation services department report TS-07-23; and

Approve the Policy Framework identified in Section 7.0 of the Integrated Mobility Plan, listed as Appendix A in transportation services department report TS-07-23; and

Approve the Program Framework identified in Section 8.0 of the Integrated Mobility Plan, listed as Appendix A in transportation services department report TS-07-23.

5.2 Transit ridership data and preliminary analysis (TR-03-23) 811 - 823

Receive and file transit department report TR-03-23 providing information/data on ridership regarding seniors, youth and SPLIT Pass

as well as estimated costs and implementation matters that would need to be considered for future discussions around free transit for youth all day, every day.

5.3 Heritage response to Bill 23 - shortlist of designation candidates (PL-35-23) 824 - 854

Direct the Director of Community Planning to retain a consultant to assess the eligibility of the following properties for potential heritage designation under Part IV of the Ontario Heritage Act, consult the Heritage Burlington Advisory Committee, and report back to Council with statements explaining the cultural heritage value or interest of qualifying properties prior to January 1, 2025:

1. 461 Elizabeth Street
2. 451 Elizabeth Street
3. 2137 Lakeshore Road
4. 472 Locust Street
5. 482 Elizabeth Street
6. 451 Nelson Avenue
7. 518 Hager Avenue
8. 562 Maple Avenue
9. 1406 Ontario Street
10. 1419 Ontario Street
11. 458 Elizabeth Street
12. 490 Elizabeth Street
13. 2464 Dundas Street
14. 2003 Lakeshore Road
15. 390 John Street
16. 2437 Dundas Street
17. 368 Brant Street
18. 550 Hurd Avenue
19. 2280 No. 2 Side Road
20. 6414 Walker’s Line
21. 367 Torrance Street
22. 1433 Baldwin Street
23. 380 Brant Street; and

Approve an upset limit of $125,000 for the study, funded from the Tax Rate Stabilization Reserve Fund; and

Direct the Director of Community Planning to assess the eligibility of the following properties for potential heritage designation under Part IV of the Ontario Heritage Act, consult the Heritage Burlington Advisory Committee, and report back to Council with statements explaining the

cultural heritage value or interest of qualifying properties prior to January 1, 2025:

24. 400 Brant Street
25. 2066 Kilbride Street.

5.4 Red Tape Red Carpet recommendations 2023 (ECDEV-05-23) 855 - 882

Receive and file Burlington Economic Development report ECDEV-05-23 regarding Red Tape Red Carpet (RTRC) recommendations and associated appendices; and

Direct the Executive Director of Burlington Economic Development, Executive Director of Community Planning Regulation and Mobility and Executive Director of Community Relations and Engagement to report back on the implementation plan in Q2 2024.

6. Confidential Items and Closed Session:

Confidential reports may require a closed meeting in accordance with the Municipal Act, 2001. Meeting attendees may be required to leave during the discussion.

Move into closed session in accordance with the following provision under the Muncipal Act:

7. Rise and Report:

8. Procedural Motions:

9. Information Items:

10. Staff Remarks:

11. Committee Remarks:

12. Adjournment:

SUBJECT: Proposed Major Transit Station Area (MTSA) Official Plan Amendment and Draft Community Planning Permit (CPP) By-law Public Release and Statutory Public Meeting

TO: Community Planning, Regulation & Mobility Cttee.

FROM: Community Planning Department

Report Number: PL-59-23

Wards Affected: 1, 2, 4, 5

Date to Committee: October 31, 2023

Date to Council: November 14, 2023

Recommendation:

Direct the Director of Community Planning to consider Council, agency, development partner and community feedback received as part of this statutory public meeting, prior to bringing forward a subsequent staff report recommending adoption of Official Pan Amendment No. 2 and Community Planning Permit By-law in December 2023; and

Receive and file the technical documents completed as of October 31, 2023 (Appendices C-D) as follows:

-Transportation Assessment (September, 2023), as prepared by Dillon Consulting, and contained in Appendix C of community planning department report PL-59-23;

-Functional Servicing Study (July, 2023), as prepared by WSP, and contained in Appendix D of community planning department report PL-59-23.

PURPOSE:

The purpose of this report is to:

1. Release the proposed draft Official Plan Amendment No 2 (Appendix A) and draft Community Planning Permit By-law (Appendix B) for community and Council consideration;
2. Highlight the elements of the proposed Draft Plan Amendment and Draft Community Planning Permit By-law, including consideration of staff direction SD-20-22;
3. Transmit a number of technical studies and elements;

4. Transmit a summary of recent engagement and notice; and
5. Outline next steps to the recommendation for adoption of the proposed Official Plan Amendment and CPPS By-law.
6. Provide an update on the lands formerly located within the MTSA Special Planning Area prior to the delineation of the MTSA Boundaries through ROPA 48.

Vision to Focus Alignment:

- Increase economic prosperity and community responsive city growth
- Improve integrated city mobility
- Support sustainable infrastructure and a resilient environment

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Background and Discussion:

On July 5, 2022, staff presented report PL-10-22, Major Transit Station Areas- Area Specific Plans Planning Study Update. The report outlined the MTSA ASP process and presented the findings of the MTSA ASP Planning Study Final report. As a result of Committee discussion around staff report PL-10-22, the following staff direction was provided:

> Direct the Director of Community Planning to re-examine the Burlington GO Central Precinct with respect to requirements related to achieving maximum height permissions on a given site, alongside the provision of community amenities, affordable housing and community facilities commensurate with those maximum height permissions and the supporting policies and policy directions (SD-20-22).

In addition to the staff direction, Council identified the issue of transitions from areas inside the MTSA to existing low-rise residential areas outside of the MTSA which staff committed to exploring further.

Following the July 2022 Council direction, staff explored the availability of innovative tools available to municipalities that would focus on securing the essential elements needed to achieve complete community objectives while permitting maximum height permissions with the delivery of facilities, services and matters proportional or commensurate with height permissions.

On June 27, 2023, staff presented report PL-40-23, MTSA Update and CPPS Exploration. PL-40-23 provided an update on the project, transmitted newly completed technical studies and introduced the Community Planning Permit System as a tool to achieve the City's vision for the MTSAs as well as to permit the maximum heights provided both the demonstration of contribution to achieving complete communities and

the demonstration of appropriate transitions to low rise areas outside of the MTSAs. Also, through community planning department report PL-40-23, Council directed staff to prepare a draft Community Planning Permit By-law for consultation in the Fall of 2023 at the same time as the release of draft Official Plan policies. As outlined below, the draft CPP By-law has established a framework for the provision of services, facilities and matters commensurate with the permissions for height and density as well as established a series of development standards to ensure that development delivers a variety of community amenities and transitions appropriately to existing low rise areas outside of the MTSAs. Staff acknowledges that the above-noted provisions will be subject to feedback through this process, however the framework has been drafted to address Council's July 2022 direction.

Staff have worked over the course of the summer to prepare a proposed Official Plan Amendment (OPA) and draft Community Planning Permit (CPP) By-law for all three of Burlington's MTSAs. Collectively, these documents satisfy the Region's requirements for area-specific planning through establishing the vision, objectives, policies, and implementation framework to encourage the redevelopment of the Protected Major Transit Station Areas into complete communities that are mixed-use, intense, transit supportive, safe, and respectful of surrounding areas including natural heritage and existing neighbourhoods.

The proposed OPA and draft CPP By-law are being released for the purposes of engagement with Council, the community and the City's development and agency partners. Staff have made deliberate efforts to approach both documents differently in recognition of the need to ensure that the city can facilitate the creation of more housing and more diverse housing options in these key areas of the city.

The proposed OPA and draft CPP by-law are intended to be read together. It is important to note that neither document is in its final state and feedback received on these documents through this statutory engagement period will be used to refine them prior to a recommendation report to Council for approval and/or adoption.

Proposed Official Plan Amendment (OPA) No. 2

In 2020, the Burlington Official Plan was approved by Halton Region that established the community's vision for growth through an Urban Structure and Growth Framework to accommodate growth through a hierarchy of land uses and identified the City's three MTSA as the priority locations to accommodate that growth. While the majority of the Burlington Official Plan, 2020 was appealed to the Ontario Land Tribunal (OLT), the OLT issued a decision on January 4, 2023, confirming that portions of the plan are in effect and therefore may be amended in accordance with the Planning Act.

Through community planning department report PL-45-23: Burlington Official Plan, 2020 Targeted Realignment Exercise-Initial Work Plan, staff provided an approach to

advance the appealed portions of the Burlington Official Plan, as well as address the ongoing change to Ontario's land use planning framework. The Terms of Reference for the MTSA ASP Planning Study included a separate deliverable related to assessing lands that had been identified as "MTSA Special Planning Area" in the Official Plan 2020 at the time of Council adoption but were removed through the delineation of the MTSA Boundaries in ROPA 48. The assessment was intended to determine if the underlying Official Plan designations remained appropriate or if changes should be made through re-designations of these non-MTSA areas. These impacted lands are east of what is now the Aldershot GO MTSA. Working with Dillon Consulting, staff has done an initial review of the underlying designations, however, given the on-going appeals to the Official Plan 2020, as well as the Targeted Re-alignment process, currently under way, staff is referring this component of the project to be reviewed through the Targeted Re-Alignment Process where it can be properly re-assessed in the context of broader city growth objectives.

Draft Official Plan Amendment No. 2, as found in Appendix A, is one of the first elements of the targeted re-alignment exercise to advance a policy framework for the implementation of the MTSA ASP project.

In light of the Council direction through report PL-40-23 to pursue a Community Planning Permit system, staff have been working over the summer to prepare an updated Draft OPA that includes the policies required to enable a CPPS. The proposed OPA has been written to account for any necessary study or other implementation requirements stemming from planning analysis or the technical studies.

The proposed OPA establishes a policy framework to encourage re-development of the MTSAs into mixed-use, intense, transit supportive, safe, communities that are respectful of surrounding areas including natural heritage and existing neighbourhoods.

The proposed OPA, replaces the MTSA policies (largely found within Chapter 8, subsection 8.1.2) in the Burlington Official Plan, 2020 which were developed at a time when the Region of Halton's Municipal Comprehensive Review was still underway. The existing policies acknowledged that the Regional policy framework, including the delineation of the MTSAs had not yet been developed and set out in subsections 2.2.3 d) iv) and in 2.3.1 h) that the final delineation of Major Transit Station Area (MTSA) boundaries and minimum density targets will be established by the Region of Halton through the municipal comprehensive review in keeping with the policies of the Provincial Growth Plan. Beyond the replacement of the policies largely contained in subsection 8.1.2, the proposed OPA relies broadly on the Official Plan, 2020 with minimal proposed modifications except where necessary to operationalize, establish and implement the MTSAs or to establish the CPPS.

The OPA as proposed, provides only the core policies required to establish the MTSA as Protected MTSAs and the necessary policies to enable the functional development of these areas, particularly as it relates to infrastructure and a public realm and sets the

foundational policy framework for a public realm that can be regulated through the Community Planning Permit System. The OPA establishes the broad parameters for development in the MTSAs including the boundaries of the MTSA, minimum density targets and proportional target mix of people and jobs as well as authorized uses of land in each MTSA and minimum floor area ratios.

OPA No. 2 was also written to support growth and intensification in the MTSA areas through its broad and flexible nature and is intended to serve as the foundation for the more detailed Community Planning Permit System By-law which will guide development in these key intensification areas. As such, things like maximum heights and maximum densities are not established in the proposed OPA but rather regulated through the Community Planning Permit By-law.

Draft Community Planning Permit By-law

Community planning department report PL-40-23 provided an exploration of the use of the CPPS tool to help to achieve the city's objectives in MTSAs. In particular, the tool was identified as being of benefit as it would use the more than seven years of public engagement on the MTSAs/Mobility Hubs to form the vision and establish a new regulatory structure. Engagement now on the CPPS with Council, the City's development partners, and the community is of great importance to ensure that the framework is reflective of the collective vision, before it is set in the CPP By-law.

Since Council's approval of the direction to prepare a draft CPP By-law for engagement, staff have worked with Dillon Consulting to prepare the draft contained in Appendix B. The Draft CPP By-law provides the regulatory framework which will replace Zoning By-law 2020 within the geographic area of the MTSAs. The creation of the CPPS has the effect of requiring technical modifications to a number of other by-laws and city processes, including the Delegated Authority By-law, Site Plan Control By-law, Community Benefits Charge By-law, among others. The Draft CPP By-law operates using a broadened definition of development to include a number of processes into a single application review process to streamline development approvals and provide greater transparency and certainty. The Draft CPP By-law regulates the permitted and discretionary uses of land as well as the standards of development applicable to those uses. The Draft CPP By-law has deliberately been written to establish development standards which focus on the elements that, in staff's opinion warrant regulating, especially in an intensification context.

The draft CPP By-law is structured as follows:

- The **Introduction** Section (Section1) sets out the community vision and goals for the MTSA.
- The **Definitions** Section (Section 2) provides definitions for terms that are used throughout the bylaw for ease of interpretation and implementation.

- The **Administration** Section (Section 3) outlines the operation and administration of the by-law including listing of exemptions, establishing permit classes and the framework for approvals and performance standards.
- The **Other Administrative Matters** Section (Section 4) contains transitional provisions to addresses development application in various process stages at the time of passing the by-law, regulations by-law amendments and the criteria in which an amendment would be considered in light of the *Planning Act* limit that an amendment to the by-law cannot be made before 5 years, except by Council resolution.
- The **General Provisions** Section (Section 5) sets out the provisions and regulations that apply to all classes of development as well as provides for specific use permissions related to additional residential units, outdoor patios and day care centers, among others. This section also includes provisions related to transportation, parking, parking design including aisles and spaces, land use compatibility, public realm and the provision of services, facilities and matters among other things.
- The **MTSA Permit Area Provisions** Sections (Sections 6-8) sets out the permitted and discretionary uses and standards for each precinct in the MTSA and the variation thresholds that apply.
- The **Site-Specific Provisions** Section (Section 9) includes the **site-specific provisions** that are specific provisions and regulations being carried into the By-law from Zoning By-law 2020.
- The **Schedules and Appendices** Sections (Sections 10 & 11) include the mapping, conditions of approval, Conservation Halton regulatory mapping, affordability threshold values and previous holding provisions. It is important to note that the schedules are part of the By-law, whereas the appendices are supporting and do not form part of the by-law.

The draft CPP by-law establishes three classes of development permits, each with different approval requirements. The purpose of these classes is to reduce the need for Council time dealing with development applications that meet the intent of Council approved polices and maximizes staff delegation, within set parameters and subject to approved criteria for the assessment of variations. All of this is intended to facilitate the expedited timelines and approvals.

Class 1 permit applications meet all development standards. As they meet the rules established by the planning documents adopted by Council, processing these permits does not require deliberation of the merit of the application and permits can be approved by staff. The development standards and provisions contained in Sections 5-

8 and through Schedules B-2, C-2 and D-2 represent the Class 1 height maximums and development standards and provisions. Section 5.29 establishes the base expectations related to the provision of Services, Facilities and Matters for Class 1 applications.

Class 2 permit applications are those that require a variation to the development standards, that may be delegated to staff for review against established and Council approved criteria and approval. Staff's approval threshold is dependent on the standard being varied (as set out in Sections 5 –8 in accordance with the By-law). With respect to heights, Schedules B-3, C-3, and D-3 represent the maximums related to height that staff can approve. As in a Class 1 application the provision of services, facilities and matters in accordance with Section 5.29 is required, which includes providing additional contributions proportionate to the additional height and density provided by the application.

Class 3 permit applications are those that seek approvals beyond the Class 2 thresholds contemplated by Schedules B-3, C-3 and D-3 and would require Committee or Council Approval. At present there is no threshold established in the CPP By-law on the variations for height that can be contemplated by Council and the development standards identified in Section 5 are subject to the provisions of the By-law and development standards in Sections 6-8 can be varied up to 100%. All Class 3 applications are intended to include the provision of Services, Facilities and Matters proportionate to the height and density of the application.

Anything outside of a Class 3 variation (i.e., the introduction of a use not contemplated or permitted in the by-law) would require an amendment to the CPP By-law, which would be a public process.

To support a streamlined development review processes and encourage the redevelopment of the MTSAs, the Draft CPP By-law includes a focused set of development standards. This amounts to less regulation than is found at present in the Zoning By-law 2020. The purpose of the reduction is to reduce the time spent reviewing the site for compliance and focus more on the critical components of the plan to ensure the development performs and can function appropriately in an intensification context. This review is supported by the submission of technical studies, as appropriate, to ensure things like servicing, land use compatibility and transportation concerns are adequately addressed at the site level.

The draft CPP By-law utilizes an expanded definition of development to incorporate a number of review processes into a single, flexible and streamlined process with a 45-day turnaround. The draft CPP By-law is intended to, when approved, replace Zoning By-law 2020 in only the MTSAs and provide the necessary regulatory framework that will enable development in line with the vision as established by the City through OPA No. 2 and the Goals, Objectives and Guiding Principles of the By-law.

The draft By-law has been deliberately written to include a more focused set of development standards than a typical zoning by-law and identifies where a use may be

permitted in the fullness of time, but where further study would be required to ensure that use could be permitted.

It is important to note that the Draft CPP By-law has been informed by on-going dialogue with Council, agency and public feedback as well as input from our development industry partners as outlined in the Engagement Matters section of this report, including through the circulation of components of a preliminary draft CPP by-law on a confidential and without prejudice basis. Staff has continued to engage in discussions with the planning and development industry and anticipate numerous changes to the draft CPP By-law as a result of Council, agency and public feedback received through the Statutory process this fall.

Technical Studies

Since June 2023, staff have completed several further technical studies supporting the Area Specific Plans as follows:

Study Name	**Status**	**Impact to ASPs/Draft OP Policies**	**Appendix Location**
Functional Servicing Study	Completed by WSP (Formerly Wood) July 2023 (draft)	The Functional Servicing Study (FSS) was completed through the Mobility Hubs Study and updated following the 2019 pause of the study. The FSS informed the creation of policies and will further inform CPP/Zoning By-law regulations.	Appendix D to PL-59-23
Transportation Assessment	Completed by Dillon September 2023 (draft)	The Transportation Assessment informed the development of policies as well as mapping and schedules for the MTSAs	Appendix C to PL-59-23
Fiscal Impact Study	Underway Dillon Estimated Completion Fall 2023	The Fiscal Impact Study is intended to be an informative study, completed following the completion of the Official Plan policies and informed by the other technical studies	N/A

Given the evolution of the planning framework in Ontario, including the changing role of Halton Region and the sequencing of the MTSA technical work with ongoing and future

studies and processes, a number of items of further study have been identified out of the technical work:

- The Land Use Compatibility report recommended a study/approach to the use of Class 4 noise designation to approve alternate noise targets.
- Transportation Study recommended the need to complete a Traffic Impact Study to accommodate development applications to examine the impact of the development on the existing and planned multi-modal transportation network as well as a monitoring exercise of the parking standards implemented through the Community Planning Permit System to ensure that the parking standards are effectively satisfying market demands and meeting the objectives of the Area Specific Plan.
- Functional Servicing Report recommended that additional modeling is necessary from a broader system perspective to determine broad Regional Water and Wastewater servicing capacity to align with the Region's Infrastructure Master Planning process.
- Further assessment of the impacts of the City's Housing Pledge, Minister's decision of ROPA 49 and the Region's Joint Best Planning Estimates exercise.

The Transportation Assessment and Functional Servicing Study remain under review by the Region and are subject to approval and modification. Staff will continue to work with the Region to finalize the review of these technical studies and note that changes to the proposed OPA or draft CPP By-law including conditions of approval, an agreement requirement or further study by the City or by the applicant at the development application stage may be required as a result of the conclusion of that review.

Strategy/process/risk

This report, PL-59-23, initiates the statutory element of the MTSA ASP Planning Project, formerly the Mobility Hubs Study, which began in 2017. The project has undergone a number of starts and stops and has encountered a number of complications as have been documented through previous staff reports.

Staff will continue to respond to and better understand the impacts of these complications, including the appeals to the Official Plan, 2020, the Minister's approval of ROPA 48 and ROPA 49, the release of the Region's Joint Best Planning Estimates (JBPEs) combined with multiple changes Ontario legislation including to the *Planning Act* and planning system in Ontario. Staff will provide a complete risk assessment as well as an assessment of the Planning context and policy changes at the time of Committee and Council consideration of a recommendation report, later this year or as directed by Council.

Inclusionary Zoning in Burlington's MTSAs

In July of 2022, staff provided an update on the preparation of the Inclusionary Zoning Municipal Assessment report through staff report PL-56-22 City of Burlington Housing Strategy Inclusionary Zoning Municipal Assessment Report update. This report provided an update on the preparation of the Inclusionary Zoning Municipal Assessment Report which was identified as a key deliverable of the Housing Strategy project. The intent of this key deliverable was to prepare a Municipal Assessment Report that meets the requirements of the Provincial Regulation for Inclusionary Zoning (Ontario Regulation 232/18) under the Planning Act. This was further reinforced by Action 12 of the Housing Strategy: "Undertake a formal assessment of the potential to introduce inclusionary zoning". The work on the Municipal Assessment Report began in the summer of 2021 and had continued throughout the development of the Housing Strategy.

Staff undertook significant technical background work and outreach to the development community. At the time of the previous report staff acknowledged that given the wide range of recent and pending changes to provincial policy that will impact the approach for IZ, the consultant team and the Housing Strategy Steering Committee determined that the Municipal Assessment Report work should be paused.

This pause allowed for the project team to assess the implications of Bill 109, More Homes for Everyone Act, 2022, monitor the Inclusionary Zoning work underway in other municipalities, and to progress on the City's Major Transit Station Area Area-Specific Planning Project. Since then, Bill 23, More Home Built Faster Act, has introduced additional changes that would impact the delivery of Inclusionary Zoning. Additional uncertainty has also been introduced by proposed changes to Ontario Regulation 232/18 – Inclusionary Zoning, which have yet to be delivered.

Given the direction to develop a CPPS and given that the tool includes mechanisms to consider services, facilities and matters staff clarify that at this time Inclusionary Zoning is not being proposed. Staff recommend that we move forward with the CPPS to achieve, among a number of other things, housing affordability and attainability. Staff do recommend revisiting this position in the future. It is also noted that a number of the Housing Affordability Task Force recommendations may have the effect of seeing further evolution of the IZ tool and staff remain committed to revisiting opportunities in the future.

Next Steps

Staff will continue to work through feedback received throughout the statutory process beginning on October 11th. All feedback received will be documented along with any

changes made to the proposed OPA and Draft CPP By-law. A record of both will be prepared for the recommendation report to Council.

Staff will also continue to work on a plan to implement the CPPS into the development application review processes at the city, including the determination of application fees. Implementation of the CPPS will be supported by the creation of an Implementation or Guidance document, currently underway, which intends to provide clarity to all users of the CPP By-law to support change management and the implementation of the tool. Further work will also be required to establish an implementation plan and to assign appropriate resources to support the implementation of this new tool and approach.

As noted in the Engagement Matters Section below, the preliminary engagement with the development industry identified a number of areas where further clarity would be needed in order for the CPPS to work as intended. Staff will continue to seek opportunities for clarity in refining the OPA and CPP By-law and will continue to develop the CPPS Implementation or Guidance Document. This document is intended to be a dynamic document that is updated regularly to provide clarity as issues arise and to identity the unique needs of each MTSA as it relates to complete community components and the provisions of services facilities and matters (i.e., the need for a fire station in Aldershot GO MTSA).

Staff is also actively engaging in discussions with potential developers to act as a potential “test cases” to assess development applications in the context of the draft CPP By-law to iron out any issues and refine where appropriate. Staff is exploring possible incentives such as reduced or eliminated application fees for early adopters or test applications.

Lastly, staff will continue to work closely with other city departments and agency partners such as Halton Region and Conservation Halton to ensure alignment with a number of related projects with implications for the MTSA/CPPS projects including, but not limited to:

- Temporary Outdoor Patio Report
- Comprehensive Zoning By-law Review Project
- Halton Region (JPBE, Integrated Master Servicing Plan, review of OPA No 2 and supporting technical studies)
- Conservation Halton – (Updated Regulatory Area mapping, Spills Policy)

Options Considered

In taking the approach of a more streamlined policy and regulatory framework, staff acknowledges that there is risk. Staff will be working with all city departments and agencies to ensure that the OPA and CPPS are prepared to support both the objective of building a streamlined regulatory framework while also ensuring that there are

appropriate safeguards and approaches in place to support the creation of safe and complete communities.

Financial Matters:

This project has proceeded in accordance with the increased budget for the project as approved through community planning department report PL-40-23 to date. Staff notes that there is a high likelihood of the project going over budget related to engagement considering the discontinuation of the print edition of the Burlington Post. Staff are exploring alternative options to ensure that notice and engagement requirements are met under the Planning Act and note that alternatives are substantially more costly than planned for with the Burlington Post in mind. Staff will provide a summary of the project budget through a subsequent staff report, upon completion of the draft CPP By-law.

Climate Implications:

Burlington's MTSAs play a key role in the sustainable growth of our city and to address climate change. The draft Official Plan policies and draft CPP By-laws will both reflect the importance of sustainable development and its role in fighting climate change.

Engagement Matters:

Engagement has continued to be a central element of the MTSA Project. The following provides a summary of engagement around the project, all of which can be determined to have informed Proposed OPA No. 2 and the draft CPP By-law.

MTSA Project – General Feedback

Feedback Summary (December 2021 to July 2023)

Appendix E contains a summary of all of the comments received to date related to the MTSA ASP Planning Study, as well as a staff response and comment on how the comment or feedback has informed the various stages of the project, including the proposed OPA, draft CPP By-law, schedules, etc.

Talk to a Planner

As indicated in community planning department report PL-40-23, staff have held recurring "talk to a planner" sessions where members of the public, planning and

development industry and landowners were able to talk directly to the project team for updates on the project, site-specific inquiries or just generally ask questions and discuss the project. Since staff's last update in June 2023, staff have held more than 10 Talk to a Planner session, primarily with members of the planning and development community.

Get Involved Burlington

Staff continues to use Get Involved Burlington as the main source of engagement and notification about the project. The MTSA Project Get Involved page is regularly updated as new information becomes available and has approximately 115 subscribers.

Food for Feedback 2023

Staff once again participated in the City's annual Food for Feedback event, held on Saturday, September 16th at Central Park. This year over 2000 people attended the event and staff were able to connect with many visitors to share information about the project, explain the use of the Community Planning Permit System tool and ask people to share their preferences for how and how frequently they wish to be notified of any new applications within our MTSAs.

This input has informed our approach to voluntarily providing notice of applications as they are received. If approved, Staff will continue to work through the details of implementation, and informed by Council's discussion and direction, to prepare an operating procedure to ensure that information is shared with the community in a timely and relevant way.

CPPS Engagement

Following the direction to prepare a draft CPP By-law for engagement in the Fall, staff undertook to prepare the draft by-law beginning with key components that were thought to benefit from advanced engagement with two key user groups of the CPP By-law, City Staff and the planning and development industry. In June, staff attended a Housing Development Liaison Committee (HDLC) meeting to share an update about the MTSA Project, orient the committee to the CPP tool and committed to preliminary engagement with the development industry over the summer, through the development of the draft CPP By-law.

On August 16th in partnership with the Burlington Chamber of Commerce and Burlington Economic Development, Staff held a roundtable discussion with members of Burlington Chamber of Commerce's development community. At this well attended event, Dillon Consulting walked the participants through preliminary approaches to aspects of the By-law including the criteria for variation, the approach to services, facilities and matters,

application classes and more. The feedback received at this event directly informed the creation of a Preliminary Draft of elements of a CPP By-law which was shared with interested members of the industry on a confidential and without prejudice basis. As a result of the circulation of the preliminary draft, staff received a number of submissions that were instrumental in informing the draft CPP By-law as contained in Appendix B. As a result of the feedback shared, staff and Dillon worked to clarify language and meaning, to establish a working draft of an implementation/guidance document, implement a number of simplifications and provide clarity in definitions.

The feedback received through the Preliminary Draft CPP circulation, can be summarized as follows:

1. More clarity:
    - Given that the tool is new and has yet to be used in an intensification context like Burlington's MTSAs, not surprisingly there was and remains a need for additional education around the purpose, intent and use of the tool as well as within the By-law itself around the various uses, provisions and standards contained within it.
    - Given that the draft that was circulated was incomplete, a number of comments related to the missing elements would provide clarity on how the tool could be used to achieve greater height and deliver services, facilities and matters.
    - Relationship between the CPP By-law and the OPA and the identification of transportation infrastructure.
    - Concerns around how the CPPS conforms to Provincial Plans and policies.
2. Flexibility:
    - Comments requested greater flexibility for staff variations and thresholds related to the permitted uses, provisions and development standards.
    - Concerns over parking standards and requirements requesting no minimums to allow for market to determine need.
    - Housing regulations and the prescriptive nature of identifying the form and tenure and size of housing rather than allowing the market to dictate that.
3. Transparency
    - There were many concerns raised by the development industry circulation that highlighted the need for a guidance or interpretive document. Staff have begun development of this document as noted in Next Steps below and will continue to develop it further through the Statutory Public Meeting process as well as the recommendation report process later this fall and beyond. It is expected that as the tool is used and as issues arise, both the CPP By-law and the Implementation/Guidance document may need to be updated regularly and as appropriate.

Statutory Public Meeting & Open House

On Thursday, October 12, 2023, staff held a virtual open house in support of the Statutory Public Meeting for both the proposed OPA and draft CPP By-law for all 3 MTSAs. Supported by Dillon Consulting, staff presented an overview of both the proposed OPA and the draft CPP By-law and explained how collectively they are designed to help to achieve the Objective of encouraging the redevelopment of the Protected Major Transit Station Areas into complete communities that are mixed-use, intense, transit supportive, safe, and respectful of surrounding areas including natural heritage and existing neighbourhoods. In particular, staff focused on three key highlight areas: Mixed Use & Employment, Community Services & Facilities and Attainable & Affordable Housing and identified how each was addressed by the proposed OPA and draft CPP By-law.

There were approximately 40 non-staff/project team members in attendance including members of the community, members of the planning/development industry and staff on behalf of our agency partners. Staff similarly asked participants how they wanted to be engaged and note that the primary response was consistent with the responses received from Food for Feedback, noting that most want to know about CPPS permit applications as they come in (or Quarterly) and would like to be notified by a dedicated mailed and/or emailed newsletter.

Following the formal presentation time, there was over an hour dedicated to question and answers. Staff received questions related to:

- commercial amenities such as grocery stores and the ability of the city to attract them as well as what future amenities might look like;
- transitions to the surrounding neighbourhoods;
- the protection of retained employment uses, in particular in the Appleby GO MTSA;
- parking and traffic;
- challenge of behaviour change and the premise of MTSA planning;
- public notifications related to CPPS permit applications;
- the lack of third party appeals to CPPs permits; and
- the various classes of CPPS applications and specifically how those relate to height permissions.

A record of questions and answers as well as a captioned version of the presentation can be found at Get Involved Burlington.

A Note about Notice

Notice of the Statutory Public Meeting was mailed to all landowners within the MTSA boundaries as well as within 120m of those boundaries in advance of the 20-day notice requirement under the Planning Act. During the preparations for the Statutory Public Meeting, the elimination of the Burlington Post's printed newspaper was announced, impacting the city's ability to provide notice of the upcoming Statutory Public Meeting in a newspaper of general circulation. Staff are continuing to work though the reality of having no print edition of the Burlington Post and how to navigate the notice requirements outlined under the *Planning Act*. Staff are committed to enhanced engagement on this project presently and going forward given the importance and timeliness of this initiative. Staff are continuing to explore opportunities to share notice about the project, including through the Hamilton Spectator and Burlington Post's online portal, Inside Halton.

In addition to the notice provided above, staff, led by our communications department, conducted a social media campaign to raise awareness about the Open House, Drop-In Sessions and the Community Planning, Regulation and Mobility Committee meeting where community planning department report PL-59-23 is discussed.

Conclusion:

Staff will continue to modify both the proposed OPA and the draft CPP By-law based on the feedback received through the entire month of engagement, including Council's feedback through this statutory public meeting process and will report back with an updated OPA and CPP By-law for Council's adoption and approval as soon as possible or as directed by Council.

Respectfully submitted,

Jenna Puletto, Manager, Planning Implementation

Karyn Poad, Senior Planner

Samantha Romlewski, Senior Planner

Rebecca Lau, Planner

Alison Enns, Manager, Policy & Community

Appendices:

A. Proposed OPA No. 2 (can be accessed at events.burlington.ca)
B. Draft CPP By-law (can be accessed at events.burlington.ca)
C. Transportation Study as prepared by Dillon Consulting (September 2023) (can be accessed at events.burlington.ca)
D. Functional Servicing Study as prepared by WSP (can be accessed at events.burlington.ca)
E. Feedback Summary (December 2021-July 2023)

Report Approval:

All reports are reviewed and/or approved by Department Director, the Chief Financial Officer and the Executive Director of Legal Services & Corporation Counsel.

Proposed DRAFT Official Plan Amendment No 2 with Proposed DRAFT Schedules

DRAFT OFFICIAL PLAN AMENDMENT

AMENDMENT NO. 2 TO THE OFFICIAL PLAN

OF THE BURLINGTON PLANNING AREA

CONSTITUTIONAL STATEMENT

The Amendment contained in Part "B" of this document constitutes Amendment No. 2 to the Official Plan of the City of Burlington, 2020.

In accordance with Section 17(36.1.4) of the Planning Act, there is no appeal of the Protected Major Transit Area components of the Amendment.

PART A – PREAMBLE

1. PURPOSE OF THE AMENDMENT

The purpose of this Official Plan Amendment is to revise certain elements the text and schedules of the Burlington Official Plan, 2020 to implement the findings of the Major Transit Station Areas (MTSA) Area Specific Planning Project for the Downtown Burlington UGC/Burlington GO MTSA, Aldershot GO MTSA and the Appleby GO MTSA. As it relates to the elements identified under Section 16(16) of the Planning Act for Protected Major Transit Station Areas, these stations are identified as Protected Major Transit Station Areas.

The effect of the proposed Amendment is to replace policies from the approved but under appeal Burlington Official Plan, 2020 to:

- Establish a planning vision for the MTSAs to evolve into three distinct and complete communities by accommodating intensification population and employment growth in a mix of uses to 2051 and beyond.
- Update the policies and schedules to identify the Burlington, Aldershot and Appleby GO Major Transit Station Areas as Protected MTSAs and including all associated policy requirements, and as Strategic Growth Areas within the City's Official Plan in accordance with the Regional Official Plan.
- Establish the policy framework for the Protected MTSAs for land use, urban design and public realm, parks and open space, transportation and infrastructure servicing and land use compatibility.
- Provide implementation direction and enabling Community Planning Permit policies to allow for the implementation of a Community Planning Permit System By-law for the Protected MTSAs.

2. SITE AND LOCATION

Burlington Urban Growth Centre/Burlington GO Major Transit Station Area

The proposed amendment pertains to the lands within an approximiate 800m radius of the Burlington GO Station, including Brant Street south to Ghent Avenue and north to Leighland Drive identfied in Attachment 1, within the Burlington Urban Growth Centre/Burlington GO Major Transit Station Area.

Aldershot GO Major Transit Station Area

The proposed amendment pertains to the lands within an approximate 800m radius of the Aldershot GO Station, south of Alayne Bryk Way and north of (and including Plains Road East and West, East of Hidden Valley Park and west of Grove Park identified in Attachment 2, within the Aldershot GO Major Transit Station Area.

Appleby GO Major Transit Station Area

The proposed amendment pertains to the lands within an approximate 800m radius of the Appleby GO Station, south of the Queen Elizabeth Way and north of the Centennial Multi-Use Trail, west of Sherwood Forest Park and generally east of Inverary Road identfied in Attachment 3, within the Appleby GO Major Transit Station Area.

3. BASIS FOR THE AMENDMENT

On November 30, 2020, the Burlington Official Plan, 2020 was approved by Halton Region. The Plan outlines the community's vision for growth through an Urban Structure and Growth Framework which establishes a hierarchy of land uses to accommodate growth within a set urban boundary. Within the vision, Major Transit Station Areas, the lands around the City's three GO stations are priority locations for the accommodation of transit supportive, mixed use intensification.

The majority of the Burlington Official Plan, 2020, including policies relating to MTSAs, is subject to appeal and therefore not yet in effect. Any parts of the Plan that were not appealed came into effect on Dec. 22, 2020- the day after the end of the appeal period. A Decision issued by the Ontario Land Tribunal (OLT) on January 4, 2023 confirmed which portions are in effect, meaning the Plan may be amended in accordance with the Planning Act.

The City's current approach to advancing the appealed portions of the Burlington Official Plan, 2020, while also addressing the ongoing changes to Ontario's land use planning framework, is outlined in report PL-25-42: Burlington Official Plan, 2020 Targeted

Realignment Exercise – Initial Work Plan. The work plan identifies a role for both modifications (through the OLT process) and amendments (through a City-initiated statutory process) to address the whole range of changes to the planning framework that was in place at the time of Regional approval of the Official Plan.

While changes to appealed policies typically proceed by way of modification, in some limited and specific circumstances, amendments may also be brought forward to replace policies that are not yet in effect, such as the Major Transit Station Area policies. In this context, the City is effectively 'withdrawing' the appealed policies and proposing new policies that are in alignment with the updated Regional and Provincial planning framework. These amendments will follow the standard Planning Act process and any appeals to the new policies would be expected to be consolidated with the existing appeals to the Burlington Official Plan, 2020, where appropriate.

On November 11, 2021, the Minister of Municipal Affairs and Housing approved Regional Official Plan Amendment 48 (ROPA 48) with minor modifications bringing the amendment into full effect. The boundaries of the Major Transit Station Areas (MTSAs) and the identification of the minimum density targets were confirmed through the Region of Halton's municipal comprehensive review in conformity to the Province's Growth Plan through Regional Official Plan Amendment No. 48 (ROPA 48). ROPA 48 also established in the Upper-tier plan direction under provisions 16(16) of the Planning Act that the City's MTSAs are identified as Protected Major Transit Station Areas (PMTSAs). In accordance with the Planning Act, the Protected Major Transit Station Area policy framework must be implemented through the City's Official Plan. ROPA 48 implemented a Regional Urban Structure hierarchy of Strategic Growth Areas (SGAs) and other non-discretionary elements to achieve conformity to the Provincial Growth Plan. In addition to items related to the regional urban structure, including employment conversions and identification of regional nodes as strategic growth areas, ROPA 48 implements the following for the City of Burlington:

- Confirms the boundaries of Burlington's Urban Growth Centre.
- Implements the boundaries for all Major Transit Station Areas, sets minimum density targets and policy changes to conform to the Growth Plan, 2019 and implements a policy framework that identifies the stations as Protected MTSAs to meet the legislative requirements under Section 16(16) of the Planning Act.
- Directs local municipalities to complete area specific plans for Strategic Growth Areas – including MTSAs.

Since the approval of the Burlington Official Plan, 2020, there have been a number of changes to the Regional and Provincial planning policy framework. These changes have necessitated in a "Targeted Re-alignment" exercise for the Burlington Official Plan, 2020 to ensure consistency with/conformity to the updated policy framework. The policies in this amendment are consistent with or in conformity to the in effect Provincial plans and

policies at the time of adoption and will be subject to change as the Ontario planning policy and regulatory landscape continues to evolve.

This Official Plan Amendment is one of the first elements of the Targeted Re-alignment exercise to advance Council's priority of establishing a policy framework and implementing Community Planning Permit System to establish the MTSAs as complete communities where the significant majority of the City's population and employment growth will be accommodated to 2051 and beyond.

The MTSA Area Specific Planning project began in 2016 as the Mobility Hubs Study. The purpose of the project was to develop area specific plans, supported by technical studies to guide growth and investment around the City's GO Stations. Following a pause in early 2019 to allow the City to address other planning priorities, the process was re-initiated in September 2021 as the MTSA Area Specific Planning project (reflective of a change in Provincial terminology). On July 5, 2022, staff presented the MTSA ASP Planning study process from January to July 2022 and the findings of the MTSA ASP Planning Study Final Report. Through report PL-10-22, Council directed staff to use the MTSA ASP Planning Study Final Report to prepare a draft amendment to the Burlington Official Plan, 2020. Through this project, the City has developed policy recommendations to guide the transformation of the MTSAs into transit oriented, mixed-use, and complete communities which will support future growth being directed to the City.

On March 28, 2023, through Report ES-02-23 which delivered the Parks Provisioning Master Plan, Council approved a recommendation directing the Community Planning Department to conduct an exploration of a Community Planning Permit System in our MTSAs. A Community Planning Permit System (CPPS) is a land use planning tool available under The Planning Act that combines Zoning By-law Regulations/Amendments, Minor Variance and Site Plan applications into one single application and approval process. The CPPS is administered through a Community Planning Permit By-law and replaces a traditional Zoning By-law for the area where the system applies. The Official Plan, 2020 contains policies which permit the use of a CPPS in the city and establishes the process to which more detailed enabling policies would be created to implement a CPPS.

On June 27, 2023, through report PL-40-23: MTSA Update and Community Planning Permit Exploration, staff provided an update on the MTSA planning project from June 2022 to June 2023 and provided an overview of the Community Planning Permit System tool and its benefits to streamlining the development of these intensification areas. Report PL-40-23 directed staff to prepare a draft Community Planning Permit By-law to algin and support the implementation of the MTSA Official Plan policies. To implement a Community Planning Permit By-law, detailed enabling Official Plan policies are required. The requirements for a Community Planning Permit are identified in Ontario Regulation 173/16 of The Planning Act.
PL-59-23, Statutory Public Meeting: MTSA OPA and CPP By-law presents the draft CPP By-law as the companion to this Amendment.

The policies of this amendment will replace the policies in subsection 8.1.2 of the Burlington Official Plan, 2020 and modifies Sections 2.2.3 d) iv) and 2.3.1 h) and i). These policies were developed at a time when the Region of Halton's Municipal Comprehensive Review was still underway and a Regional policy framework for MTSAs had not yet been developed. The policies of the Burlington Official Plan, 2020 were designed to provide interim direction and to communicate a high-level local vision, based on the work completed through the former Mobility Hubs Study and other projects. Since this time, the Regional policy framework for MTSAs has been established through the approval of ROPA 48, which is also reflective of post-2020 changes to Provincial policies concerning MTSAs. In addition, a detailed local vision has been developed through the City's MTSA Area-Specific Planning project, supported by various technical studies that are reflective of current conditions. Given the complexity of the ongoing appeal process, as well as the other elements of the Targeted Realignment exercise, this amendment is limited to the core enabling policies required to advance the MTSAs in accordance with the City's growth priorities. Additional revisions that may be required, such as updating terminology and cross-references in other sections of the Plan, implementing further changes to Provincial policy, or incorporating future decisions of the OLT, will be addressed throughout the other processes as outlined in PL-25-42.

PART B – THE AMENDMENT

1. DETAILS OF THE AMENDMENT

1.1 Text Change:

The amendment includes the changes to the text of the Burlington Official Plan, 2020 as described in the following table, and as provided in Attachment 4:

In the "Description of Change" column, text that is underlined is new text to be inserted into the Burlington Official Plan, 2020 by way of changes to the approved or under appeal policies not in effect. Text that is crossed out ("~~strikethrough~~") is to be deleted from the under-appeal policies not in effect.

Item No.	Section	Description of Change
1	**2.2.3 d) iv)**	Modify Section 2.2.3 d) iv) as follows: ~~The final delineation of Major Transit Station Areas (MTSAs) boundaries and minimum density targets will be established by the Region of Halton through the municipal comprehensive review in keeping with the policies of the~~

		~~Provincial Growth Plan~~. The boundaries of the Major Transit Station Areas are depicted in the Regional Official Plan and this Plan. These boundaries identify the area around an existing higher order transit station as a *Protected Major Transit Station Area* in accordance with The Planning Act. The boundaries and minimum density targets of the *Protected Major Transit Station* Area are identified through Section 8.1.2.
2	**2.3.1 h)**	Modify Section 2.3.1 h) as follows: *Major Transit Station Areas (MTSAs)* are an important component of the City's Urban Planning Area, and are intended to serve as city-wide destinations and focal points for the provision of transit. *MTSAs* will exhibit a wide variety of land uses and building types, and densities that will be oriented to support and facilitate transit and active transportation. Located in key areas served by the regional and local transit networks, *MTSAs* are focal points for higher intensity and mixed-use, transit supportive development that will accommodate a significant share of the City's future population and employment growth. It is anticipated that the majority of growth ~~within the City's four MTSAs~~ will occur in the three *MTSAs* located along higher order transit routes and with planned frequent transit service by way of Regional Express Rail. ~~In keeping with the policies of the Provincial Growth Plan, the final delineation of the MTSA boundaries and the identification of minimum density targets, will be established by the Region of Halton through the municipal comprehensive review and will be implemented through a future Official Plan Amendment.~~
3	**2.3.1 i)**	Modify Section 2.3.1 l) as follows: In Burlington there are three *Protected Major Transit Station Areas* ~~MTSA Special Planning Areas~~ identified by the City and the Region around the Downtown Burlington Urban Growth Centre/Burlington GO, Aldershot GO and Appleby GO Stations. ~~All three areas are major transit station areas~~. In this Plan, the three *MTSAs* ~~Special Planning Areas~~ are identified as areas that will be subject to further detailed area-specific planning. ~~The boundaries of the major transit station areas and assignment of growth targets will be confirmed through the Region of Halton's municipal~~

		~~comprehensive review in conformity to the Provincial Growth Plan.~~
4	**8.1.1(3.8) Upper Brant Precinct**	Delete Section 8.1.1(3.8) in its entirety.
5	**8.1.2 Major Transit Station Areas**	Delete Section 8.1.2 Major Transit Station Area in its entirety and replace with the new policies as shown in **Attachment 4**.
6	**12.1.14 Community Planning Permit Systems**	Insert a new subsection 12.1.14(3) as follows: 12.1.14 (3) Community Planning Permit System A *Community Planning Permit System* is a land use planning tool available to municipalities in Ontario through <u>The Planning Act</u>. The tool can be implemented for an entire municipality or for a specific area. Once implemented, the Zoning By-law for the identified area is replaced with a Community Planning Permit By-law. A Community Planning Permit By-law combines Zoning By-law Amendments, minor variance, and site plan approval processes into a single application and approval process. The By-law *may* also identify *development* rules and requirements usually covered under separate processes, such as vegetation removal, and allow discretionary uses, conditional approvals, and variations. Doing so provides staff and Council with flexibility in approving *development* applications that meet the growth objectives of the Permit Area while streamlining the *development* approvals process. It also provides the public and developers with more certainty on the type of *development* permitted within an area under a *Community Planning Permit System*.

		a) The City will adopt a Community Planning Permit By-law to implement the Major Transit Station Area policies of this Plan. b) The following areas are designated *Community Planning Permit Areas*, as shown on Schedule F: Land Use- Downtown Burlington Urban Growth Centre/Burlington GO Major Transit Station Area, Schedule G: Land Use- Aldershot GO Major Transit Station Area, and Schedule H: Land Use- Appleby GO Major Transit Station Area : i. Downtown Burlington Urban Growth Centre/Burlington GO *Major Transit Station Area*; ii. Aldershot GO *Major Transit Station Area*; and iii. Appleby GO *Major Transit Station Area*. The *City's* Zoning By-law and Site Plan Control By-law *shall* not apply within areas where a Community Planning Permit By-law has been enacted. c) Pursuant to the provisions of The Planning Act, a Community Planning Permit By-law *shall*: i. Contain a description of the area to which the by-law applies, which must be within the boundaries of the Community Planning Permit Area identified in the Official Plan; ii. Set out and define permitted and discretionary uses; iii. Set out a list of minimum and maximum *development* standards; iv. Set out any internal review procedures for community planning permit decisions; v. Describe notification procedures for community planning permit decisions; vi. Set out criteria for determining whether a proposed use or *development* is permitted; vii. Describe the process for amending community planning permits, community planning permit agreements and pre-existing Site Plan agreements;

		viii. Outline any conditions of approval that *may* be imposed; ix. Set out the scope of delegated authority, including any limitations; and x. Include exemptions for any class of *development* or use of land from the complete information and material requirements for applications under a Community Planning Permit By-law. d) Pre-consultation with the *City* and other affected agencies, as outlined in this Plan and in the Community Planning Permit By-law, *shall* occur prior to the submission of a community planning permit application. e) For a Community Planning Permit application to be deemed complete, the *City* will require the provision of additional supporting information or material required to allow full consideration of the application, as outlined in this Plan and in the Community Planning Permit By-law. The scope of the information or material required for each application *shall* be determined as part of the pre-consultation process. f) If a Community Planning Permit By-law is enacted, the use and *development* of land within the *Community Planning Permit Area* must comply with the permitted uses, standards and criteria set out in the Community Planning Permit By-law as demonstrated by the issuance of a Community Planning Permit, unless the proposed use or *development* is exempted from a permit as indicated in the Community Planning Permit By-law. In the context of a Community Planning Permit By-law, *development* is defined in accordance with *O.Reg 173/16* under The Planning Act and includes site alteration, including but not limited to: alteration of the grade of land, placing or dumping fill, or the removal of vegetation. The removal of vegetation defined as a tree *shall* not require a Community

		Planning Permit and is subject to the City's Public and Private Tree By-law as amended. g) The criteria for determining whether a *development*, use of land, discretionary use or variation to the By-law provisions *may* be permitted and *shall* be set out in the Community Planning Permit By-law and *shall* include demonstration of the following to the satisfaction of the City: i. The proposed *development* implements the Guiding Principles of the Community Planning Permit By-law; ii. The proposed *development* implements the complete community requirements and maintains the general intent of the Burlington Official Plan; iii. The proposed *development* does not result in significant off-site impacts, or any potential significant off-site impacts can be mitigated to the satisfaction of the *City*; iv. The proposed *development* demonstrates consideration for provincial, regional and municipal guidelines and regard for technical studies; and, v. The proposed *development* is consistent with provincial policy, regulations and standards, as amended. h) The Community Planning Permit By-law establishes permitted uses, listed discretionary uses subject to criteria identified in the By-law and *may* also allow, as a discretionary use, any use not specifically listed as a permitted use, provided that the proposed use is similar to and compatible with the uses permitted under the By-law, would have no negative impact on adjoining properties, and would maintain the intent, objectives and policies of this Plan and the criteria set out in the Community Planning Permit By-law.

		i) The Community Planning Permit By-law *may* outline provisions for issuing a Community Planning Permit for the extension or enlargement of a non-conforming use, building or structure as a discretionary use, provided the proposal conforms with the intent, objectives, and policies of this Plan and the criteria set out in the Community Planning Permit By-law. j) Where existing Site Plan Agreements are already registered on a property, those agreements *may* be amended as long as such amendments comply with the applicable provisions of the Community Planning Permit By-law. k) The Community Planning Permit By-law *may* allow for variations to a development standard as specified in the Community Planning Permit By-law. l) Any proposal for a use which is not listed as a permitted or discretionary use subject to criteria in the Community Planning Permit By-law, or which exceeds the limit of variation permitted in the Community Planning Permit By-law, *shall* require an amendment to the Community Planning Permit By-law. An application to amend a Community Planning Permit By-law *shall* be supported by a comprehensive planning rationale, details of public engagement, and applicable supporting studies and conformity to the Burlington Official Plan. The scope of the information or material required for the amendment *shall* be determined as part of the pre-consultation process. m) Where a Community Planning Permit By-law has been enacted, Council *may* delegate to staff, a Committee, or a body appointed by Council the approval or issuance of Community Planning Permits. Limits on and criteria for such delegation *shall* be established in the Community Planning Permit By-law. n) A Community Planning Permit will not be required for the following:

		i. Any *development* that has a Plan approved through prior Site Plan Control and/or existing Site Plan Agreements. Such *developments may* proceed in accordance with the approved Site Plan. ii. Any use or *development* explicitly exempt within the Community Planning Permit By-law. iii. The placement of a portable classroom on a school site of a district school board, if the school site was in existence on January 1, 2007 subject to Section 8.1.2(7.1) of this Plan. o) Upon consideration of a complete Community Planning Permit Application, the *City may:* i. Approve the application and issue a Community Planning Permit with no conditions; ii. Approve the application and issue a Community Planning Permit with conditions attached as outlined in the By-law; iii. Approve the application subject to conditions being met before the issuance of a Community Planner Permit (Provisional Approval); iv. Approve the application subject to the conditions being met before the issuance of the Community Planning Permit (Conditions Attached to Approval and Provisional Approval) and with conditions as outlined in the By-law; or v. Refuse to approve the application. p) The Community Planning Permit By-law *may* include policies related to the requirement of specified facilities, services or matters in exchange for a specified density or height of development or increases in density or height where there is a maximum height as regulated in the Community Planning Permit By-law, in accordance with The Planning Act. The By-law *may* establish a proportional relationship between the quantity or monetary value of the facilities, services and matters

		that may be required and the height or density of development that *may* be allowed. q) In addition to Section 12.1.14 (3) p) of this Plan, a Community Planning Permit By-law *may* identify other specified facilities, services or matters as part of issuing a Community Planning Permit to achieve *Protected Major Transit Station Area* objectives, provided the proposal conforms with the intent, objectives, and policies of this Plan and the criteria established within the Community Planning Permit By-law. r) A Community Benefits Charge and By-law *shall* not apply in an area where a Community Planning Permit System is in effect, in accordance with <u>The Planning Act</u>.
7	**Part VIII, Definitions**	By adding the following new Definition under Part VIII, Definitions: <u>Community Planning Permit Area- An area within a municipality that is subject to the regulations and provisions of a Community Planning Permit System By-law as adopted by Council.</u>
8	**Part VIII, Definitions**	By adding the following new Definition under Part VIII, Definitions: <u>Community Planning Permit System – a land use planning tool under The Planning Act that combines the Zoning By-law, Site Plan Control and Minor Variance approvals into a single permit application and approval process. The *Community Planning Permit System* establishes regulations, permitted uses, standards, and criteria for variations for *development* within a *Community Planning Permit Area*.</u>
9	**Part VIII, Definitions**	By modifying the following definitions under Part VIII, Definitions: Development - <u>Within areas designated Community Planning Permit System, Development means:</u> ○ <u>a change of use of land,</u> ○ <u>the construction, erection or placing of one or more buildings or structures on land,</u>

		○ the making of an addition or alteration to a building or structure that has the effect of substantially increasing its size or usability, ○ the laying out and establishment of, ○ a commercial parking lot, ○ sites for the location of three or more mobile homes as defined in subsection 46 (1) of the *Planning Act*, ○ sites for the construction, erection or location of three or more land lease community homes as defined in subsection 46 (1) of the *Planning Act*, or ○ sites for the location of three or more trailers as defined in subsection 164 (4) of the *Municipal Act*, 2001, ○ site alteration, including but not limited to: ○ alteration of the grade of land, and ○ placing or dumping fill, or ○ the removal of vegetation. In all other cases, Development means- The creation of a new lot, a change in land use, or the construction of buildings and structures requiring approval under The Planning Act, but does not include: 1. activities that create or maintain infrastructure authorized under an environmental assessment process; or 2. works subject to The Drainage Act.
10	**Part VIII, Definitions**	By modifying the following definitions under Part VIII, Definitions: Development Application – Formal request to the City of Burlington and/or Region of Halton, for an Official Plan amendment, zoning by-law amendment, site plan approval, land conveyance, minor variance approval, plan of subdivision, plan of condominium, part-lot control application, community planning permit application**,** Niagara Escarpment development permit application, or Parkway Belt regulation application.
11	**Part VIII, Definitions**	By adding the following new Definition under Part VIII, Definitions:

		Linear Park and Greenway – an active transportation corridor and connection between open spaces and community facilities and are either manicured (Linear Park) or more natural (Greenway) that provide connections in the area to support the larger objective of seamless connectivity through the public realm.
12	**Part VIII, Definitions**	By modifying the following definition under Part VIII, Definitions: Major Transit Station Area (MTSA) – The area including and around any existing or planned *higher order transit* station, or stop within a *settlement area*; or the area including and around a major bus depot in an urban core. Major transit station areas generally are defined as the area within an approximate five hundred (500) m to eight hundred (800) m radius of a transit station, representing about a ten (10) minute walk. ~~In keeping with the policies of the Provincial Growth Plan, the final delineation of the Major Transit Station Area boundaries and the identification of minimum density targets, will be established by the Region of Halton through the municipal comprehensive review and will be implemented through a future Official Plan Amendment.~~ The City's *MTSAs* are identified as *Protected Major Transit Station Areas* in accordance with The Planning Act and the Regional Official Plan.
13	**Part VIII, Definitions**	By adding the following new Definition under Part VIII, Definitions: Place of Assembly- Means a building or part of a building used to accommodate the gathering of people for events such as trade shows, banquets, conferences, conventions, meetings, seminars, workshops or other similar events and may include accessory food preparation.
14	**Part VIII, Definitions**	By adding the following new Definition under Part VIII, Definitions: Protected Major Transit Station Area – a Major Transit Station Area delineated and assigned a minimum density target in accordance with Section 16(16) of the Planning Act.

15	Chapter 14 List of Tables	Insert new Table 3- Classification of MTSA Transportation Facilities as shown in Attachment 6
16	Chapter 14 – List of Tables	Insert new Table 4- Major Transit Station Area Public Right-of-Way widths as shown in Attachment 7
This section is provided for reference purposes only and does not form part of the Official Plan.		
17	Appendices	**UNDER DEVELOPMENT**: Attachment 8 Figures 1,2 and 3 are presented to form the basis for future updates to relevant appendices showing CH Regulated area and components thereof (Appendix E: Conservation Halton Approximate Regulation Limit Mapping)

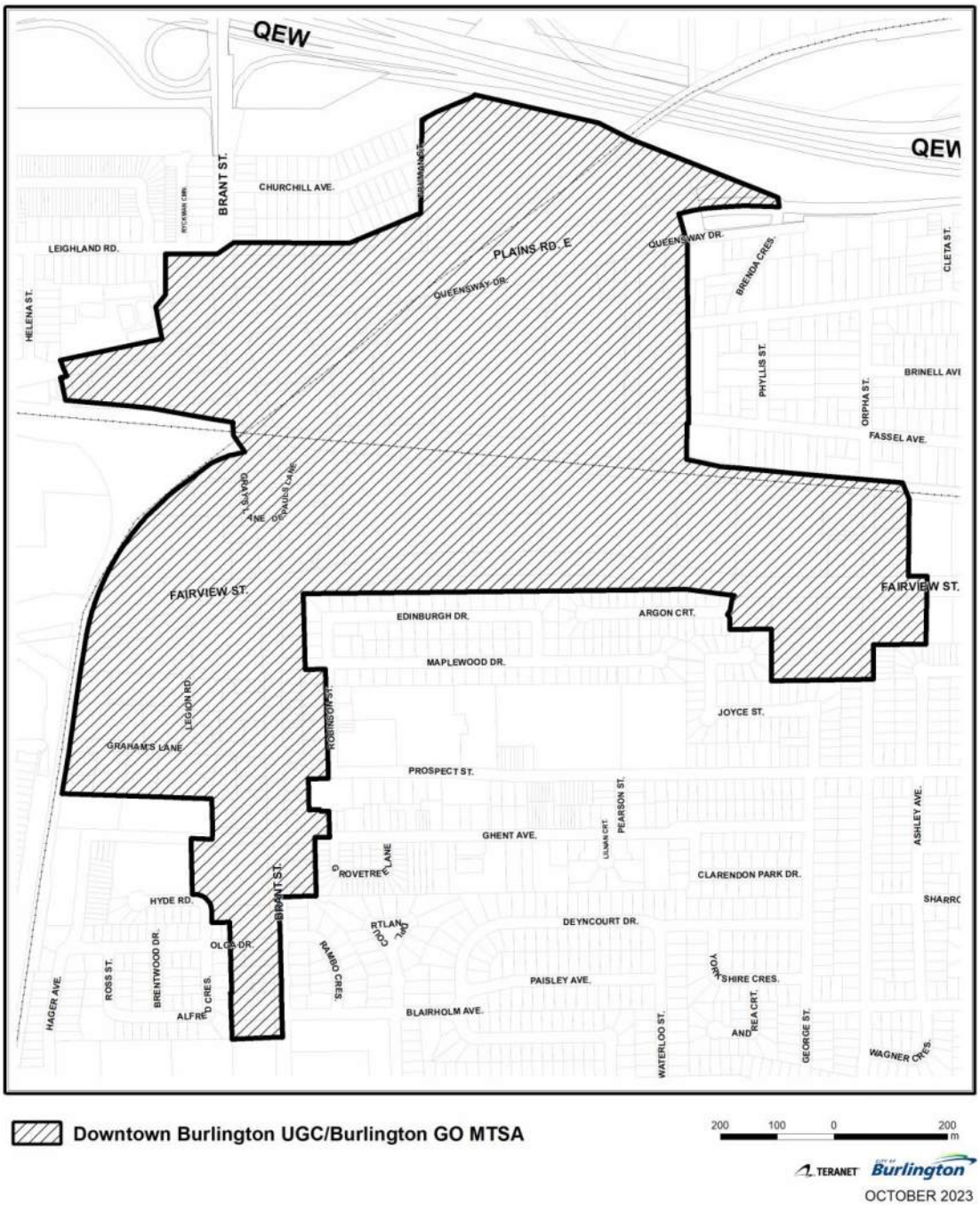
1.2 Map Changes:

The following schedules in Attachment 5 to OPA 2 are hereby added to the Official Plan as follows:

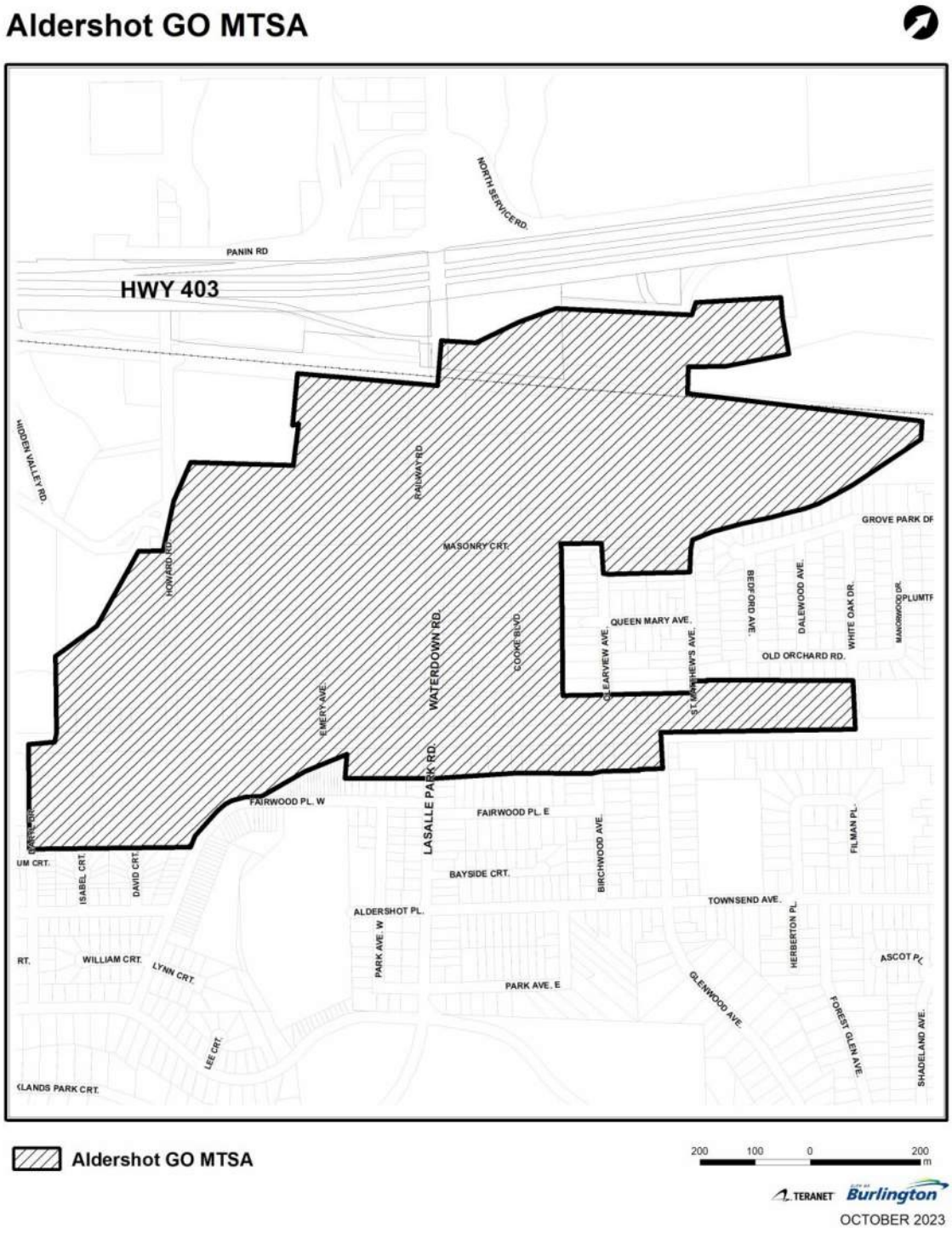
Item No.	Section	Description of Change
18	Schedules	Insert new schedule as follows: Schedule F: Land Use – Downtown Burlington Urban Growth Centre/Burlington GO Major Transit Station Area
19	Schedules	Insert new schedule as follows: Schedule F-1: Downtown Burlington Urban Growth Centre/Burlington GO Major Transit Station Area Transportation Network
20	Schedules	Insert new schedule as follows: Schedule F-2: Downtown Burlington Urban Growth Centre/Burlington GO Major Transit Station Area Activated Street
21	Schedules	Insert new schedule as follows: Schedule F-3: Downtown Burlington Urban Growth Centre/Burlington GO Major Transit Station Area Tertiary Planning Areas

22	Schedules	Insert new schedule as follows: Schedule G: Land Use- Aldershot GO Major Transit Station Area
23	Schedules	Insert new schedule as follows: Schedule G-1: Aldershot GO Major Transit Station Area Transportation Network
24	Schedules	Insert new schedule as follows: Schedule G-2: Aldershot GO Major Transit Station Area Activated Streets
25	Schedules	Insert new schedule as follows: Schedule G-4: Aldershot GO Major Transit Station Area Tertiary Planning Areas
26	Schedules	Insert new schedule as follows: Schedule H: Land Use- Appleby GO Major Transit Station Area
27	Schedules	Insert new schedule as follows: Schedule H-1: Appleby GO Major Transit Station Area Transportation Network.
28	Schedules	Insert new schedule as follows: Schedule H-2: Appleby GO Major Transit Station Area Activated Streets
29	Schedules	Insert new schedule as follows: Schedule H-3: Appleby GO Major Transit Station Area Tertiary Planning Areas.

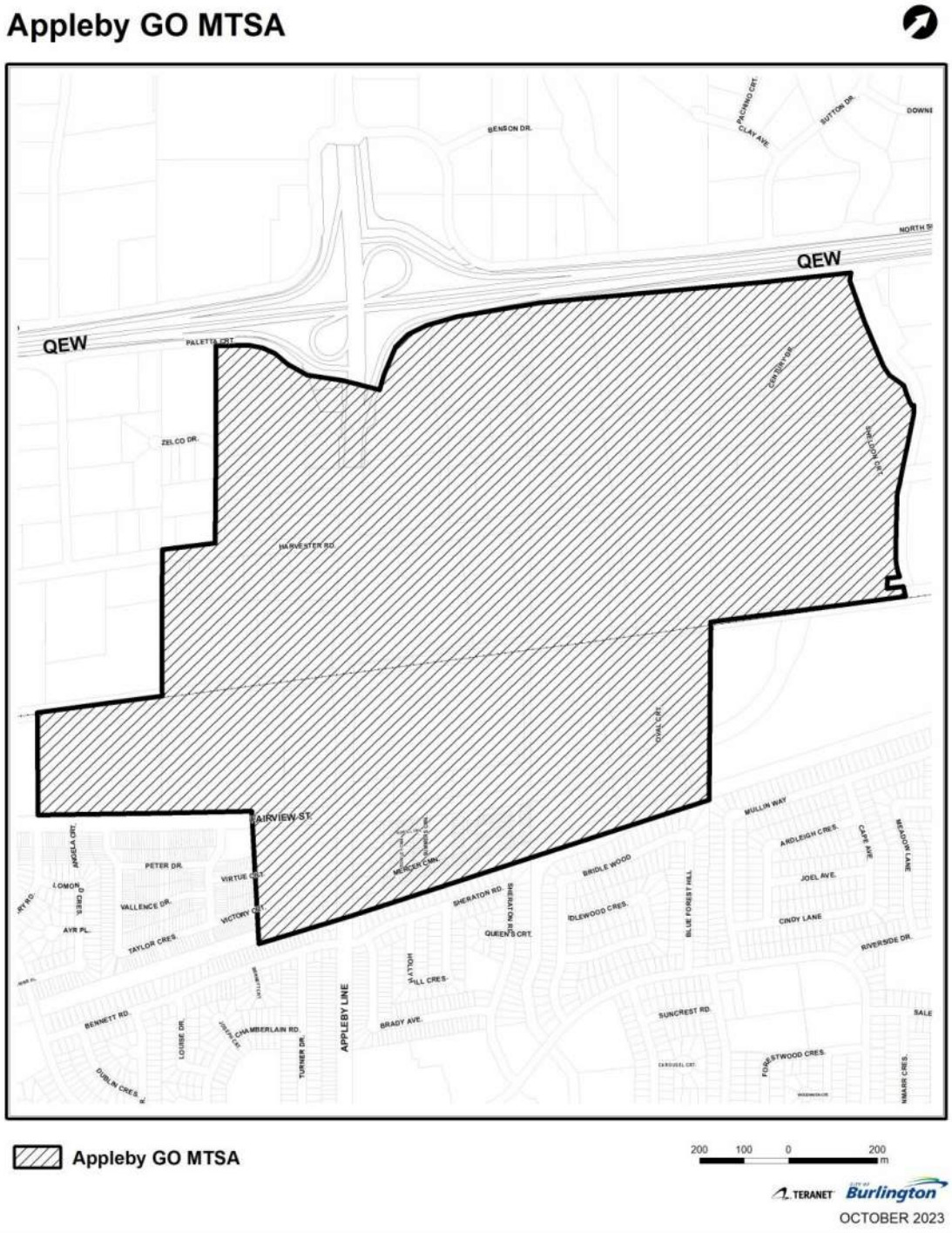
Attachment 1 to OPA 2- Subject Lands



Attachment 2 to OPA 2- Subject Lands



Attachment 3 to OPA 2- Subject Lands



Attachment 4 to OPA 2 – Major Transit Station Area Policies

8.1.2 Major Transit Station Areas

*Major Transit Station Area*s (*MTSAs*) are important components of the *City*'s Urban Structure, Growth Framework and transportation network and serve as city-wide destinations and focal points for the provision of transit. These areas are intended to accommodate growth through *intensification* in a variety of land uses and densities that supports and facilitates a modal shift to transit and *active transportation* and delivers *complete communities.*

The *City* has three *Major Transit Station Area*s: Burlington GO, which is also the *City*'s Urban Growth Centre; Aldershot GO; and Appleby GO. The *MTSAs* have been identified and delineated as Protected MTSAs in accordance with the provisions of The Planning Act.

This section establishes a vision for the *MTSAs* to evolve into three distinct and *complete communities* that will accommodate a significant share of the City's population and *employment* growth to 2051 and beyond. The vision is supported by a series of policies organized into two components. The first set of policies and schedules establish the boundaries, minimum density targets and authorized uses of land for each *Major Transit Station Area.* The second set of policies and schedules, set out land use policies that are applicable to all *MTSAs* and are to be read in conjunction with other applicable policies of this Plan. All schedules are to be read together and in conjunction with all policies of this Plan.

A Community Planning Permit By-law will be approved for the Burlington GO, Aldershot GO, and Appleby GO *Major Transit Station Areas* to achieve the vision for the *MTSAs* to evolve into urban destinations to provide the day to day needs of the community. The Community Planning Permit By-law will be designed to ensure that development within these areas will incrementally and comprehensively deliver on *complete community* elements with a priority on *affordable housing*, rental housing, *employment* opportunities, and community parks, amenities and facilities while remaining flexible to allow the City to monitor and respond to changing conditions over time.

8.1.2(1) General Objective

a) To encourage the redevelopment of the *Protected Major Transit Station Areas* into *complete communities* that are mixed-use, intense, *transit supportive*, safe, and respectful of surrounding areas including natural heritage and existing neighbourhoods.

8.1.2 (2) Downtown Burlington Urban Growth Centre/Burlington GO Major Transit Station Area

Downtown Burlington Urban Growth Centre/Burlington GO *Major Transit Station Area* is the *City*'s Urban Growth Centre and the focal point for growth and *intensification*. It will have the greatest variety and intensity of uses in the *City*, from residential to commercial, *major office*, cultural, recreation, *public service facilities* and other *employment* uses. The Downtown Burlington Urban Growth Centre/Burlington GO *Major Transit Station Area* will be a destination for residents both within and beyond the *MTSA.*

The future transportation network in the Downtown Burlington Urban Growth Centre/Burlington GO *MTSA* will provide enhanced mobility and improved access to the GO station from the north and south of the rail corridor, as well as enhanced connections on the broader mobility network to the rest of the City. Enhanced *active transportation* and transportation connections, including investments to support community connectivity, will be made between the Downtown Burlington Urban Growth Centre/Burlington GO *Major Transit Station Area* and the other *MTSAs*, adjacent neighborhoods and to the Downtown Urban Centre.

8.1.2 (2.1) Downtown Burlington Urban Growth Centre/ Burlington GO Major Transit Station Area

a) The area surrounding and including the Burlington GO Station as shown on Schedule F: Land Use – Downtown Burlington Urban Growth Centre/Burlington GO Major Transit Station Area is a *Protected Major Transit Station Area* in accordance with The Planning Act.
b) *Development* within the Downtown Burlington Urban Growth Centre/*Major Transit Station Area* boundary *shall* be planned to achieve a minimum density of 200 people and jobs per hectare and will contribute towards achieving the minimum density target of the Urban Growth Centre/*Major Transit Station Area*.
c) The minimum density target of 200 people and jobs per hectare *shall* be applied to the entire geography of the Downtown Burlington Urban Growth Centre/*Major Transit Station Area*.
d) Based on the minimum density of 200 people and jobs per hectare, the corresponding population is approximately 15,985 people and 8,449 jobs, for an estimated minimum of 24,434 residents and jobs to achieve a proportional target of approximately 65% residents and 35% jobs per hectare.
e) The proportional mix of residents and jobs is planned to 2051 and beyond and *shall* be monitored and adjusted in accordance with Section 8.1.2(9.2) and Section 12.3 of this Plan to track the achievement of the growth target.

f) The entire Downtown Burlington Urban Growth Centre/Burlington GO `Major Transit Station Area is planned to achieve a minimum *floor area ratio* of 2.3 to be implemented and regulated through the Community Planning Permit By-law by way of minimum and maximum building heights.

8.1.2 (2.3) Downtown Burlington Urban Growth Centre/Major Transit Station Area Authorized Uses of Land

a) Schedule F: Land Use- Downtown Burlington Urban Growth Centre/Burlington GO Major Transit Station Area identifies the precincts within the MTSA. The visions for each precinct, which *shall* be implemented through the Community Planning Permit System are as follows:

Burlington GO Urban Growth Centre/MTSA Precinct Visions	
Burlington GO Central	• Preeminent destination for *major office*, regional *public service facilities* as well as commercial, recreation, cultural and *entertainment uses*. • Expected to accommodate high density *employment* centres, accommodate *affordable housing* and urban format retail and focuses tall buildings close to the GO station. • Designed and developed to support the area as a landing and leaving place for all transit trips. • Built-form transition to ensure increased density is met with streetscape design that creates a pedestrian-focused area for travelers to arrive in, find amenities, and enjoy outdoor spaces. • Tallest buildings *should* be located along the rail corridor, where shadows will have the least impact. • Tall buildings at the interface of parks and natural heritage systems will provide sufficient setback with reduced height to provide a transition and minimize shadow impacts. • The completion of a tertiary plan is required in this precinct identify the future transportation network subject to further transportation study and an environmental assessment.
Queensway Commons	• Envisioned to serve as a unique retail and *service commercial* destination with a comfortable and vibrant pedestrian environment with active uses at the street level and increased emphasis on pedestrian and *multi-modal* movement. • Opportunity for public features such as flexible streets, community hubs and central park features that offer unique opportunities for community gatherings.

	• Mixed-use buildings throughout the precinct contribute towards the creation of lively, vibrant and people-oriented places. • Predominately developed with *mid-rise* built forms. • Large, single-use buildings are to be avoided to better establish a fine-grained street frontage along new *complete street*s.
Fairview Frequent Transit Corridor	• Envisioned as a vibrant, lively, and people-oriented place, serviced by frequent and diverse *modes* of travel. • Will accommodate a significant concentration of residential, retail, *employment* and *service commercial* uses, with a main-street pedestrian experience along the *frequent transit corridor* of Fairview Street • Setback treatments that allow for patio spaces, public open space, and enhanced tree canopies.
Urban Employment	• Area is and will continue to be an *employment area* as part of the Region of Halton Employment Area • Envisioned to evolve and can accommodate more intensive *office* and additional *employment* uses in *mid-rise* built form.
Drury Node	• Envisioned to function as the eastern entryway into Burlington Urban Growth Centre/MTSA. • Mixed-use precinct is focused around a new mid-block connection and is intended to accommodate a wide range of housing options with a variety of built form and services to provide for the day-to-day and weekly needs of residents within the precinct and the surrounding neighbourhoods.
Legion Commons	• Includes former *City employment* lands that were converted to become a *complete community* and serve as a community hub. • New community hub will provide for the introduction of new *public service facilities* such as community centres and will support the creation of a diverse range and mix of housing options, including the retention of existing rental housing. • Precinct presents opportunities for *ground-oriented* housing as well as some ground and second floor retail and *service commercial* uses in mixed use buildings. • The replacement of an equal number of jobs will be retained through the creation of new uses serving this area including *public service facilities*, retail and *service commercial* uses. • A Tertiary Plan of this precinct is required to ensure the delivery of *public service facilities* and community amenities.
Leighland Node	• Planned to allow for *intensification* at the major intersection of Brant Street and Plains Road East.

	• Envisioned to function as the gateway and key intersection of Brant Street and Plains Road East and provide opportunities for *public service facilities* as well as retail and *service commercial* uses within landmark buildings. • Lands designated as Leighland Node are intended to serve as a key retail and *service commercial* area, sensitively connecting adjacent residential neighbourhoods to the Burlington GO Central Precinct.
Upper Brant	• Acts as the connection between the Downtown Burlington Urban Centre and the Downtown Burlington Urban Growth Centre/Burlington GO *MTSA*. • Accommodate developments with a variety of building heights proportional to parcel depth along Brant Street between Prospect Street and Blairholm Avenue, with the tallest developments located along and north of Ghent Avenue. • Development will generally achieve a height and density that reflects the precinct's walking distance to higher-order transit at the Burlington GO Station and contribute to the creation of a transit, pedestrian and cycling oriented area while also achieving compatibility with adjacent Residential Low Density areas. • A low-rise feel will be maintained for pedestrians along Brant Street through setbacks above the third storey for buildings abutting Brant Street. • To balance the objectives of providing increased density within walking distance to the Burlington GO Station, providing for a transition to adjacent established low- rise residential areas and to provide for a setback along Brant Street above the third storey, flexibility *may* be considered in the depth of the setback from Brant Street above the third storey.
Mid-Rise Residential	• Precinct is intended to support the general housing and height transition objectives of the *City*'s *Major Transit Station Area*s. • Includes a variety of *low-rise* and *mid-rise building* forms, with the tallest buildings framing main streets such as Plains Road East, Queensway Drive, Brant Street, Fairview Street, and along the rail corridor. • Gradual transitions from the *mid-rise buildings* along Fairview Street, Drury Lane, Plains Road East and Leighland Road will give way to the adjacent *low-rise* neighbourhoods, offering flexibility for new housing *development* to support the growing population of the area.

Low to Mid-Rise Residential	• Precinct applies to areas that serve as a transition between existing *low-rise* residential neighbourhoods and the *intensification areas* within the *MTSA*. • The existing low-rise built form is not anticipated to redevelop in the long term recognizing the existing low-rise *development,* however, opportunities exist to allow for lower mid-rise residential and residential/mixed use infilling opportunities.

b) The following uses *may* be permitted on land within the precincts identified on Schedule F: Land Use- Downtown Burlington Urban Growth Centre/Burlington GO *Major Transit Station Area* and *shall* be regulated in accordance with the Community Planning Permit By-law:
   i. residential uses excluding single detached dwellings, and semi-detached dwellings;
   ii. *office* uses;
   iii. retail and *service commercial* uses;
   iv. *entertainment* uses;
   v. *recreation* uses;
   vi. *employment* uses
   vii. hotel uses;
   viii. *place of assembly*; and,
   ix. major trip generating facility.

c) *Public Service Facilities* and *institutional uses shall* be permitted in all precincts identified on Schedule F:- Land Use-Downtown Burlington Urban Growth Centre/Burlington GO MTSA, of this Plan; with the exception of the Natural Heritage System precinct and in lands within the approximate regulated limit of hazardous lands and hazardous sites as shown on Appendix E of this Plan, and in accordance with the policies of this Plan and implemented through the Community Planning Permit By-law.

d) *Assisted* and *special needs housing* are *encouraged* to locate in all precincts where residential uses are permitted identified on Schedule F: Land Use-Downtown Burlington Urban Growth Centre/Burlington GO MTSA and where public transit, retail and public service facilities are readily accessible, in accordance with the policies of this Plan and implemented through the Community Planning Permit By-law subject to reasonable planning standards and design criteria.

8.1.2(3) Aldershot GO Major Transit Station Area

The Aldershot GO *Major Transit Station Area* is envisioned to continue to evolve as an urban neighbourhood with a distinct sense of place and neighbourhood identity that is connected with the surrounding community. The *MTSA* is supported by five distinct precincts providing a mix of residential, commercial and *employment* uses.

New *multi-modal* urban streets and *active transportation* facilities will support the continued evolution of the Aldershot GO *Major Transit Station Area* into a walkable, urban community that is highly integrated with the existing surrounding community. The envisioned transportation network in the *MTSA* will provide enhanced mobility and improved access to the GO station as well as enhanced connections on the broader mobility network to the Burlington Urban Growth Center and the Downtown Urban Centre. The transportation network will also provide connections to nearby leisure and recreation opportunities such as urban parks and open spaces, as well as the many other amenities that Aldershot Village already offers.

8.1.2(3.1) Aldershot GO Major Transit Station Area

a) The area surrounding and including the Aldershot GO Station as shown on Schedule G: Land Use- Aldershot GO Major Transit Station Area, of this Plan, is a Protected *Major Transit Station Area* in accordance with The Planning Act.

b) *Development* within the Aldershot GO *Major Transit Station Area* boundary *shall* be planned to achieve a minimum density of 150 people and jobs per hectare and will contribute towards achieving the minimum density target of the *Protected Major Transit Station Area*.

c) The minimum density target of 150 people and jobs per hectare *shall* be applied to the entire geography of the Aldershot GO *Major Transit Station Area*.

d) Based on the minimum density of 150 people and jobs per hectare, the corresponding population is approximately 15,249 people and 2,565 jobs, for an estimated 17,814 residents and jobs to achieve a proportional target of approximately 80% residents and 20% jobs per hectare.

e) The proportional mix of residents and jobs is planned to 2051 and beyond and *shall* be monitored in accordance with Section 8.1.2(9.2) and Section 12.3 of this Plan to track the achievement of the growth target.

f) The entire Aldershot GO MTSA is planned to achieve a minimum *floor area ratio* of 1.5 to be implemented and regulated through the Community Planning Permit By-law by way of minimum and maximum building heights.

8.1.2(3.3) Aldershot GO Major Transit Station Area Authorized Uses of Land

a) Schedule G: Land Use- Aldershot GO Major Transit Station Area identifies the precincts within the MTSA. The visions for each precinct that will be implemented through the *Community Planning Permit System* are as follows:

Aldershot GO MTSA Precinct Visions	
Aldershot GO Central	• Focus area for the Aldershot GO *MTSA*'s highest densities. • Preeminent destination for *Major Office*, *affordable housing*, retail and *service commercial* uses within Aldershot Corners and the focus of the tallest buildings close to the GO station. • Built-form transition is very important in this precinct, to ensure increased density is also met with streetscape design that creates a pedestrian-focused area for travelers to arrive in, find amenities, and enjoy outdoor spaces. • The tallest buildings in the precinct are planned to be located along the rail corridor, where shadows will have the least impact, and the height peak of the precinct is planned to be where Waterdown Road intersects the rail line.
Aldershot Main Street	• Envisioned to advance the historic neighbourhood driven-Plains Road Village Vision and establish a unique community destination with a focus on a continuous retail frontage and main-street pedestrian experience along the *frequent transit corridors* of Waterdown Road and Plains Road (East and West).
Cooke Commons	• Planned to accommodate a mix of uses, with *tall* and *mid-rise* mixed use buildings being the predominant built form and use. • New *development* will support the growth of a unique retail and dining destination, with a comfortable and vibrant pedestrian environment fronting onto a re-imagined Cooke Boulevard, including a potential flex street with active uses at the street level and increased emphasis on pedestrian and *multi-modal* movement. • *Development* which fronts onto Cooke Boulevard *shall* include ground floor retail and *service commercial* use.
Emery Commons	• Functions as a transitional area between the tower-concentrated Aldershot GO Central Precinct and the Mid-Rise Residential and Aldershot Main Street precincts. • Precinct will accommodate a concentration of residential, retail, *employment* and *service commercial* uses in buildings with varying heights that contribute towards the creation of lively, vibrant and people-oriented places.

	• Envisioned to be a new community hub for Aldershot Corners, with a concentration of community services, amenities and facilities.
Mid Rise Residential	• Envisioned to include a variety of *low-rise* and *mid-rise building* forms at the eastern and western edges of the Aldershot GO *Major Transit Station Area*. • Planned to support the *Major Transit Station Area* objectives of providing housing as well as retail, *service commercial*, and *employment* opportunities in close proximity to the Aldershot GO Transit Station and allow for transitions to existing neighbourhoods beyond the *Major Transit Station Area* boundary. • Opportunities to consider intervening land uses between the Mid-Rise residential precinct and existing *major facilities* exist in accordance with the land use compatibility policies of this Plan.

b) The following uses *may* be permitted on land within the precincts identified on Schedule G: Land Use- Aldershot GO Major Transit Station Area and *shall* be regulated in accordance with the Community Planning Permit By-law:
   i. residential uses excluding single detached dwellings, and semi-detached dwellings;
   ii. *office* uses;
   iii. retail and *service commercial* uses;
   iv. *entertainment* uses;
   v. *recreation* uses;
   vi. *hotel* uses; and
   vii. light assembly and manufacturing uses, *compatible* with abutting *sensitive land uses*.

c) *Public Service Facilities* and *institutional uses shall* be permitted in all precincts identified on Schedule G: Land Use-Aldershot GO Major Transit Station Area; with the exception of the Natural Heritage System precinct and in lands within the approximate regulated limit of *hazardous lands* and *hazardous sites* as shown on Appendix E and in accordance with the policies of this Plan and implemented through the Community Planning Permit By-law.

d) *Assisted* and *special needs housing* are *encouraged* to locate in all precincts where residential uses are permitted identified on Schedule G: Land Use-Aldershot GO Major Transit Station Area and where public transit, retail and

public service facilities are readily accessible, in accordance with the policies of this Plan and implemented through the Community Planning Permit By-law subject to reasonable planning standards and design criteria.

8.1.2 (4) Appleby GO Major Transit Station Area

The Appleby GO *MTSA* area is divided by the rail corridor into two sub-areas: Appleby GO North and Appleby GO South. Appleby GO *MTSA* North consists of largely existing *employment* uses and will continue to grow to accommodate more intensive *office* and *employment* uses while continuing to support existing *major facilities.* Appleby GO *MTSA* South will evolve as an urban village with a balanced mix of *employment*, residential and commercial opportunities, bordered by Sherwood Forest Park. The two areas will be connected by a new transit plaza, as well as enhanced *transportation* facilities crossing the rail line. Transitions from North to South will focus on land use *compatibility* and will include mitigation measures to protect both existing *employment* uses and new *sensitive land* uses.

A network of new and enhanced *complete street*s and *active transportation* facilities will create additional options for riders travelling to and from the GO Station during peak periods, helping to manage congestion. The transportation network will provide access to recreation opportunities in nearby urban parks and open spaces, while also improving connectivity throughout the *MTSA*, to the adjacent neighbourhood, other *MTSA*s and the Urban Growth Centre, and beyond.

8.1.2 (4.1) Appleby GO Major Transit Station Area

a) The area surrounding and including the Appleby GO Station as shown on Schedule H: Land Use- Appleby GO Major Transit Station Area is a Protected *Major Transit Station Area* in accordance with The Planning Act.
b) *Development* within the Appleby GO *Major Transit Station Area* boundary *shall* be planned to achieve a minimum density of 120 people and jobs per hectare will contribute towards achieving the minimum density target of the Protected *Major Transit Station Area*.
c) The minimum density target of 120 people and jobs per hectare *shall* only be applied to the entire geography of the Appleby GO *Major Transit Station Area*.
d) Based on the minimum density of 120 people and jobs per hectare, the corresponding population is approximately 5,458 people and 19,579 jobs, for an estimated 25,037 residents and jobs to achieve a proportional target of approximately 40% residents and 60% jobs per hectare.
e) The proportional mix of residents and jobs is planned to 2051 and beyond and *shall* be monitored in accordance with Section 8.1.2(9.2) and Section 12.3 of this Plan to track the achievement of the growth target.

f) The entire Appleby GO MTSA is planned to achieve a minimum floor area ratio of 1.2 to be implemented and regulated through the Community Planning Permit By-law by way of minimum and maximum building heights.

8.1.2(4.3) Appleby GO MTSA Authorized Uses of Land

a) Schedule H: Land Use- Appleby GO Major Transit Station Area identifies the precincts within the MTSA. The visions for each precinct that will be implemented through the Community Planning Permit System are as follows:

Appleby GO MTSA Precinct Visions	
General Employment	• Continues to provide locations for existing, new and/or relocating manufacturing, assembly, distribution and service *industrial* uses. • Will provide a broad range of light *industrial* to *office* uses with a mix of *office* and low-rise *employment* built form while ensuring *compatibility* with adjacent *sensitive land uses*.
Urban Employment	• Will continue to be an *employment area* which will grow to accommodate more intensive *office* and additional *employment* uses in a *mid-rise* built form that provides access and high visibility along major transportation routes.
Appleby GO Central	• Intended to accommodate *major office*, *public service facilities* as well as commercial, recreation, cultural and *entertainment uses*. • Expected to accommodate a higher density mix of uses including affordable *housing* and retail with a focus of tall buildings close to the GO station and along the rail. • Will be designed and developed to support the improved connectivity to the *employment* area north of the rail. • Achieving land use compatibility and/or mitigation is very important in this precinct, to ensure the long term viability of the *employment* uses on the north side of the rail corridor while ensuring the protection of new *sensitive land uses*. • Tallest buildings with appropriate compatibility mitigation *should* be located along the rail corridor, where shadows will have the least impact. • Tall buildings at the interface of parks and natural heritage systems will provide sufficient setback with reduced height to provide a transition and minimize shadow impacts.
Fairview Frequent Transit Corridor	• Planned as a vibrant, lively, and people-oriented place, serviced by frequent *multi-modal* travel opportunities.

	• Will establish a unique community destination with a focus on a continuous retail frontage and main-street pedestrian experience. • Accommodates a significant concentration of residential, retail, *employment* and *service commercial* uses, with a main-street pedestrian experience along the *frequent transit corridor* of Fairview Street, and setback treatments that allow for patio spaces, public open space, and enhanced tree canopies.
Mid-Rise Residential	• Envisioned to support the general housing and height transition objectives of this Plan offering gradual transitions from the adjacent existing low rise neighbourhoods.
Low to Mid-Rise Residential	• Applies to an area that includes existing *low-rise* residential neighbourhoods within the *Major Transit Station Area*. • The existing low-rise built form is not anticipated to redevelop in the long term, recognizing the existing low-rise *development*.

b) The precincts identified south of the rail corridor on Schedule H: Land Use-Appleby GO Major Transit Station Area *may* permit the following authorized uses of land and *shall* be regulated in accordance with the Community Planning Permit By-law:

   i. residential uses excluding single detached dwellings, and semi-detached dwellings;
   ii. *major office* and *office* uses;
   iii. retail and *service commercial* uses;
   iv. *hotel* uses;
   v. *recreation uses* ; and
   vi. *entertainment uses*.

c) The precincts identified north of the rail corridor on Schedule H: Land Use-Appleby GO Major Transit Station Area *may* permit the following authorized uses of land and *shall* be regulated in accordance with the Community Planning Permit By-law:

   i. *Industrial* uses;
   ii. *Employment* uses;
   iii. *office* and *major office* uses;
   iv. *automotive commercial* uses;
   v. *accessory* retail and *service commercial uses* which serve the day to day needs of employees; and,

vi. A limited range of *recreation uses* such as fitness centres and gyms that meet the definition of *ancillary employment use*, as defined by this Plan, and *shall* be located within a building with existing or planned *employment* uses.

d) *Public Service Facilities* and *institutional uses shall* be permitted in all precincts identified on Schedule H: Land Use-Appleby GO Major Transit Station Area with the exception of the Natural Heritage System precinct and in lands within the approximate regulated limit of *hazardous lands* and *hazardous sites* as shown on Appendix E and in accordance with the policies of this Plan and implemented through the Community Planning Permit By-law.

e) *Assisted* and *special needs housing* are *encouraged* to locate in all precincts where residential uses are permitted identified on Schedule H: Land Use-Appleby GO Major Transit Station Area and where public transit, retail and public service facilities are readily accessible, in accordance with the policies of this Plan and implemented through the Community Planning Permit By-law subject to reasonable planning standards and design criteria.

The policies within Sections 8.1.2(5) through to 8.1.2(9) and other applicable policies of this Plan provide direction for all precincts within the City's three *Major Transit Station Areas*.

8.1.2(5) Water, Wastewater and Transportation Infrastructure

To support *intensification* within the *Major Transit Station Areas*, the comprehensive study of planning, phasing and ultimately financing of *infrastructure* in an integrated manner must be prioritized. Planning for *infrastructure* is undertaken by the Region of Halton and a number of different partner agencies and organizations, and collaboration is necessary to ensure that there are services in place to support new population and employment uses as growth occurs.

Accommodating growth through *intensification* requires investment in the transportation network to ensure that people of all ages and abilities have a variety of travel options. The *multi-modal* network will be safe, accessible, and balanced, supported by the prioritization of walking, cycling and transit facilities including first and last mile connections to transit facilities. The *multi-modal* network of *complete street*s will be designed based on the safe integration of all *modes* of travel.

8.1.2 (5.1) Water and Wastewater Infrastructure

a) *Infrastructure* will be delivered in accordance with Section 6.1 of this Plan.
b) In accordance with the City's Growth Framework, the phasing of municipal *sewage and water services* capacity improvements amongst the *Major Transit Station Area*s *shall* be as follows:

    i) the Downtown Burlington Urban Growth Centre/Burlington GO *MTSA*;
    ii) Aldershot GO *MTSA*; and
    iii) Appleby GO *MTSA*.

c) D*evelopment shall* be connected to municipal *sewage and water services* in accordance with the Region of Halton's Water and Wastewater Master Plan.
d) *Development shall* be limited to the capacity and financial capability of the Region of Halton to deliver municipal *sewage and water services* in accordance with Subsection 8.1.2(9.2) b) of this Plan.
e) In accordance with the findings of the functional servicing report, further study regarding the impact of planned MTSA intensification and its relation to other planned development on the Regional scale *shall* be required. The City will work with the Region to scope and deliver a targeted study, either as a component of the Integrated Master Servicing Planning being undertaken by the Region or as a unique study assessing system-wide analysis.
f) In accordance with Section 8.1.2(9.2) of this Plan, the City will monitor growth in the *MTSAs* and collaborate with the Region to confirm the appropriate study, phasing and financing elements are in place to ensure the timely delivery of infrastructure investment to unlock growth in MTSAs.
g) The *City* will coordinate the timing of its *infrastructure* projects, including streetscape improvements and future road projects, with upgrades to sewage and water networks in collaboration with the Region of Halton to minimize the impacts of construction on the residents and businesses.
h) The co-location of linear *infrastructure* is *encouraged*, where appropriate.

8.1.2(5.2) Transportation Network

a) Street design *shall* comply with Table 1: Classification of Transportation Facilities and Table 3: Classification of *Major Transit Station Area* facilities, of this Plan.
b) The location of streets and off-road *active transportation* connections are conceptual and *shall* be provided, as identified on Schedule F-1: Downtown Burlington Urban Growth Centre/Burlington GO Major Transit Station Area Transportation Network, Schedule G-1: Aldershot GO Major Transit Station Area Transportation Network, and Schedule H-1: Appleby GO Major Transit Station Area Transportation Network, of this Plan. Further refinements and additions to the street and active transportation network may be determined through tertiary

planning in accordance with Subsection 8.1.2(8.2) of this Plan o through the consideration of a community planning permit or other approval.

c) The locations of streets, as identified on Schedule F-1: Downtown Burlington Urban Growth Centre/Burlington GO Major Transit Station Area Transportation Network, Schedule G-1: Aldershot GO Major Transit Station Area Transportation Network, and Schedule H-1: Appleby GO Major Transit Station Area Transportation Network, of this Plan, are conceptual and may be determined through tertiary planning in accordance with Subsection 8.1.2(8.2) of this Plan.
d) The ultimate location and design of any new streets, whether identified on Schedule F-1: Downtown Burlington Urban Growth Centre/Burlington GO Major Transit Station Area Transportation Network, Schedule G-1: Aldershot GO Major Transit Station Area Transportation Network, and Schedule H-1: Appleby GO Major Transit Station Area Transportation Network, or through policy, *shall* be reviewed through a *development application,* Community Planning Permit application or an Environmental Assessment process in accordance with the design parameters of Table 1: Classification of Transportation Facilities and Table 3: Classification of Major Transit Station Area Facilities, of this Plan.
e) The public street rights-of-ways identified in Schedule F-1 Downtown Burlington Urban Growth Centre/Burlington GO Major Transit Station Area Transportation Network, Schedule G-1 Aldershot GO Major Transit Station Area Transportation Network, and Schedule H-1 Appleby GO Major Transit Station Area Transportation Network and in Table 4: Major Transit Station Area Public Right-of-Way Widths, of this Plan, *shall* be protected and secured through the processing of a Community Planning Permit application, unless waived by the *City* in accordance with Subsection 6.2.7(2)f) of this Plan. Further, any public right-of-way identified in a detailed engineering study or Environmental Assessment study *shall* be protected and secured in the same way through the Community Planning Permit application.
f) A detailed, intersection level Transportation Impact Assessment Study *shall* be completed for *development* proposals to assess the impacts of traffic on the local and Regional road network and to identify *infrastructure* upgrades and access improvements.
g) Where a Transportation Study identified in Section 8.1.2(5.2) e) determines that capacity is not available, *development shall* not be permitted until improvements to address the identified constraints have been implemented to the satisfaction of the *City* and Region including alternative modes of travel, transit priority measures, Transportation Demand Management measures and other approaches outlined in the Burlington Integrated Mobility Plan and the Mobility Management Strategy for Halton Region.
h) Minor modifications to the location, size and alignment of the conceptual streets *may* be permitted without amendment to this Plan and *Community Planning*

Permit System provided that such modifications are approved by the *City* and Halton Region in accordance with their applicable guidelines.

i) *Development* proposals *shall* be located on public streets or roads, unless it can be demonstrated by the proponent to the satisfaction of the *City* that a private street or road is equally desirable from the standpoints of functionality, community safety, efficiency, servicing, neighborhood connectivity, facilitating east of land assembly for future *development*, reducing *negative* environmental impacts and minimizing financial impacts to the *City*.

j) Streets *shall* be planned as *complete streets* in accordance with the policies of this Plan.

k) The *City will* prepare Complete Street design guidelines as directed by the Integrated Mobility Plan, to provide guidance for the *complete streets* network, establish detailed engineering and design standards for the construction of new roads and improvements to existing roads, and to provide design opportunities for *flex streets* .

l) New streets to support *development shall* consist of short blocks and frequent crossings that will improve *active transportation* and vehicular connections.

m) Midblock connections including *active transportation* connections *should* be incorporated to support site permeability and enhance pedestrian access.

n) The *City shall* study and implement Bus Rapid Transit facilities with dedicated lanes as identified on Schedule B-2 Growth Framework and Long Term Frequent Transit Corridors of this Plan.

o) Subject to a Municipal Class Environmental Assessment, a north-south Major Collector grade separated crossing connecting the north Burlington GO Central precinct to the south Burlington GO precinct to Fairview Street as shown on Schedule F-1: Downtown Burlington Urban Growth Centre/Burlington GO Major Transit Station Area Transportation Network, of this Plan, *shall* be *required*.

p) The evaluation of other potential major network improvements in the area identified on Schedule F-1: Downtown Burlington Urban Growth Centre/Burlington GO Major Transit Station Area Transportation Network, of this Plan, as 'Area Subject to Further Study' and enhanced *active transportation* facilities *shall* also be required.

q) Subject to a Municipal Class Environmental Assessment, a north-south Arterial grade separated crossing connecting Harvester Road to Fairview Street as shown on Schedule H-1: Appleby GO Major Transit Station Area Transportation Network, of this Plan, *shall* be required. Enhanced *active transportation* facilities *shall* also be required. The lands *shall* be dedicated to the City in accordance with the Tertiary Plan.

r) The *City* will collaborate with the appropriate agencies to secure an *active transportation* grade crossing at the north end of Century Drive across the QEW as shown on Schedule H-1: Appleby GO Major Transit Station Area Transportation Network and in Burlington GO across the QEW as identified on

Schedule F-1: Downtown Burlington Urban Growth Centre/Burlington GO Major Transit Station Area Transportation Network, of this Plan.

8.1.2 (5.3) Laneways

a) Laneways *may* be considered to provide a pedestrian and mid-block connection to the interior of *development,* as well as access to the required deliveries, services and utilities for the building.
b) Laneways *should* be located in the middle or rear of *development* with access points providing adequate distance between intersections and existing driveways in accordance with a Transportation Impact Assessment.

8.1.2 (5.4) Active Transportation Network

a) *Active transportation* connections *shall* be provided both on existing and proposed streets in accordance with Schedule F-1: Downtown Burlington Urban Growth Centre/Burlington GO Major Transit Station Area Transportation Network, Schedule G-1: Aldershot GO Major Transit Station Area Transportation Network, and Schedule H-1: Appleby GO Major Transit Station Area Transportation Network, of this Plan.
b) Off-Road a*ctive transportation* connections, as shown on Schedule F-1: Downtown Burlington Urban Growth Centre/Burlington GO Major Transit Station Area Transportation Network, Schedule G-1: Aldershot GO Major Transit Station Area Transportation Network, and Schedule H-1: Appleby GO Major Transit Station Area Transportation Network, of this Plan, and Potential *Linear Park and Greenway* elements identified on Schedule F: Land Use – Downtown Burlington Urban Growth Centre/Burlington GO Major Transit Station Area, Schedule G: Land Use- Aldershot GO Major Transit Station Area and Schedule H: Land Use – Appleby GO Major Transit Station Area, *shall* be planned to facilitate direct connections within and outside of the *Major Transit Station Area*s and provide recreational opportunities in accordance Section 6.2.4 and Schedule Q: Trails Strategy, of this Plan.

8.1.2(6) Land Use Compatibility

a) *Development* of *sensitive land uses* and *major facilities shall* be in accordance with Section 4.6 and Subsection 8.1.2(6), of this Plan.
b) Where avoidance is not possible, *development* containing *sensitive land uses shall* demonstrate how land use *compatibility* has been evaluated and addressed through a Land Use Compatibility Study. Development *shall* only be permitted where the impacts to industrial, manufacturing or other *major facilities* have been minimized and mitigated to the satisfaction of the *City*.
c) Where proposed *development* contains *sensitive land uses*, a Land Use Compatibility Study *shall* be undertaken based on a Terms of Reference developed by the *City* which *may* include but is not limited to, the following:
    i. Detailed site description and proposed use;

ii. Building massing, location and height description;
iii. Description of impact of air emissions from surrounding environment on proposed *development*;
iv. Proposed measures, including at-source mitigation and the consideration of intervening land uses, to demonstrate mitigation;
v. Required engagement with existing industry landowners;
vi. In the case where land that has been converted from an exclusive *employment* designation, the study *shall* consider the plans of the existing industry to phase out and/or relocate the use;
vii. Warning clauses in offers of purchase and sale, lease or rental agreements and condominium declarations, or other *development* agreement as applicable, *shall* be determined and secured through the planning application process, and *may* include but not be limited to advising purchasers and future occupants of:
    a) the proximity of *industrial* uses with associated heavy truck traffic; and,
    b) the proximity of the railway and associated rail traffic and operations.
viii. Any other considerations that *may* be required or recommended in accordance with applicable Provincial policies and guidelines.

d) Land use *compatibility* studies *shall* include engagement with existing industry landowners and quantitative analysis to demonstrate compatibility with respect to air quality contaminants, odour, dust, noise and vibration.
e) To protect the operational and economic viability of existing *major facilities*, the introduction of new *sensitive land uses shall* not be permitted within the Minimum Separation Distance of a Class 3 *major facility* in accordance with Provincial guidelines until it can be demonstrated that the potential impacts to the facility are minimized and mitigated, and that *land use compatibility* can be maintained to the satisfaction of the *City*.
f) Where a Land Use Compatibility Study recommends that source and/or site receptor mitigation actions are required, the mitigation measures *shall* be undertaken at the expense of the applicant and agreed upon by all affected parties.
g) For proposed developments where source mitigation is required, appropriate agreements *should* be enacted to ensure monitoring of the long term maintenance of recommended and employed mitigation measures to support new *sensitive land uses*.
h) The *City shall* develop city-wide guidelines for the formalization of the procedures for assessing Class 4 applications including, but not limited to, the requirement for a detailed noise impact assessment in accordance with NPC-300 and any applicable Provincial guidelines.

8.1.2(7) Natural Heritage System Precinct

a) The Natural Heritage System Precinct is shown on Schedule F: Land Use- Downtown Burlington Urban Growth Centre/Burlington GO Major Transit Station Area, Schedule G: Land Use- Aldershot GO Major Transit Station Area, and Schedule H: Land Use- Appleby GO Major Transit Station Area, of this Plan.
b) Proposed *development shall* consider the impacts to all components of the Natural Heritage System Precinct, as well as components of the Natural Heritage System on adjacent lands, in accordance with the policies of this Plan and the Regional Official Plan.
c) Where *development* is proposed within or adjacent to the Natural Heritage System Precinct, as shown on Schedule F: Land Use- Downtown Burlington Urban Growth Centre/Burlington GO Major Transit Station Area, Schedule G: Land Use- Aldershot GO Major Transit Station Area, and Schedule H: Land Use- Appleby GO Major Transit Station Area, of this Plan, an Environmental Impact Assessment (EIA) *shall* be required in accordance with the policies of this Plan.
d) *Buffers* for identified *significant woodlands shall* be no less than 10m wide and *shall* form part of the City's Natural Heritage System precinct. Non-intensive pedestrian trails *may* be located within these *buffers* where *negative impacts* to *woodlands* can be minimized as demonstrated through an Environmental Impact Study.

8.1.2(7.1) Natural Hazards and Flood Hazards

a) *Development* proposals *shall* consider the recommendations and findings from the latest Flood Hazard Assessments and Stormwater Management Plans pertaining to each *Major Transit Station Area*.
b) The delineation and regulation of *hazardous lands* and *hazardous sites* is administered by Conservation Halton. Conservation Halton regulates lands in or adjacent to river or stream valleys (including *flooding* and *erosion hazards*), *wetlands*, shorelines and other *hazardous lands*. *Development* in the Natural Hazard Overlay must be consistent with provincial natural hazard policy and permission is required from Conservation Halton to undertake development within these areas, in accordance with Conservation Halton's regulation and regulatory policies.
c) *Development* adjacent to valleyland and watercourse features, as well as *development* within or in proximity to *hazardous lands may* be required to be supported by detailed slope stability, stream erosion and/or flooding studies, where appropriate. The studies and resulting limits of the *hazardous lands shall* be to the satisfaction of the *City* and Conservation Halton.
d) *Flooding hazards*, including spills, *shall* be assessed by *development* proponents utilizing the best flood hazard modeling information available to confirm requirements for on-site stormwater management quantity and quality controls

and to ensure any required floodproofing for safe-ingress and egress is implemented in accordance with the City's Stormwater Management Design guidelines.

e) *Adverse effects* of *development* on the downstream aquatic environment including watercourse erosion, *shall* be avoided or mitigated to the satisfaction of the City and Conservation Halton.

f) The approximate regulated limit of these lands and location of watercourses are illustrated on Appendix H. The map lines are approximate. Technical studies may be required to identify regulated *hazardous lands*, *hazardous sites*, watercourses and *wetlands* that are unmapped. Conservation Halton must be contacted to confirm the approximate regulation limit mapping and permit requirements.

g) The *City may* update the relevant appendices of this Plan from time to time without amendment to this Plan, in accordance with the latest Flood Hazard Assessments and Stormwater Management Plans pertaining to each *Major Transit Station Area* and the policies of this Plan.

8.1.2(8) Urban Design and Public Realm

8.1.2 (8.1) Public Realm

a) The design of the *public realm* and the private realm *should* be coordinated to provide attractive *streetscapes* throughout the *MTSA*s.

b) Streetscape improvements will be scheduled and phased appropriately with road and *infrastructure* projects, as well as timing of *development,* in accordance with Section 8.1.2 (5.1) of this Plan. Proponents of *development shall* collaborate with the *City* to align *development* with road and *infrastructure* projects, where it is deemed appropriate by the *City*.

c) Any new public streets developed in accordance with Section 8.1.2(5.2) *should* include appropriate linkages to new and existing parks or potential Linear Parks & Greenways. Where feasible and appropriate, elements which enhance the functionality of park linkages *should* be incorporated into the design of new streets (e.g., additional seating, provision of shade, street trees and accessibility requirements).

d) For lands that are not subject to a Tertiary Plan as identified in Section 8.1.2(9.1), a shared distribution of the responsibility among landowners to provide street *infrastructure*, *active transportation* connections and parks to contribute to the public realm is required through the comprehensive planning of contiguous lots based on good planning principles.

e) *Development* proponents *shall* demonstrate that the proposal will not compromise the ability of development on adjacent property(ies) to meet the objectives and policies of this Plan and will be designed to facilitate future

pedestrian, cycling and/or private street connections across one or more adjacent properties, where such opportunities exist as determined by the *City*.

8.1.2 (8.2) Activated Streets

Activated Streets located in *MTSA*s will be designed to cater to pedestrians and create a vibrant streetscape for leisure, shopping, dining and working. *Public realm* and built form design will establish the safety and comfort of pedestrians as the first priority. Design will focus on creating a safe, welcoming and comfortable environment for high volumes of pedestrians across all seasons. Where Activated Streets have been identified on Schedule F-2: Downtown Burlington Urban Growth Centre/Burlington GO Major Transit Station Area Activated Streets, Schedule G-2: Aldershot GO Major Transit Station Area Activated Streets, and Schedule H-2: Appleby GO Major Transit Station Area Activated Streets, of this Plan, retail, *service commercial* and *office* uses that activate and animate the ground floor of buildings facing the street *shall* be required. Uses such as stores, restaurants, patios, *public service facilities, institutional* uses, *offices* and residential lobbies will help to create vibrancy and activation on these important streets within the *MTSAs*.

Activated streets will experience near constant evolution, be it through *redevelopment* or tenant changes over time. Every effort *should* be made to maintain and support the character and continuity of activated streets throughout this evolution.

a) In accordance with Schedule F-2: Downtown Burlington Urban Growth Centre/Burlington GO Major Transit Station Area Activated Streets, Schedule G-2: Aldershot GO Major Transit Station Area Activated Streets, and Schedule H-2: Appleby GO Major Transit Station Area Activated Streets, of this Plan, *service commercial* and *office* and uses at-grade *may* be developed:

    i. along Major Mixed Use Streets, retail, *service commercial* or *office*, uses *shall* be required continuously at grade in buildings having frontage onto public streets.
    ii. along General Mixed Use Streets, retail, *service commercial*, and *office* uses are encouraged at grade in buildings fronting onto public streets.
    iii. Notwithstanding Section 8.1.2(8.2) a) i), and ii) of this Plan, *public service facilities, institutional uses* and residential lobby entrances in conjunction with other permitted uses are permitted along activated streets.

b) The Community Planning Permit By-law *may* establish provisions for when the City would consider exemptions to the requirements of 8.1.2(8.2) a) (i) to achieve other objectives of this Plan, including enabling the flexibility of uses.

c) In accordance with Section 8.1.2(5.2) of this plan, where a new public street not shown on Schedule F-2: Downtown Burlington Urban Growth Centre/Burlington GO Major Transit Station Area Activated Streets, Schedule G-2: Aldershot GO Major Transit Station Area Activated Streets, and Schedule H-2: Appleby GO Major Transit Station Area Activated Streets, of this Plan, is proposed, or where a new public street is proposed within an area subject to a Tertiary Plan in accordance with Section 8.1.2(9.1) of this Plan, the *City* will determine the appropriate category of activated street. The *City* will consider objectives and vision of the precinct or precincts which the new street will cross, as well as the location of the new street in relation to other existing or proposed activated streets.
d) *Development shall* demonstrate how the amount of proposed retail and *service commercial* floor area will support the *City's* objectives for activated streets.
e) Along Mixed Use Major Streets, the gross floor area of existing retail and *service commercial* uses *shall* be considered the minimum requirement for the maintenance, restoration or replacement of retail and *service commercial uses* in any new *development*.
f) The Community Planning Permit By-law *shall* establish requirements for new development along activated streets to be designed in a manner that ensures flexible and functional ground floor retail and service commercial units that contribute to a vibrant, active and animated built environment, including, but not limited to:
    i. Minimum first floor height and floor area;
    ii. Maximum frontage at grade for units to create a character of smaller shops;
    iii. Minimum setbacks to expand the pedestrian realm; and,
    iv. Design guidance to support the character and continuity of activated streets.

8.1.2 (8.3) Built Form Transitions

a) The *City's* implementing Community Planning Permit By-law *shall* establish appropriate regulations which:
    i. ensure *compatibility* between a new *development* and existing built form in the Low to Mid-Rise Residential precinct as shown on Schedule F: Land Use- Downtown Burlington Urban Growth Centre/Burlington GO Major Transit Station Area, Schedule G: Land Use- Aldershot GO Major Transit Station Area and Schedule H: Land Use- Appleby GO Major Transit Station Area or Residential – Low Density designation shown on Schedule C: Land Use – Urban Area of this Plan, and
    ii. support diversity and flexibility in building form massing and design.

8.1.2 (8.4) Complete Communities Elements

a) *Public service facilities* and *institutional uses shall* be permitted in all precincts of the MTSAs with the exception of the Natural Heritage System precinct, Natural Hazards overlay, General Employment and Urban Employment precincts in accordance with Section 3.2.2 c) of this Plan, subject to land use *compatibility* policies for existing *major facilities*.

b) *Public service facilities and institutional uses* are *encouraged* to co-locate with other uses within a single building, site, mixed-use *development* or community hub.

c) *Public service facilities shall* be planned for and designed to meet the needs of the *City* and other public service providers in accordance with their respective master planning work to support long-term growth.

d) The prioritization of investment in *public service facilities* will be considered in accordance with Section 6.1.2 of this Plan.

e) *Public service facilities* are encouraged to be located within close proximity to *linear parks and greenways*, along public transit networks or *active transportation* connections as identified on Schedule F: Land Use- Downtown Burlington Urban Growth Centre/Burlington GO Major Transit Station Area, Schedule G: Land Use- Aldershot GO Major Transit Station Area and Schedule H: Land Use- Appleby GO Major Transit Station Area and Schedule F-1: Downtown Burlington Urban Growth Centre/Burlington GO Major Transit Station Area Transportation Network, Schedule G-1: Aldershot GO Major Transit Station Area Transportation Network, and Schedule H-1: Appleby GO Major Transit Station Area Transportation Network of this Plan.

f) All *public service facilities shall* be designed with flexibility and adaptability to accommodate shifts in demographics, community needs and function over the long term.

g) The delivery of *public service facilities* through public/private partnerships *shall* be *encouraged* to support the *complete community* objectives of this Plan.

h) All *City public service facilities shall* be designed in a multi-purpose function to accommodate a variety of community uses and a range of different users.

i) At the time of *development,* proponents *shall* collaborate with the City to address p*ublic service facility* needs identified through *City* studies including but not limited to, the Parks Provisioning Master Plan, the Parks, Recreation, and Cultural Assets Master Plan, and Fire Master Plan, as well as identified Regional, Provincial and School Board needs related to growth. The following facilities are to be provided in accordance with the Community Planning Permit By-law:

    i) On-site community facilities.

    ii) Off-site community facilities within 1.6 kilometers, or an appropriate distance determined by the *City* that contributes to providing elements of a complete community for the *Major Transit Station Areas*.

j) The City will establish a prioritized list of *public service facility* needs in alignment with the Community Planning Permit System Interpretation and Monitoring report as identified in Section 8.1.2(9.2) e) of this Plan.

8.1.2 (8.5) Parks and Open Space

a) The planning, design and *development* of parks *shall* be guided by the Parks Provisioning Master Plan and will consider all applicable policies of Chapter 3, Subsection 3.3, Parks, Recreation and Open Space, and Chapter 7, Design Excellence of this Plan.
b) New parks *shall* be planned within the areas generally shown as the "New Public Park" and "New Linear Park and Greenway" symbols on Schedule F: Land Use- Downtown Burlington Urban Growth Centre/Burlington GO Major Transit Station Area, Schedule G: Land Use- Aldershot GO Major Transit Station Area and Schedule H: Land Use- Appleby GO Major Transit Station Area, of this Plan. The specific location, size and function of a park *shall* be established through a Community Planning Permit application process or through a Tertiary Plan as set out in Section 8.1.2 (9.1) of this Plan.
c) Privately-Owned Publicly Accessible Spaces (POPS) *may* be considered as parks and *shall* be subject to all applicable parks policies of this Plan, as well as Appendix B of the Parks Provisioning Master Plan.
d) When considering proposals for parkland dedication as part of a *development application*, or when considering opportunities for *City* parkland purchases , the parkland dedication criteria in Appendix B of the Parks Provisioning Master Plan *shall* be applied by the *City*.
e) In appropriate locations, the *City shall* collaborate with landowners to complete a Tertiary Plan in accordance with Section 8.1.2 (9.1) of this Plan, to ensure the proper siting of parks and the effective coordination of land dedication to support park space functionality.

8.1.2 (8.6) Housing Policies

a) All forms of *affordable* and *assisted housing*, including subsidized non-market housing units, are *encouraged* for integration within neighbourhoods.
b) The Community Planning Permit system shall set out that notwithstanding any other requirements, *affordable housing* and *assisted housing*, *may* be permitted as single use *developments* and are *encouraged* to be combined with *developments* that also provide market housing.
c) The *City* will collaborate with development proponents, the Region and non-profit housing providers to locate opportunities for subsidized non-market housing units within the *Major Transit Station Area*s.
d) The *City shall* require the submission of a *housing impact statement* where a *development* proposal includes more than one hundred (100) *dwelling units,* in accordance with subsection 3.1.1(2)h) of this Plan. The *housing impact*

statement shall also identify how the proposal contributes to achieving the *City*'s Council approved housing targets.

e) To achieve a mix of unit types and to support the creation of a range of housing types, the Community Planning Permit System shall regulate achievement of housing size and type as identified in the City's Housing Strategy.

8.1.2(9) Implementation

8.1.2 (9.1) Tertiary Plans

a) A Tertiary Plan in select key areas of the Major Transit Station Areas *shall* provide a framework for the distribution of *development* to ensure the shared delivery of streets and blocks, land use, parks and open space, *public realm* and streetscapes, parking, site access and pedestrian connections, and *public service facilities*.

b) A Tertiary Plan and cost-sharing agreement(s) *shall* be completed by the landowners group and approved by the *City* prior to the approval of any *development application* to ensure that the costs associated with the provision of parkland, parking, *infrastructure* and servicing are distributed in an equitable and fair manner among the landowners unless the landowners can demonstrate that the proposed development is delivering the elements identified in 8.1.2(9.1) d) or that those elements are achieved elsewhere, the City *may* consider waiving the requirement for a Tertiary Plan.

c) A Tertiary Plan will be included as a non-statutory appendix to this Plan prior to the approval of a *development* application. The Tertiary Plan will be authorized by *City* staff and does not require Council approval.

d) A Tertiary Plan *shall* provide for *complete community* elements that *may* include, but are not limited to the following, in accordance with the policies of this Plan and the *Community Planning Permit System* By-law regulations:

   i. Transportation, *active transportation*, including pedestrian, cycling and transit stops and trail connections along with an assessment of the function, ownership, cross-section, alignment and design of transportation connections, including connections across railways;
   ii. Proposed layout of streets, lanes and development blocks;
   iii. The provision of waste and wastewater infrastructure servicing in accordance with the policies of this Plan;
   iv. Provision and location of stormwater management facilities and/or green infrastructure in accordance with the policies of this Plan;
   v. An assessment of the need for, and recommended location of pedestrian connections;
   vi. The distribution of height and density while having regard for transition to any adjacent Residential – Low Density or Low-Rise Neighbourhood Precinct, as identified on Schedule C: Land Use – Urban Area, of this Plan;

vii. The location of new required public parks, open spaces and linear parks within the precinct including the size, location and configuration of public parks;
viii. New *public service facilities* and *institutional uses,* along with an assessment of function, configuration and ownership in accordance with the policies of this Plan;
ix. The location and configuration of retail and *service commercial* floor area;
x. The provision of *special needs housing*, *assisted housing* and *affordable housing* in accordance with Section 3.1 of this Plan;
xi. The relationship to abutting precincts and surrounding neighborhoods outside the *MTSA* boundaries;
xii. Demonstration of land use *compatibility,* including any mitigation requirements, to the satisfaction of the *City*.

e) The City *may* identify and deem necessary future areas that may require tertiary planning or equivalent to ensure *development* provides for *complete community* elements.
f) A Tertiary Plan *shall* be required for the following subareas within the *Major Transit Station Areas*:

Burlington Urban Growth Centre/Major Transit Station Area

i. The area south of Queensway Drive, east of Brant Street and north of the Rail corridor within the Burlington GO Central and Queensway Commons precinct as shown on Schedule F-3: Downtown Burlington Urban Growth Centre/Burlington GO MTSA Tertiary Planning Areas of this Plan. A Tertiary Plan shall consider the items set out in Section 8.1.2(9.1)d) of this Plan and *shall* also address the following:
    a) An assessment of the need for, and recommended location of *active transportation* connections throughout the area;
    b) Transportation connections throughout the precinct in accordance with the *Major Transit Station Area* Transportation Study and as informed by the completion of a Transportation Impact Assessment;
    c) New public parks and a transit plaza;
    d) A grade separated rail crossing in accordance with Section 8.1.2(5.2) o) of this Plan.

ii. The area north of Fairview Street and west of Brant Street within the Burlington GO Central precinct as shown on Schedule F-3: Downtown Burlington Urban Growth Centre/Burlington GO Major Transit Station Area Tertiary Planning Areas, of this Plan. A Tertiary Plan *shall* consider the items set out in Section 8.1.2(9.1)d), of this Plan and *shall* also address the following:

a) An assessment of the need for, and recommended location of *active transportation* connections throughout the area;
b) Demonstrated preservation and integration of *cultural heritage resources* in accordance with the policies of this Plan;
c) A new public park.

iii. The entirety of the Legion Commons precinct as shown on Schedule F-3: Downtown Burlington Urban Growth Centre/Burlington GO Major Transit Station Area Tertiary Planning Areas, of this Plan. A Tertiary Plan *shall* consider the items set out in Section 8.1.2(9.1)d) and *shall* also address the following:
   a) Transportation connections throughout the precinct in accordance with the *Major Transit Station Area* Transportation Study and completion of a Transportation Impact Assessment;
   b) A new public park and *linear park* connections within the precinct;
   c) *Public service facilities* and *institutional uses* provided as part of mixed use *development*.

Aldershot GO MTSA

i. The area west of Waterdown Road, south of rail and east of Howard Road, north of Plains Road within the Aldershot GO Central, Emery Commons and Aldershot Main Street precincts and shown on Schedule G-3: Aldershot GO Major Transit Station Area Tertiary Planning Areas, of this Plan. A Tertiary Plan *shall* consider the items set out in Section 8.1.2(9.1)d) and *shall* also address the following:
   a) New public parks within the precinct and a linear park along Masonry court extending from Grove Park to Hidden Valley Park;
   b) Transportation connections throughout the precinct in accordance with the *Major Transit Station Area* Transportation Study and completion of a Transportation Impact Assessment;
   c) An assessment of the need for and recommended location of, pedestrian connections throughout the precinct;
   d) A *public service facility* or community hub;
   e) Demonstration of land use *compatibility,* to the satisfaction of the City, in accordance with Section 8.1.2(6) c) (vi) and the objective of phasing out of *major facilities* within this area.

ii. The area east of Waterdown Road, south of the rail and north of Masonry Court within the Mid-rise Residential precinct as shown on Schedule G-3: Aldershot GO Major Transit Station Area Tertiary Planning Area, of this Plan. A Tertiary Plan *shall* consider the items set out in Section 8.1.2(9.1)d) and *shall* also address the following:
   a) New public parks within the precinct and a linear park along Masonry Court extending to Grove Park;

b) Transportation connections throughout the precinct in accordance with the *Major Transit Station Area* Transportation Study and completion of a Transportation Impact Assessment;
c) An assessment of the need for, and recommended location of, pedestrian connections throughout the precinct;
d) Demonstration of land use *compatibility,* to the satisfaction of the City.

Appleby GO MTSA

i. The area south of the rail, east of Appleby Line, north of Fairview Street and west of the creek block within the Appleby GO central and Fairview Frequent Transit Corridor precincts as identified on Schedule H-3 Appleby GO MTSA Tertiary Planning Areas, of this Plan. A Tertiary Plan *shall* consider the items set out in Section 8.1.2(9.1)d) and *shall* also address the following:
   a) New public parks within the precinct, and including a linear park;
   b) A new east-west transportation connection in accordance with the *Major Transit Station Area* Transportation Study and completion of a Transportation Impact Assessment;
   c) An assessment of the need for, and recommended location of, pedestrian connections throughout the precinct;
   d) *Public service facilities*;
   e) Demonstration of land use *compatibility,* to the satisfaction of the *City;*
   f) A grade separated rail crossing in accordance with Subsection 8.1.2(5.2) q) of this Plan.

ii. The area south of the rail, west of Appleby Line, and north of Fairview Street within the Appleby GO Central and Fairview Frequent Transit Corridor precinct as shown on Schedule H-3 Appleby GO Major Transit Station Area Tertiary Planning Areas. A Tertiary Plan *shall* consider the items set out in Section 8.1.2(9.1)d) and *shall* also address the following:
   a) New public parks within the precinct and a linear park;
   b) A new east-west transportation connection in accordance with the *Major Transit Station Area* Transportation Study and completion of a Transportation Impact Assessment;
   c) An assessment of the need for, and recommended location of pedestrian connections throughout the precinct;
   d) *Public service facilities*;
   e) Demonstration of land use *compatibility* to the satisfaction of the *City*.

g) Landowners are *encouraged* to work together to complete a Tertiary Plan however, an individual landowner *may* complete the Tertiary Plan for the entire tertiary plan area if other landowners decide not to participate.
h) Where a Tertiary Plan is required, the following *may* be requested and prepared for all properties within the Tertiary Plan area prior to the submission of a Community Planning Permit application:
    i. Traffic Impact Assessment;
    ii. Parking Study;
    iii. Functional Servicing Report;
    iv. Stormwater Management Plan;
    v. Environmental Impact Assessment;
    vi. Urban Design Brief;
    vii. Cost Sharing Analysis;
    viii. Market Impact Study;
    ix. Shadow Study;
    x. Development Phasing Plan;
    xi. Cultural Heritage Impact Assessment;
    xii. Other supporting information and material that *may* be requested during the pre-consultation process and any other supporting information or material that the City requires to undertake a comprehensive review of the proposal.

i) Detailed requirements for engagement with landowners during the development of a Tertiary Plan will be established through the Community Planning Permit By-law.

8.1.2 (9.2) Phasing and Monitoring

a) *Development shall* be phased and coordinated with the provision of *infrastructure*, and transportation network and intersection improvements in accordance with Section 8.1.2(5) of this Plan.
b) The timing of *development* will be subject to the availability of required *infrastructure* including transportation, transit, municipal sewage and water, parks and *public service facilities,* in accordance with the policies of this Plan.
c) The *City may* require *development* applications to be supported by servicing studies specific to the site and the proposed use, and/or *may* rely on the supporting MTSA Area Specific Planning technical studies completed to date and/or may require alignment with other study requirements set out in the policies of this Plan.
d) The *City* will collaborate with the Region of Halton and other service and *utility* providers to support timely investments in *sustainable infrastructure*, *utilities* and services to support growth and *intensification* in accordance with Section 12.1.21 of this Plan.

e) In addition to the requirements of Section 12.3 of this Plan, the *City* will prepare an annual Major Transit Station Area Monitoring Report, including, but not limited to, the following:
    i. Progress toward population and employment growth targets;
    ii. *development* activity related to residential and non-residential uses and the monitoring of the achievement of the *City's* housing targets;
    iii. a needs assessment of need for complete community elements within each MTSA;
    iv. the delivery of *public service facilities*, in a timely manner that aligns with growth;
    v. the Community Planning Permit System performance including but not limited to the following:
        i. quantity and status of permits and nature of variations,
        ii. achievement of services, facilities and matters as identified in the Community Planning Permit By-law, and
        iii. established parking standard and approved variations to standards.

8.1.2 (9.3) Pre-Consultation Complete Application Requirements

a) In addition to the policies of 12.1 of this Plan, the following complete application requirements for development within the Major Transition Station Areas apply:

    i. A Tertiary Plan in accordance with Chapter 8.1.2 (9.1) of this Plan;
    ii. Transportation Impact Assessment study with the requirements confirmed to the satisfaction of the *City* to identify any new streets necessary to create a grid network, including an intersection level analysis to assess the impacts of traffic on the local and Regional road network and the dentification of infrastructure upgrades and access improvements in accordance with Subsection 8.1.2(5.2) f) of this Plan;
    iii. A detailed Land Use Compatibility Assessment in accordance with the City of Burlington's Terms of Reference for Land Use Compatibility Assessments in accordance with Section 8.1.2(6) of this Plan;
    iv. Height survey of adjacent buildings;
    v. Market Impact Study;
    vi. Hydro Corridor Land Use Application if applicable;
    vii. Risk study and sensitive land use report;
    viii. Environmental Assessment, where development is proposed within or adjacent to the Natural Heritage System Precinct;
    ix. A Planning Justification Report that includes:
        a. Consideration of the City's Housing Strategy and associated targets,

b. Consideration of the achievement of Complete Communities, including as regulated in the Community Planning Permit By-law provisions for Services, Facilities and Matters,
c. Employment and/or residential needs analysis, where required.
d. Consideration of the Community Planning Permit System By-law criteria for variations for Class 2 and 3 applications as regulated, and,
e. Detailed discussion related to development Phasing in accordance with Chapter 8.1.2 (9.2) and applicable policies of this Plan.

x. Reference plan or application for plan of subdivision (as it relates to the conveyance of Parks, and public rights of ways ROW).

DRAFT

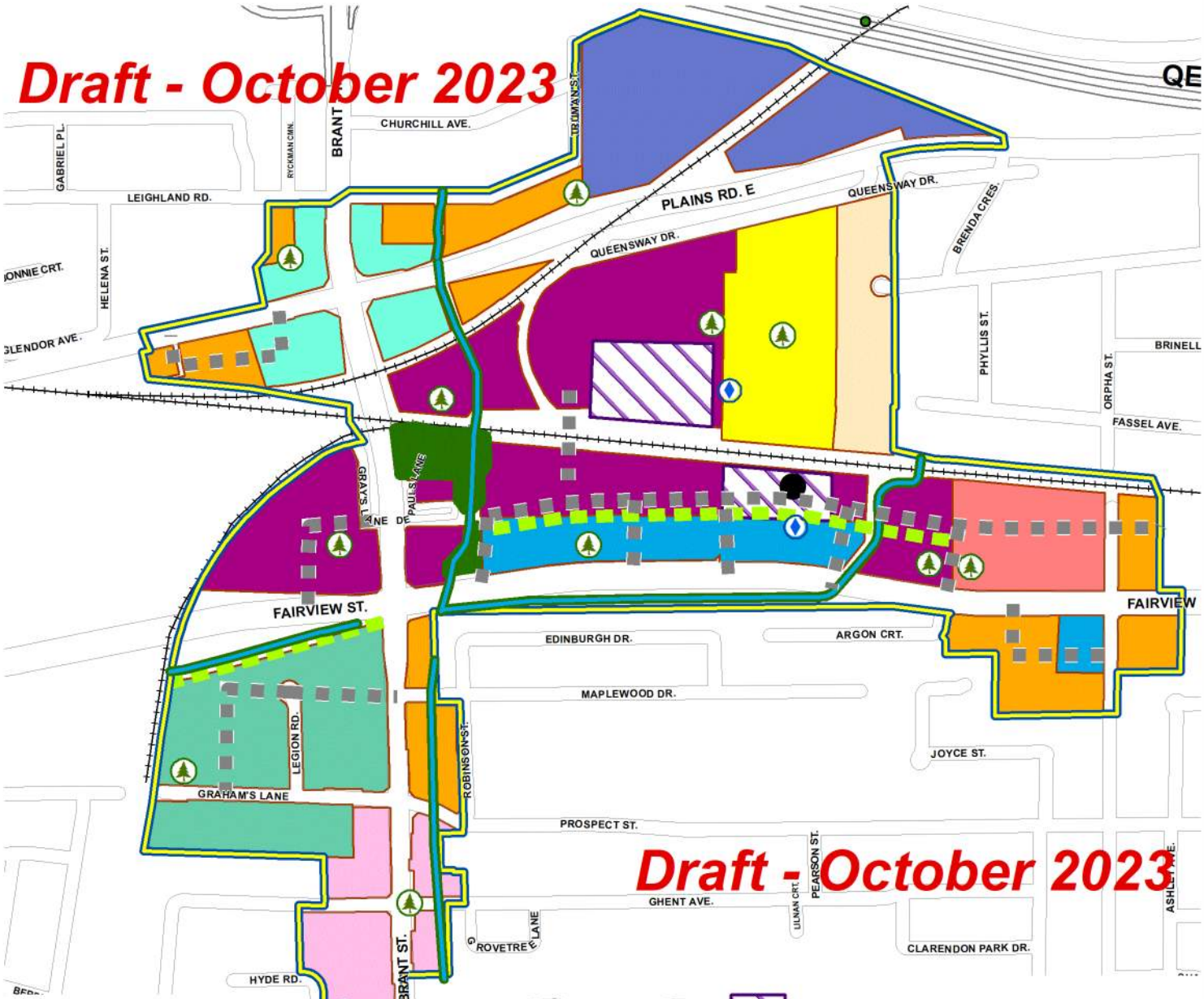
Attachment 5 to OPA 2 – Major Transit Station Area Schedules

DRAFT

SCHEDULE F

Land Use - Downtown Burlington Urban Growth Centre/ Burlington GO Major Transit Station Area

City of Burlington



Legend

Precincts

- Burlington GO Central
- Queensway Commons
- Fairview Frequent Transit Corridor
- Urban Employment
- Drury Node
- Legion Commons
- Leighland Node
- Upper Brant
- Mid-Rise Residential
- Low to Mid-Rise Residential
- Natural Heritage System

- Transit Station Area
- Downtown Burlington Urban Growth Centre / Burlington GO Major Transit Station Area
- Potential Linear Park & Greenway
- Proposed Street - see Schedule F-1 for details
- New Park
- Transit Station Plaza
- Major Transit Station
- Rail Line
- Watercourse

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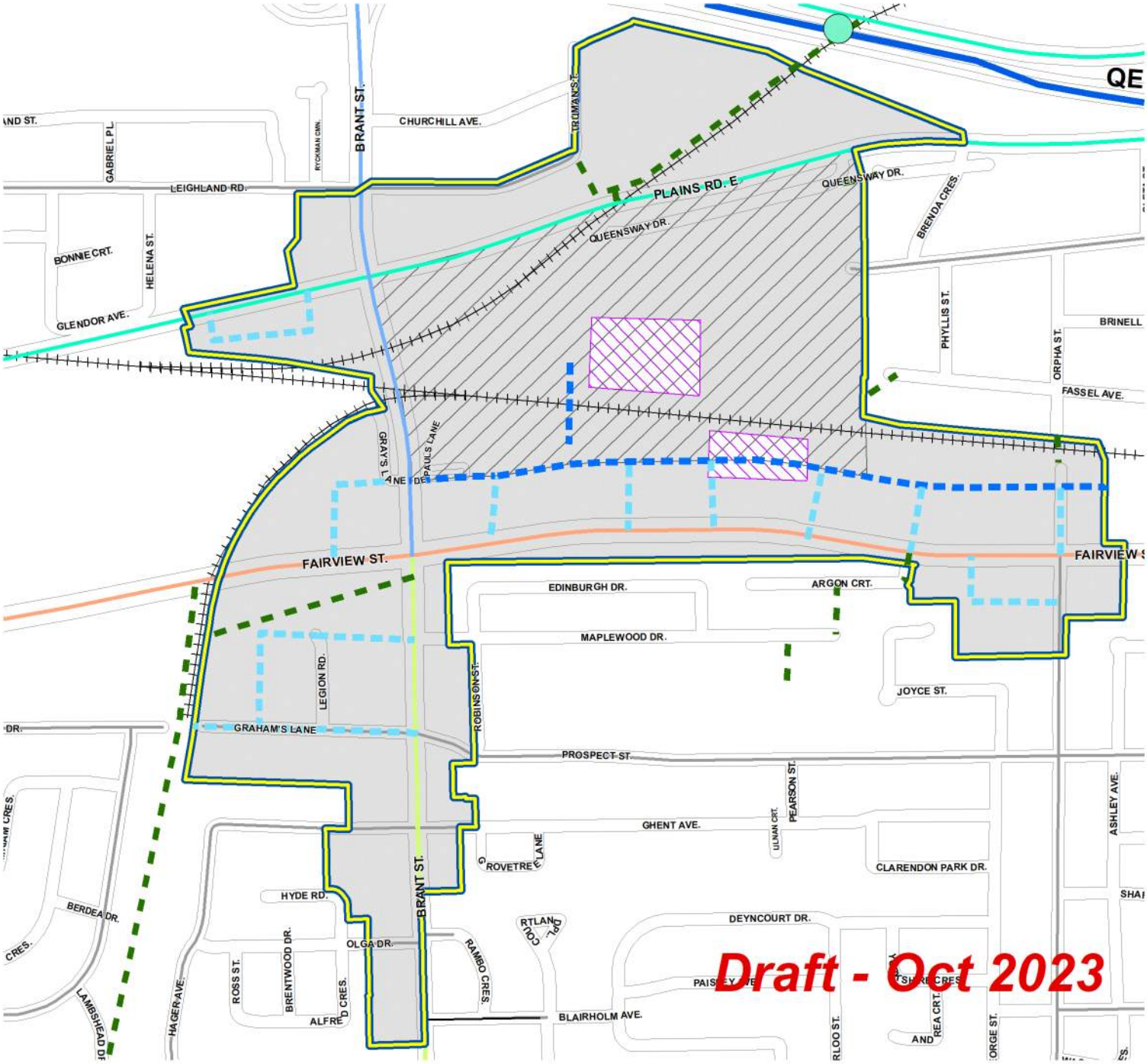
This draft schedule is subject to change and/or refinement as a result of on-going technical study, Regional and external agency review as well as community and stakeholder feedback. This schedule shall be used in conjunction with other applicable schedules and policies of this Plan

OCTOBER 2023

SCHEDULE F-1
Downtown Burlington Urban Growth Centre/Burlington GO Major Transit Station Area Transportation Network
City of Burlington



Legend

- Proposed MTSA Connector
- Proposed MTSA Distributor
- Off-Road Active Transportation Connection
- Downtown Burlington Urban Growth Centre / Burlington GO Major Transit Station Area
- Rail Line
- Grade Separated Crossing (See Schedule P of the Official Plan for more details)
- Area Subject to Further Study in accordance with Section 8.1.2(5.2) of this Plan
- Transit Station Area
- Major Arterial
- Multi Purpose Arterial
- Main Street
- Industrial Connector
- Neighbourhood Connector
- Provincial Freeway

This draft schedule is subject to change and/or refinement as a result of on-going technical study, Regional and external agency review as well as community and stakeholder feedback. This schedule shall be used in conjunction with other applicable schedules and policies of this Plan.

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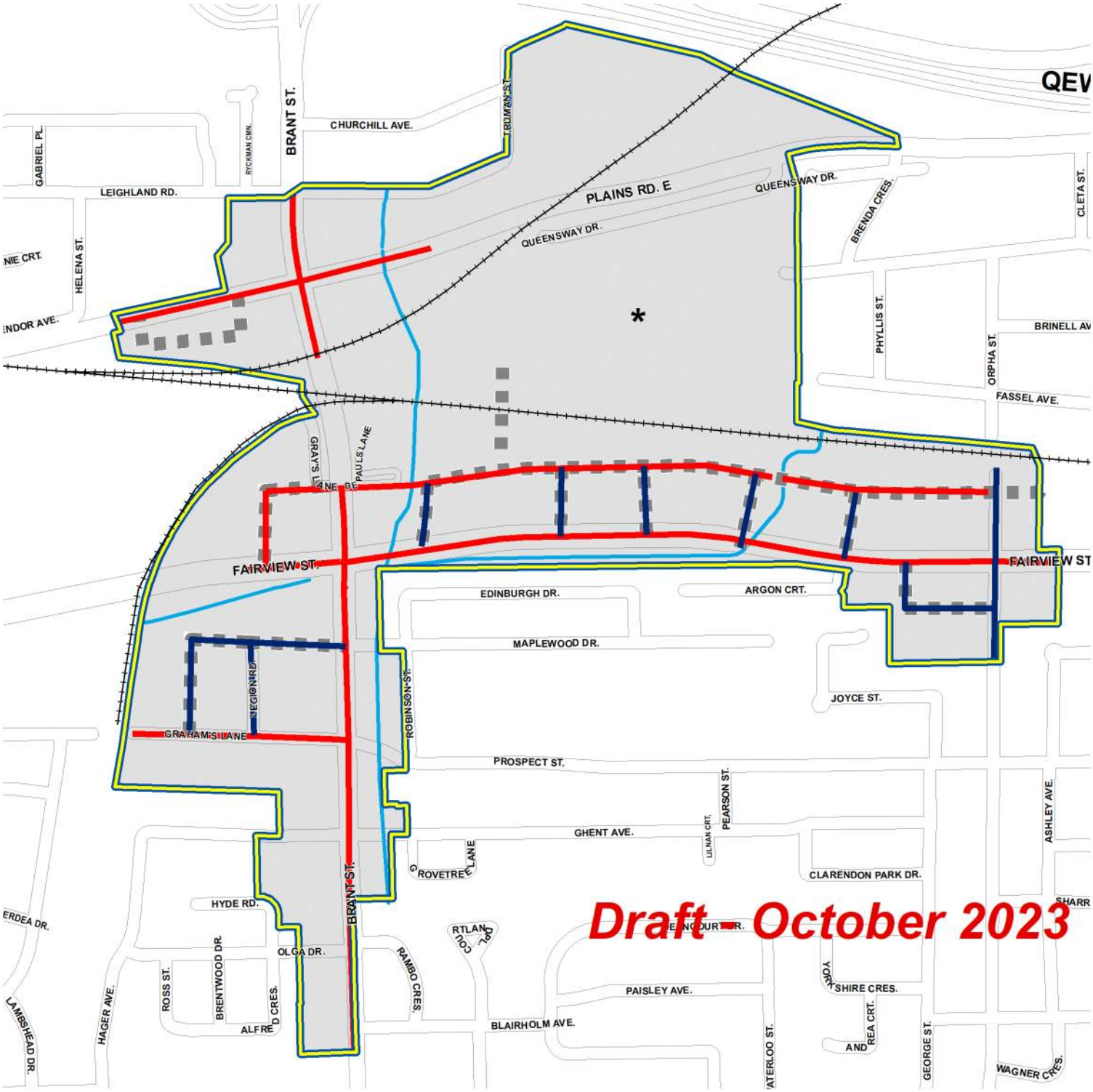
OCTOBER 2023

SCHEDULE F-2
Downtown Burlington Urban Centre/Burlington GO Major Transit Station Area Activated Streets
City of Burlington



Legend

- Proposed Street (See Schedule F-1 in Official Plan for more information)
- MTSA Major Mixed Use Street
- MTSA General Mixed Use Street
- Downtown Burlington Urban Growth Centre / Burlington GO Major Transit Station Area
- Rail Line
- Watercourse

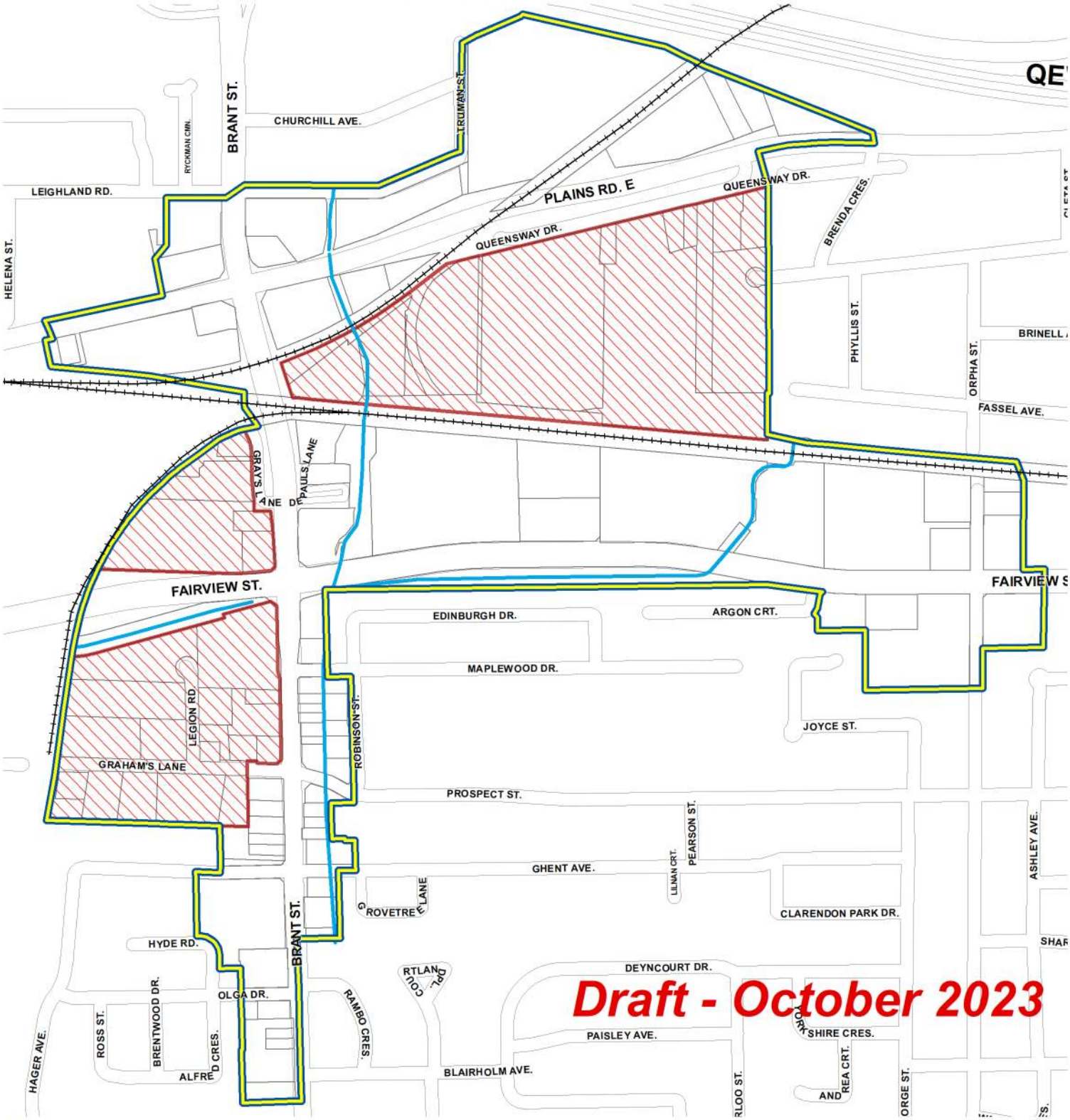
200 100 0 200 400 m

**Future Activated Streets to be determined in accordance with Section 8.1.2 (8.2) of the Official Plan.*

This draft schedule is subject to change and/or refinement as a result of on-going technical study, Regional and external agency review as well as community and stakeholder feedback. This schedule shall be used in conjunction with other applicable schedules and policies of this Plan

OCTOBER 2023

Schedule F-3
Downtown Burlington Urban Growth Centre/Burlington GO Major Transit Station Areas Tertiary Planning Areas
City of Burlington



Legend

- Tertiary Planning Areas (in accordance with Section 8.1.2 (9.1) of the Official Plan)
- Downtown Burlington Urban Growth Centre / Burlington GO Major Transit Station Area
- Rail Line
- Watercourse

200 100 0 200 400 m

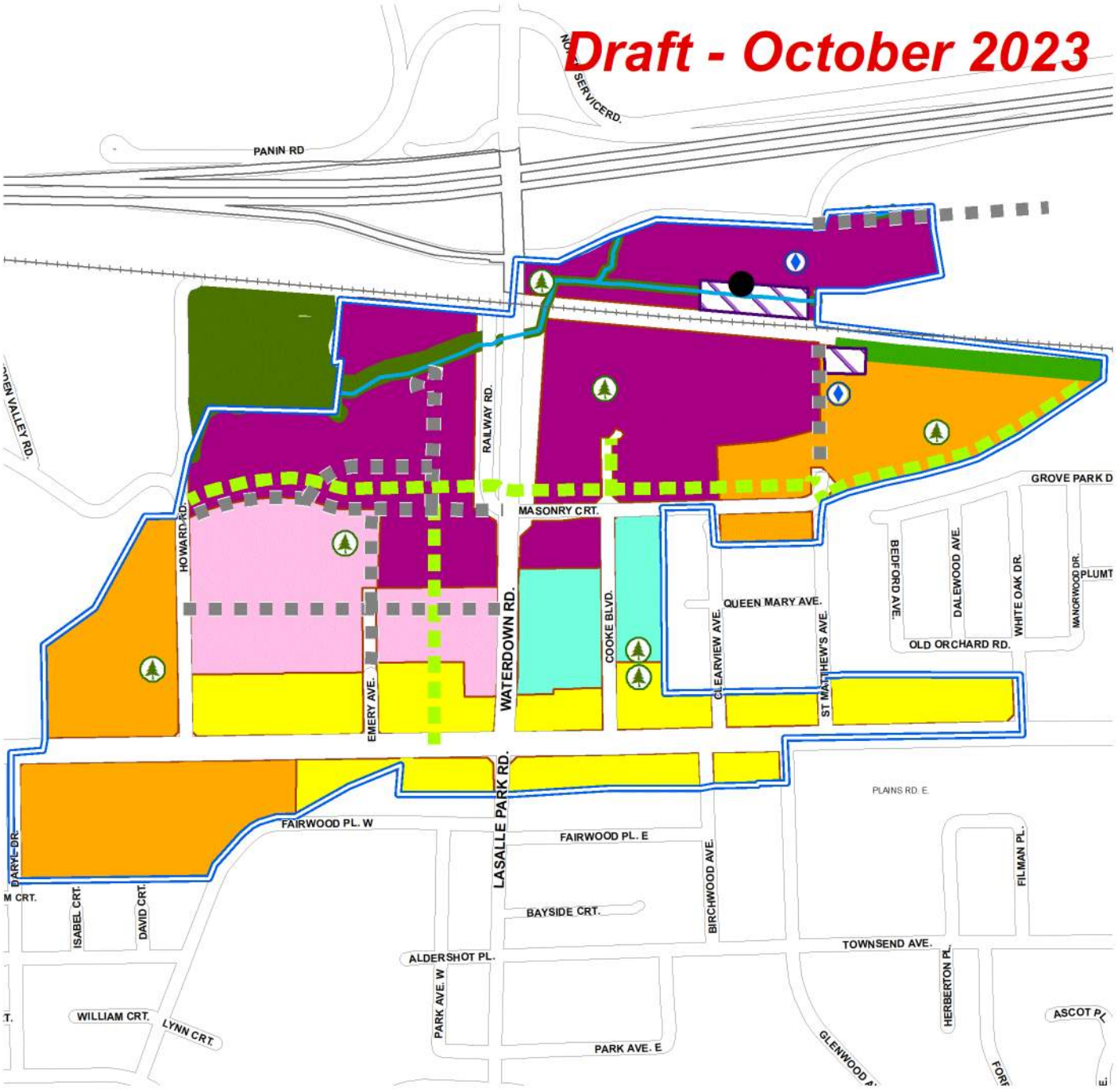
This map is provided for information purposes only to graphically illustrate where comprehensive tertiary planning is required as described in the proposed MTSA Official Plan Policies. This map is not intended to form part of the Official Plan. Where discrepancies exist between this map and proposed policies, the proposed tertiary planning policies shall apply.

This schedule shall be used in conjunction with other applicable schedules and policies of this Plan.

OCTOBER 2023

SCHEDULE G
Land Use - Aldershot GO Major Transit Station Area
City of Burlington

Draft - October 2023



Legend

Precincts

- Aldershot GO Central
- Aldershot Main Street
- Cooke Commons
- Emery Commons
- Mid-Rise Residential
- Natural Heritage System

- Transit Station Area
- Aldershot GO Major Transit Station Area
- Major Transit Station
- Existing Natural Open Space

- Proposed Street - see Schedule G-1 for details
- Potential Linear Park & Greenway
- New Park
- Transit Station Plaza
- Rail Line
- Watercourse

200 100 0 200 400 m

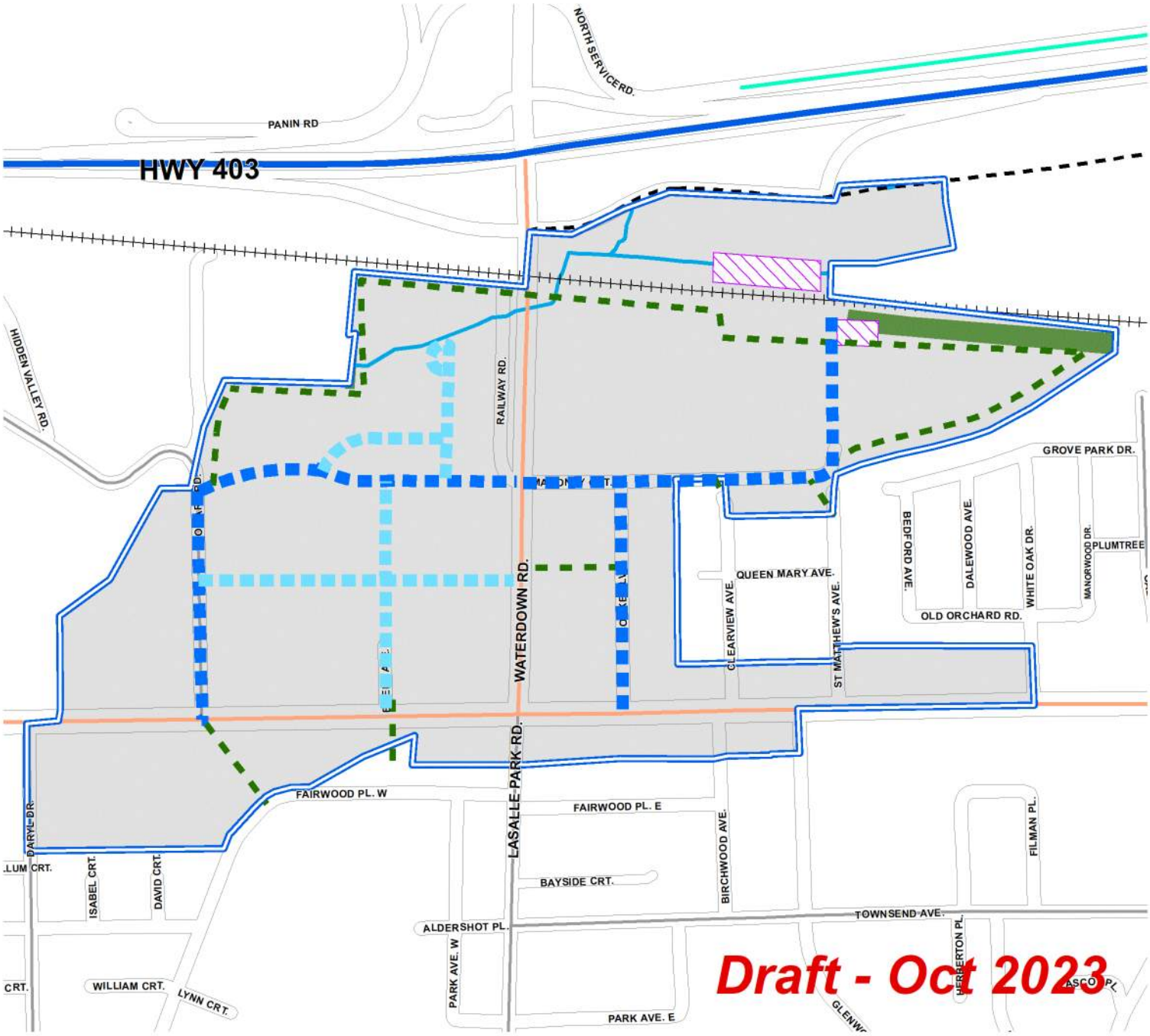
This draft schedule is subject to change and/or refinement as a result of on-going technical study, Regional and external agency review as well as community and stakeholder feedback. This schedule shall be used in conjunction with other applicable schedules and policies of this Plan

OCTOBER 2023

SCHEDULE G-1

Aldershot GO Major Transit Station Area Transportation Network

City of Burlington



Legend

- Proposed MTSA Connector
- Proposed MTSA Distributor
- Off-Road Active Transportation Connection
- Multi Purpose Arterial
- Industrial Connector
- Neighbourhood Connector
- Provincial Freeway
- Proposed Road (See Sched O-1 of this Plan for more details)
- Aldershot GO Major Transit Station Area
- Transit Station Area
- Existing Natural Open Space
- Rail Line
- Watercourse

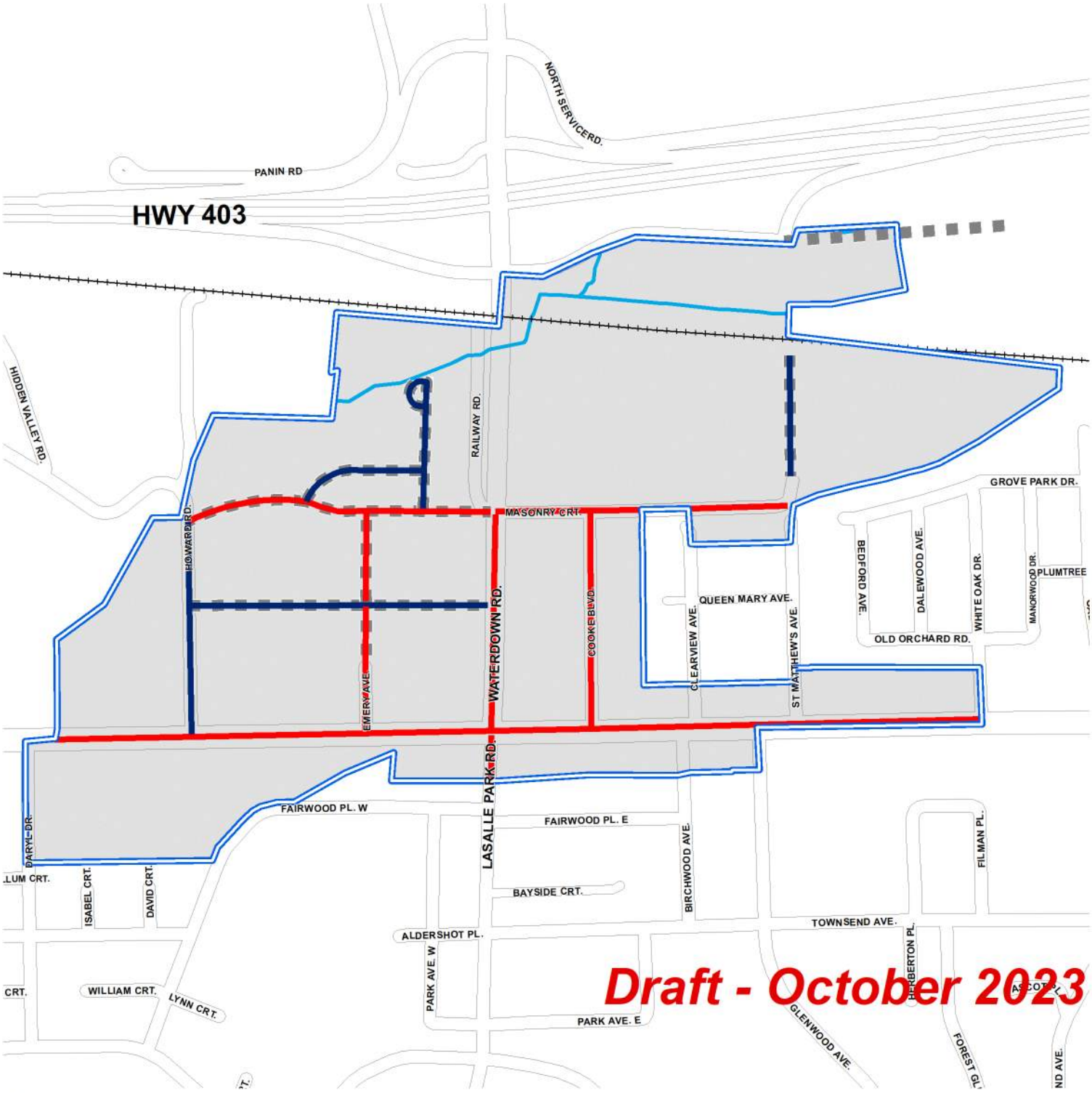
200 100 0 200 400 m

This draft schedule is subject to change and/or refinement as a result of on-going technical study, Regional and external agency review as well as community and stakeholder feedback. This schedule shall be used in conjunction with other applicable schedules and policies of this Plan.

SCHEDULE G-2

Aldershot GO Major Transit Station Area Activated Streets

City of Burlington



Legend

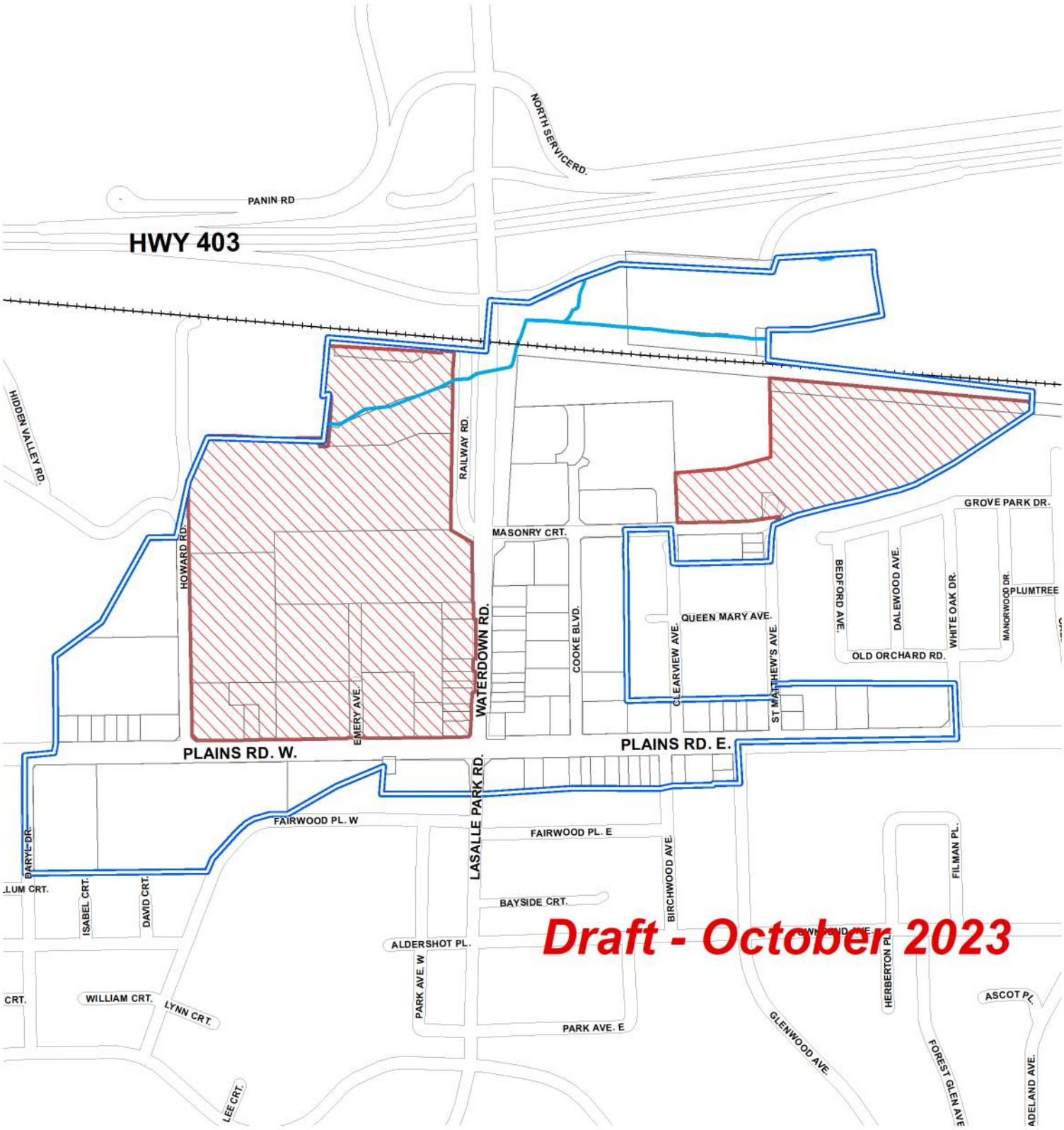
- Proposed Street (See Schedule G-1 in Official Plan for more information)
- MTSA Major Mixed Use Street
- MTSA General Mixed Use Street
- Aldershot GO Major Transit Station Area
- Rail Line
- Watercourse

200 100 0 200 400 m

This draft schedule is subject to change and/or refinement as a result of on-going technical study, Regional and external agency review as well as community and stakeholder feedback. This schedule shall be used in conjunction with other applicable schedules and policies of this Plan

OCTOBER 2023

Schedule G-3
Aldershot GO Major Transit Station Areas Tertiary Planning Areas
City of Burlington



Draft - October 2023

Legend

- Tertiary Planning Areas (in accordance with Section 8.1.2 (9.1) of the Official Plan)
- Aldershot GO Major Transit Station Area
- Rail Line
- Stream/Creek

200 100 0 200 400 m

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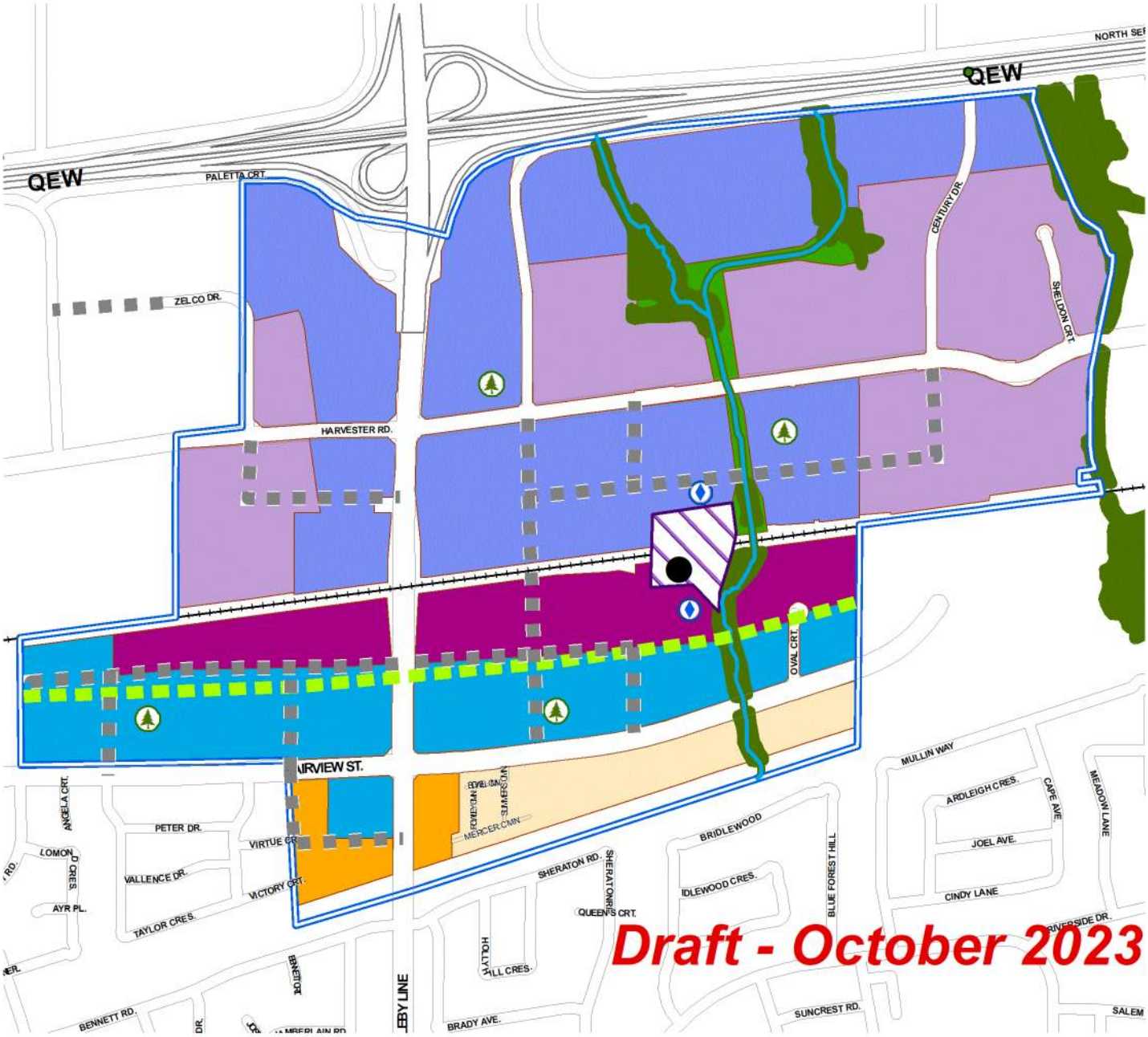
OCTOBER 2023

SCHEDULE H

Land Use - Appleby GO Major Transit Station Area

City of Burlington



Legend

Precincts

- Applyby GO Central
- Fairview Frequent Transit Corridor
- Mid-Rise Residential
- Low to Mid-Rise Residential
- Urban Employment
- General Employment
- Natural Heritage System

- Existing Natural Open Space
- Appleby GO Major Transit Station Area
- Transit Station Area
- Major Transit Station

- Proposed Street - see Schedule H-1 for details
- Potential Linear Park & Greenway
- New Park
- Transit Station Plaza
- Rail Line
- Watercourse

This draft schedule is subject to change and/or refinement as a result of on-going technical study, Regional and external agency review as well as community and stakeholder feedback. This schedule shall be used in conjunction with other applicable schedules and policies of this Plan

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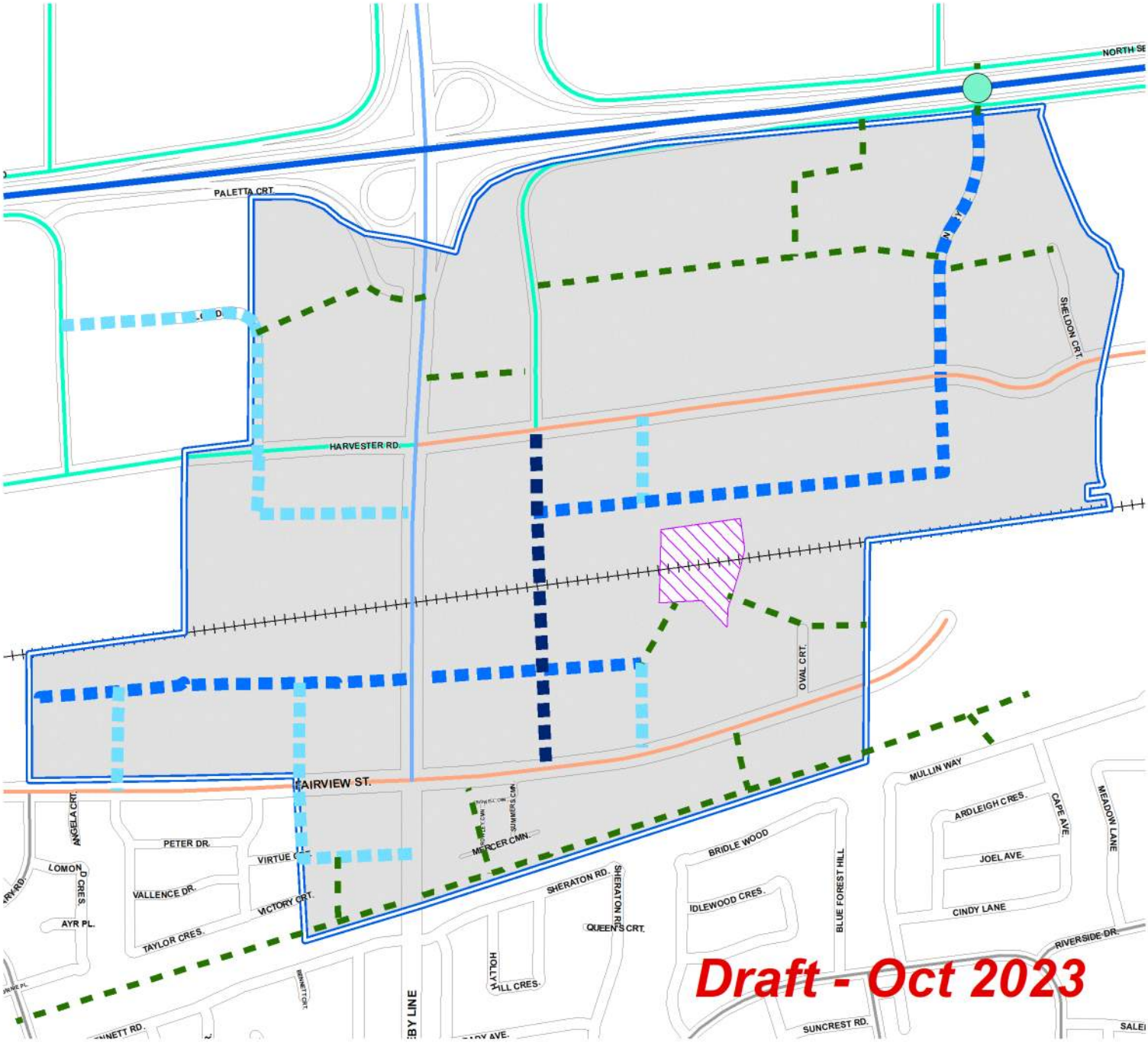
OCTOBER 2023

SCHEDULE H-1

Appleby GO Major Transit Station Area Transportation Network

City of Burlington



Legend

- Proposed Arterial
- Proposed MTSA Connector
- Proposed MTSA Distributor
- Off-Road Active Transportation Connection
- Appleby GO Major Transit Station Area
- Rail Line
- Transit Station Area
- Grade Separated Crossing (See Schedule P of the Official Plan for more details)
- Major Arterial
- Multi Purpose Arterial
- Industrial Connector
- Neighbourhood Connector
- Provincial Freeway

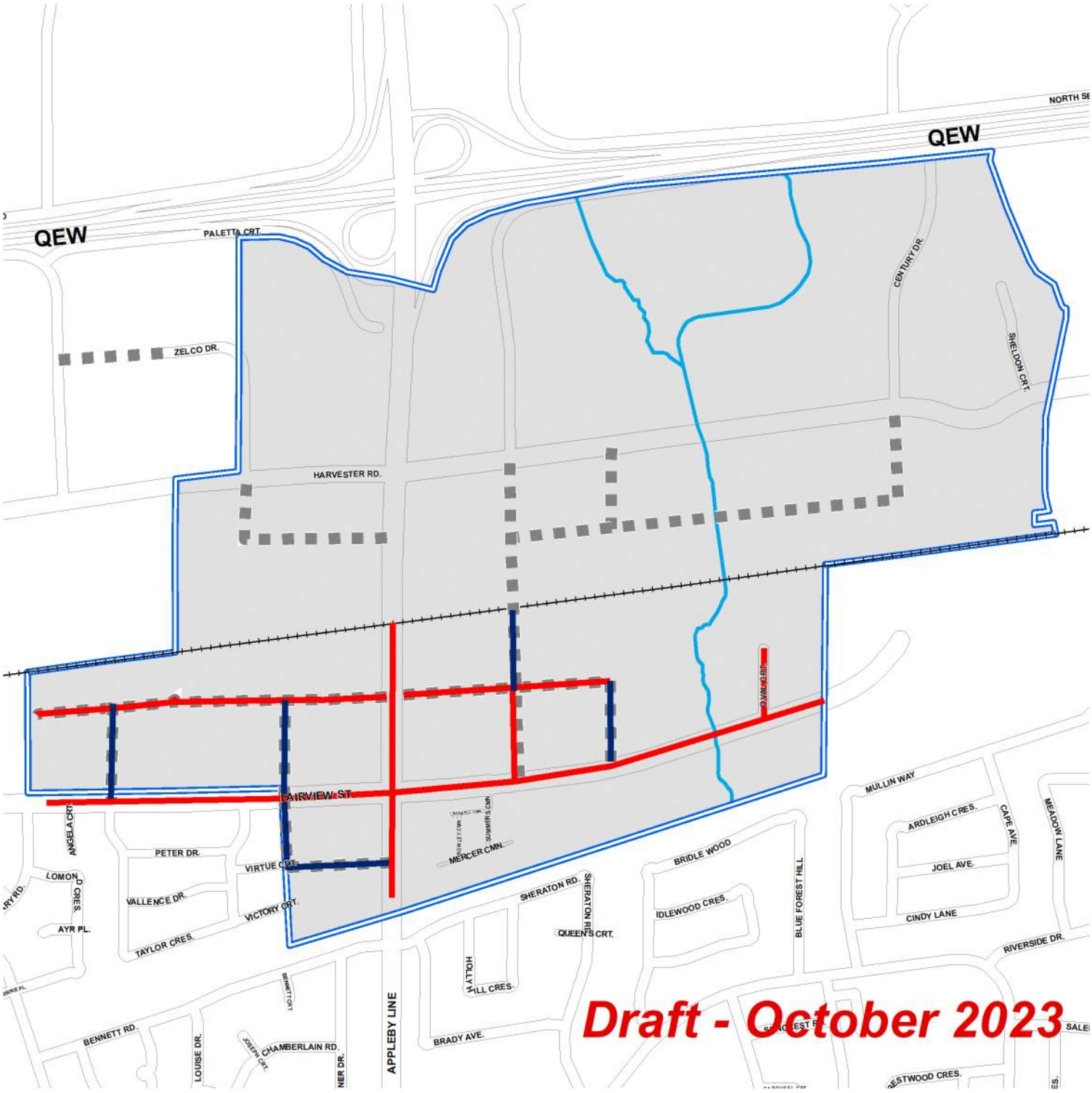
200 100 0 200 400 600 m

This draft schedule is subject to change and/or refinement as a result of on-going technical study, Regional and external agency review as well as community and stakeholder feedback. This schedule shall be used in conjunction with other applicable schedules and policies of this Plan.

SCHEDULE H-2

Appleby GO Major Transit Station Area Activated Streets

City of Burlington



Legend

- Proposed Street (See Schedule H-1 in Official Plan for more information)
- MTSA Major Mixed Use Street
- MTSA General Mixed Use Street
- Appleby GO Major Transit Station Area
- Rail Line
- Watercourse

200 100 0 200 400 600 m

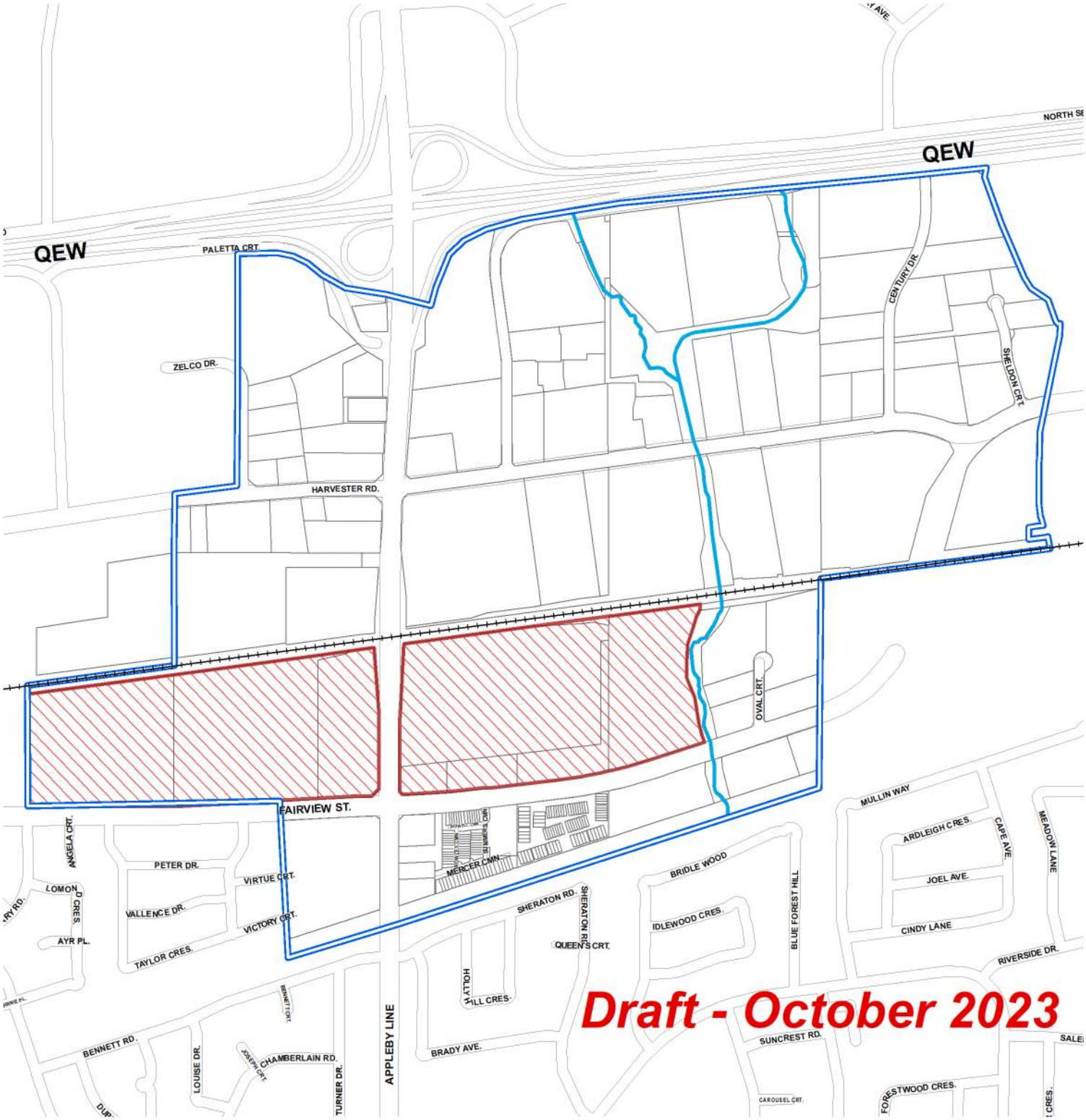
This draft schedule is subject to change and/or refinement as a result of on-going technical study, Regional and external agency review as well as community and stakeholder feedback. This schedule shall be used in conjunction with other applicable schedules and polices of this Plan

OCTOBER 2023

Schedule H-3

Appleby GO Major Transit Station Areas Tertiary Planning Areas

City of Burlington



Legend

- Tertiary Planning Areas (in accordance with Section 8.1.2 (9.1) of the Official Plan)
- Appleby GO Major Transit Station Area
- Rail Line
- Watercourse

200 100 0 200 400 600 m

This map is provided for information purposes only to graphically illustrate where comprehensive tertiary planning is required as described in the proposed MTSA Official Plan Policies. This map is not intended to form part of the Official Plan. Where discrepancies exist between this map and proposed policies, the proposed tertiary planning policies shall apply.

This schedule shall be used in conjunction with other applicable schedules and policies of this Plan.

OCTOBER 2023

Attachment 6 to OPA 2 – Major Transit Station Area Table 3

Table 3: Classification of Major Transit Station Area Facilities

In addition to the applicable classifications shown on Schedule F-1: Downtown Burlington Urban Growth Centre/Burlington GO Major Transit Station Area Transportation Network, Schedule G-1: Aldershot GO Major Transit Station Area Transportation Network, and Schedule H-1: Appleby GO Major Transit Station Area Transportation Network and identified in Table 1, of this Plan, the following Classifications of Transportation facilities *shall* apply in Major Transit Station Areas. This table shall be incorporated into Table 1: Classification of Transportation Facilities once the table has been confirmed as in effect by the Ontario Land Tribunal.

1. Major Transit Station Area Collector Streets
Major Transit Station Area (MTSA) Collector Streets provide important connections through the Major Transit Station *intensification* areas, delivery a high level of service for *active* and *sustainable* modes of transportation and enabling supportive design features . There are two types of MTSA Collector Streets: MTSA Mixed Use/Commercial Connector and MTSA Mixed Use/Commercial Distributor.
1.1 MTSA Mixed Use/Commercial Connector • Right of Way requirements of 30m • Minimum 1.5m protected cycle track • Minimum 1.8m pedestrian clearway and 1.5 metre planting and furnishing zone • A community 'Main Street' or 'High Street' that balances mobility and access; • Moves moderate to high volumes of cycling, transit and vehicle movements; • Balances priority of all modes; • Subject to *intensification* or redevelopment; and • Likely to have mixed, but predominantly commercial land use.
1.2 MTSA Mixed Use/Commercial Distributor • Right of Way requirements of 26m • Cycling provision of wide lane sharrows • Minimum 2.0m pedestrian clearway and 1.5m planting and furnishing zone. • A community street that provides 'rear' service and access functions to adjacent commercial and residential properties; • High level of pedestrian and cycling activity and low to moderate level of vehicular traffic; and • Provides an attractive environment that complements adjacent main or civic streets.

Attachment 7 to OPA 2 – Major Transit Station Area Table 4

Table 4: Major Transit Station Area Public Right-of-Way Widths

The following Table shall be read in conjunction with the Public Right-of-Way policies contained in Chapter 6: Infrastructure, Transportation and Utilities and Section 8.1.2(5.2) of this Plan and *shall* be incorporated into Table 2: Public Right-of-Way Widths, of this Plan once the table has been confirmed as in effect by the Ontario Land Tribunal. The final public right-of-way width will be determined as part of future studies including Tertiary Planning, Environmental Assessments and/or subdivision approvals in accordance with the policies of this Plan.

Street	From	To	Public Right of Way Width (metres)
Burlington GO UGC/MTSA			
Grahams Lane	Hydro Corridor	Brant Street	26
De Pauls Lane	Brant Street	Proposed east-west connection	30
Drury Lane	CN Rail Corridor	145 metres south of Fairview street	26
Aldershot GO MTSA			
Masonry Court	Waterdown Road	Grove Park	30
Cooke Blvd	Plains Road	Masonry Court	30
Emery Ave	Plains Road	Emery Ave extension	26
Howard Road	Plains Road	Lemonville Road	30
Appleby GO MTSA			
South Service Road	Harvester Road	120 metres east of Century Drive	30
Century Drive	Harvester Road	South Service Road	30
Zelco Drive	Harvester Road	To Zelco Drive extension	26

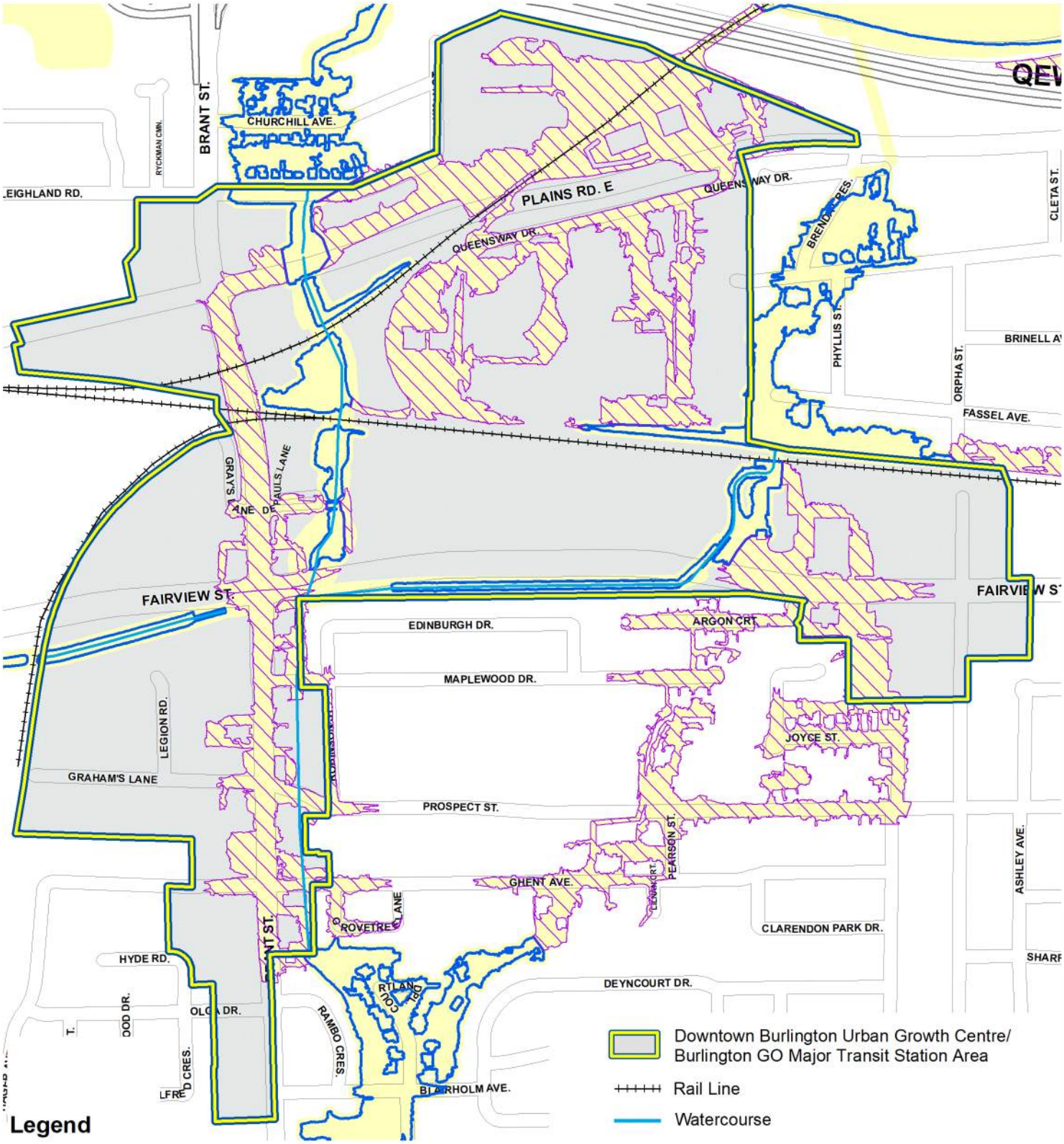
Attachment 8 to OPA 2 – For Reference Purposes Only, and does not form part of the Official Plan: Figures 1, 2, 3 (Conservation Halton) to inform the update of Appendix E

DRAFT

Figure 1 : Conservation Halton Approximate Regulation Limit Mapping

Downtown Burlington UGC/Burlington GO MTSA

City of Burlington



The text of Ontario Regulation162/06 takes precedence over the Approximate Regulation Limit. Some regulated features may not appear on the Approximate Regulation Limit mapping. This mapping should be used for information purposes only. The data displayed are derived from sources with different accuracies and all boundaries should therefore be considered approximate. Data on this map are used under license and are protected by copyright for different organizations, including but not limited to Teranet Enterprises Inc. and other agencies.

This draft appendix is subject to change and/or refinement as a result of on-going technical study, Regional and external review as well as community and stakeholder feedback.

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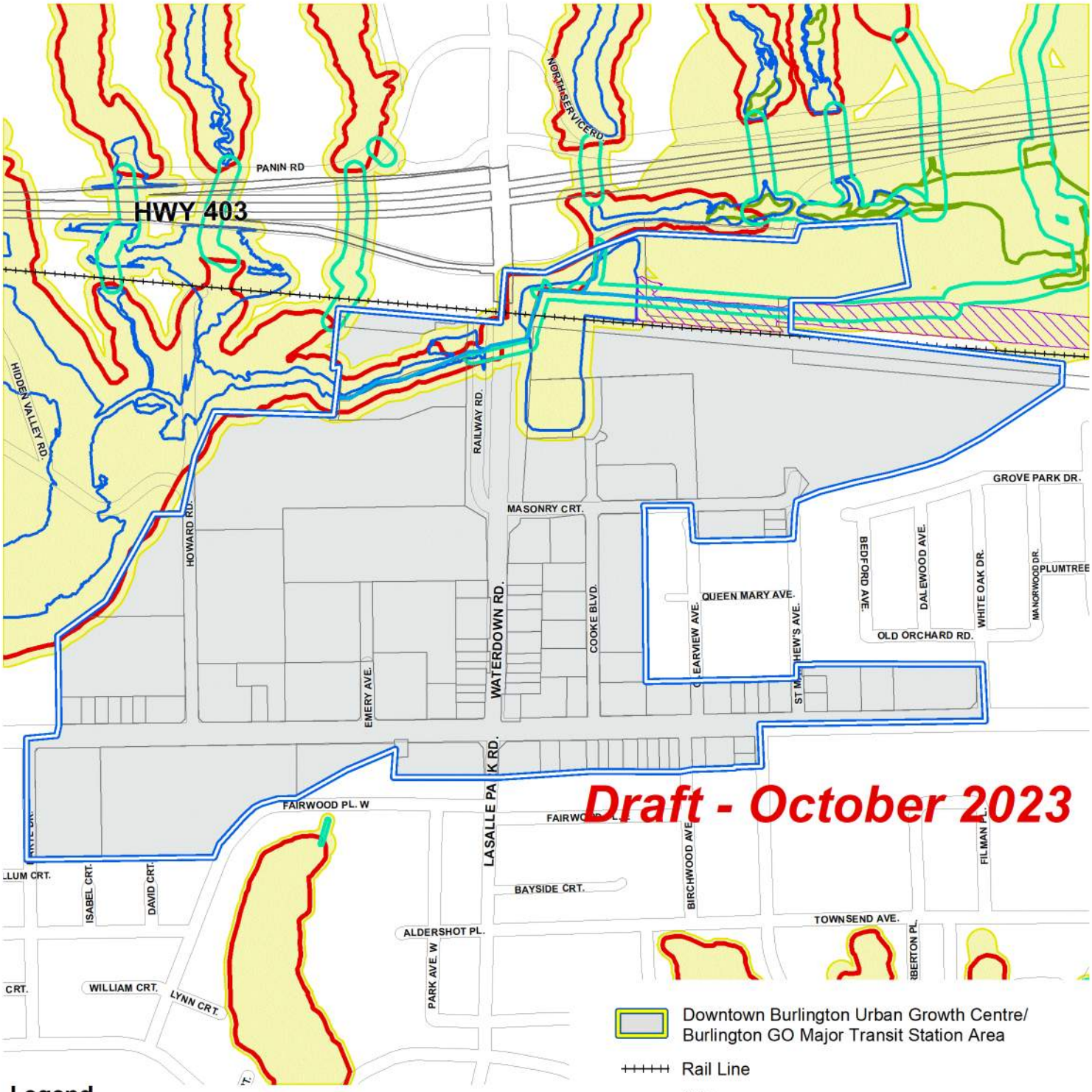
OCTOBER 2023

Figure 2 : Conservation Halton Approximate Regulation Limit Mapping

Aldershot GO MTSA

City of Burlington



Downtown Burlington Urban Growth Centre/
Burlington GO Major Transit Station Area

Rail Line

Watercourse

Legend

- Spill Flood Hazard
- Floodplain Hazard
- Meander Belt Hazard
- Stable Top of Bank Hazard
- Wetland Hazard
- Regulation Limit (Approximate)

The text of Ontario Regulation162/06 takes precedence over the Approximate Regulation Limit. Some regulated features may not appear on the Approximate Regulation Limit mapping. This mapping should be used for information purposes only. The data displayed are derived from sources with different accuracies and all boundaries should therefore be considered approximate. Data on this map are used under license and are protected by copyright for different organizations, including but not limited to Teranet Enterprises Inc. and other agencies.

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200 100 0 200 400 m

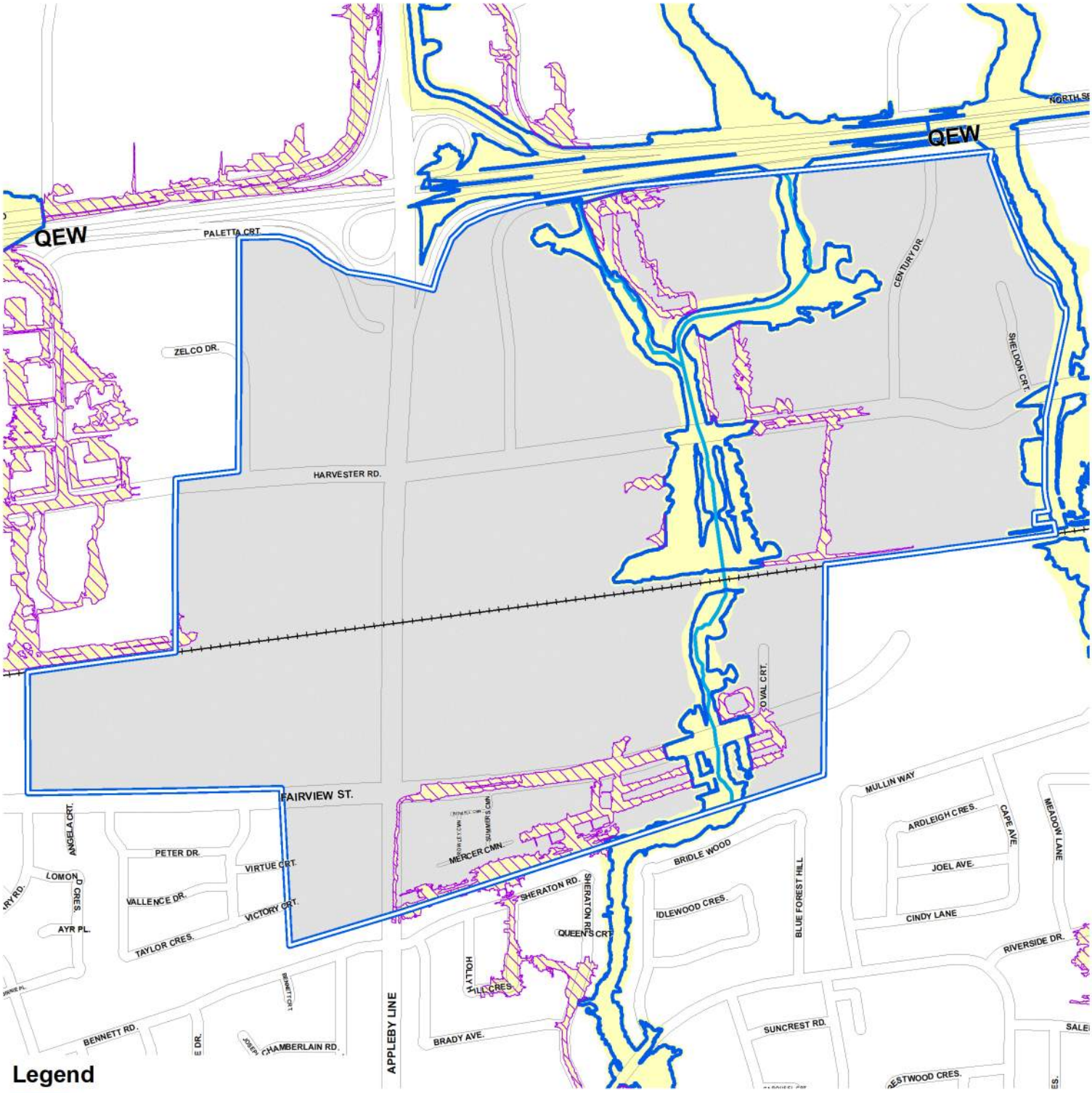
OCTOBER 2023

City of Burlington

Figure 3 : Conservation Halton Approximate Regulation Limit Mapping

Appleby GO MTSA

City of Burlington



Legend

- Spill Flood Hazard
- Floodplain Hazard
- Regulation Limit (Approximate)
- Appleby GO Major Transit Station Area
- Rail Line
- Watercourse

The text of Ontario Regulation162/06 takes precedence over the Approximate Regulation Limit. Some regulated features may not appear on the Approximate Regulation Limit mapping. This mapping should be used for information purposes only. The data displayed are derived from sources with different accuracies and all boundaries should therefore be considered approximate. Data on this map are used under license and are protected by copyright for different organizations, including but not limited to Teranet Enterprises Inc. and other agencies.

This draft appendix is subject to change and/or refinement as a result of on-going technical study, Regional and external review as well as community and stakeholder feedback.

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OCTOBER 2023

Burlington Major Transit Station Areas: Community Planning Permit By-law

DRAFT FOR PUBLIC CONSULTATION - October 2023

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1 Introduction

1.1 Title

1.1.1 This By-law, as amended, may be cited as the "Community Planning Permit By-law for the Burlington Major Transit Station Areas".

1.2 Goals and Objectives

1.2.1 The goal of the Community Planning Permit System (CPPS) is to:

a) Implement the vision, principles and policies of the Burlington Official Plan and Area Specific Plans for the Major Transit Station Areas (MTSAs).

1.2.2 The objectives of the **City** in implementing the Community Planning Permit System include but are not limited to:

a) To implement a land use regulatory framework that supports the objectives and policies of the MTSAs.
b) To provide greater certainty to the **development** community and current and future residents through establishing principles to support desired **development** that aligns with the Council-approved policy framework for the MTSAs.
c) To streamline the **development** process to assist the **development** industry by combining the zoning, site plan approval and minor variance processes into one review and approval process, in alignment with the requirements and objectives of this By-law and the Burlington Official Plan.

d) To support the **development** of complete communities that meet people's needs for daily living throughout an entire lifetime by providing convenient access to an appropriate mix of jobs, local services, a full range of housing and public service facilities including affordable housing, schools, recreation and open space for their residents.

1.3 Guiding Principles

The following Guiding Principles form the basis for the provisions in this By-law. When considering an application, the following Guiding Principles **should** be considered:

A City that Grows

- **Development** will contribute to the creation of **complete communities** in each MTSA through growth that responds to the present and future needs of the community.
- **Development** will include a mix of uses, including employment, **retail** and **service commercial** uses that demonstrate the achievement of the assigned target proportion of residents and jobs and that serve the needs of residents.
- **Development** will be diverse and include housing forms, sizes and tenures that demonstrate the achievement of general target proportion of residents and jobs that meet the needs of current and future residents and that includes balanced, targeted population growth for youth, families and newcomers and as outlined in the **City's** Housing Strategy.
- **Development** will be limited to the capacity and financial capability of the Region of Halton to deliver municipal sewage and water services within the MTSAs.

- **Development** will support the retention and expansion of existing employment functions and **encourage** new employment functions and employment uses, including but not limited to **office** which are compatible with other uses and serve to make each MTSA an employment destination within the **city**.

A City that Moves

- **Development** will contribute to a **multi-modal** transportation network that includes **complete streets** and supports seamless connections within and adjacent to the MTSAs.
- **Development** will minimize parking and prioritize pedestrians, **active transportation** and public transit.
- **Development** will contribute to a lively, high-quality, comfortable **public realm** featuring a connected network of publicly accessible spaces such as public squares, parks and open spaces and **public service facilities** that incorporate street trees, landscaping and vegetation and provide connection of these spaces with the **City's** broader parks and trails network and Privately-Owned Publicly Accessible Space (POPS).

A Healthy & Greener City

- **Development** will maintain, restore and where possible enhance the long-term ecological integrity and biodiversity of the **Natural Heritage Features and Areas**, including the Natural Heritage System and its ecological and hydrologic functions within the MTSAs.
- **Development** will protect public health, safety, and property from natural hazards within and beyond the MTSA boundary.

- **Development** will target carbon neutrality in MTSAs through the use of district energy, **sustainable** building measures and other innovative approaches.
- **Development** will prioritize and implement innovative **sustainable** practices and the possibility of **green infrastructure** related to energy, water, landscape (such as street trees) and waste management that together assist with adapting to the **impacts of a changing climate.**
- **Development** will ensure the provision of a range of open spaces and connections, including an opportunity to consider POPS.

An Engaging City

- **Development** will contribute to the provision of a range of **public service facilities,** including parks, schools, emergency services, **day cares**, recreational facilities and other community needs to support future growth.
- **Development** will include built form transitions that respect existing Established Neighbourhood Areas and the MTSAs.
- **Development** will provide **human scale** built form and **activated street** frontages in order to foster street level communities.
- **Development** will achieve design excellence in the MTSAs that will **encourage** long-term investment and the creation of high quality and **sustainable** built forms contributing to achieving these communities with a unique sense of place.
- **Development** will acknowledge the existing history of the areas (Cultural, Archaeological, Natural, Indigenous).

- **Development** of **infrastructure** projects will be coordinated by the **City**. This will include **streetscape** improvements and future road projects, with upgrades to water and sanitary networks in collaboration with the Region of Halton to minimize the impacts of construction on the residents and businesses within the MTSAs.
- **Development** will be supported by collaborative **infrastructure** provision.

2 Definitions and Interpretation

2.1 Interpretation

2.1.1 The provisions of this By-law are minimum requirements except where a maximum requirement is specifically identified.

2.1.2 This By-law **shall** be read in its entirety and interpreted in conjunction with the Burlington Official Plan (2020).

2.1.3 Compliance with this By-law does not exempt any person from the requirements of any Federal, Provincial, Regional or Municipal legislation, approval process, licensing or permitting regime, agreements, or other By-law.

2.1.4 The provisions and standards of this By-law set out in Sections 5,6,7 and 8 *may* be applied to the **lot** or to an entire development, at the discretion of the Approval Authority.

2.1.5 Notwithstanding the definition of **development** in Section 2.5, an application involving only site alteration subject to the **City's** Site Alteration By-law or tree removal subject to the **City's** Private Tree Protection By-law is not subject to the Community Planning Permit By-law.

2.1.6 The Burlington Private Tree Protection By-law applies to all private property in all Community Planning Permit Precincts identified on Schedules B-1, C-1, and D-1 of this By-law.

2.1.7 Notwithstanding provision 2.1.5, the Burlington Private Tree Protection By-law does not apply to woodland or greenlands that are governed by the Halton Region Tree By-law.

2.2 Community Planning Precincts and Conservation Halton's Regulatory Limit

2.2.1 Community Planning Permit Precincts are identified on Schedules B-1, C-1, and D-1 of this By-law.

2.2.2 Community Planning Permit Precincts are specified areas that prescribe the permitted and discretionary uses and the applicable **development** standards in each Community Planning Permit Area.

2.2.3 The delineation and regulation of **hazardous lands** and **hazardous sites** is administered by Conservation Halton. For reference purposes, the Conservation Halton Regulatory Limit is depicted on Appendices B-1, B-2 and B-3, however the exact delineation of **hazardous lands** and **hazardous sites** shall be determined by Conservation Halton. Notwithstanding the provisions of the Community Planning Permit Precincts, lands within the Conservation Authority Regulatory Limit **shall** be subject to additional provisions.

2.2.4 Boundaries of Community Planning Permit Precincts shown on the Schedules are intended to follow **lot lines**, street centre lines and other similar elements and features. Where a boundary on the Schedules:

a) follows a street, lane, utility or railway right-of-way or watercourse, it is considered to follow the centerline of such street, lane, utility or railway right-of-way or watercourse;
b) substantially follows **lot lines** shown on a registered plan of subdivision, it is considered to follow such **lot lines**;
c) passes through a **lot** and the distance is not indicated, the boundary shall be measured using the scale of the Precinct Schedule;
d) varies from the Schedules to any site specific amendment, the boundaries shall be as per those shown on the site specific amendment;

e) shows a discrepancy due to drafting errors or is ill-defined, the Director of Community Planning shall be responsible for interpreting boundaries in consultation with Conservation Halton regarding the Conservation Halton Mapping; and
f) is determined or revised through a Plan of Subdivision application, it is considered to follow the centerline of such street, lane, utility or railway right-of-way.

2.2.5 The City may update the relevant Appendices of this By-law from time to time without amendment to this By-law.

2.3 Forms of Words

2.3.1 Unless otherwise defined, words not defined in this By-law **may** be given their definition in the *Planning Act* and the Ontario Building Code. Words not defined in this By-law **shall** take on their usual meaning, or the meaning as they are defined in the Burlington Official Plan (2020) or relevant City guidelines or standards.

2.3.2 For the purposes of this By-law,

a) words used in the present include the future;
b) words in the singular number include the plural number and words in the plural include the singular number;
c) the words “used” and “occupied” **shall** include the words “arranged” and “designed to be used or occupied” respectively;
d) the words “may”, “should” and “shall” express either flexibility or strength within this By-law and **shall** be interpreted as follows:

i) "may" implies that there is discretion and flexibility or that criteria are to be satisfied in the application of a provision or standard within this By-law;
ii) "should" implies that the provision or standard is directive and a professional planning rationale is required in order not to fully comply with a provision or standard within this By-law; and
iii) "shall" implies that the provision or standard is mandatory or it is required to comply with a provision or standard within this By-law.

e) where a provision or standard involves two or more conditions, connected by a conjunction, the following **shall** apply:
i) "and" means all the connected items **shall** apply in combination; and
ii) "or" means that the connected items **may** apply singly or in combination.

2.4 Reference Aids

2.4.1 Words that are **bold** denote terms defined in Section 2.5.

2.4.2 Tables form part of this By-law and are used throughout to present provision or standard in a concise format.

2.4.3 All measurements in this By-law appear in metric.

2.4.4 Appendices do not form part of this By-law, but are provided for information purposes.

2.5 Defined Terms

Accessory Drive-through

- An amenity to a **principal** use whereby goods or services are provided, either wholly or in part, to customers located within a motor vehicle.
- **Accessible Parking Space** A parking space for the use of persons with disabilities.

Accessory Building or Structure

- A detached building or structure not used for human habitation, the use of which is naturally or customarily incidental and subordinate to, or exclusively devoted to a **principal** use, **building** or structure and located on the same lot therewith. Accessory Buildings **may** include a detached garage, workshop, shed, or pool house. Accessory Structures may include arbours, gazebos, pergolas, play structures, or detached car port exclusive of patios or decks.

Accessory Use

- The use of any land, **building** or structure which is normally incidental to, subordinate to, or exclusively devoted to, the **principal** use located on the same lot.

Active Transportation

- Human-powered travel, including but not limited to, walking, cycling, inline skating and travel with the use of mobility aids, including motorized wheelchairs and other power-assisted devices moving at a comparable speed.

Activated Street

- An MTSA Major Mixed Use Street or MTSA General Mixed Use Street as shown on Figures 1a, 2a or 3a of this By-law, or a street identified by the **City** as such in accordance with subsection 8.1.2(2.3) c) of the Burlington Official Plan (2020).

Additional Residential Unit

- A self-contained **dwelling unit** which is located within, and/or on the same **parcel of urban residential land** as a **rowhouse**.

Adult Entertainment Establishment

- Any premise or part thereof in or on which is provided in pursuance of a trade, calling, business or occupation, or to which an admittance or other fee is required, service of an employee, entertainer or other person who exposes to view any portion of the nipple or areola of the female breast or any portion of his or her pubic hair, anus, cleft of the buttocks, penis, vulva or genitals, or any other service designed to appeal to erotic or sexual appetites or inclinations.

Animal Care Establishment

- Premises for the caring, grooming and training of domesticated animals, excluding livestock, for a fee on a daily basis, excluding breeding, overnight boarding and outdoor facilities.

Apartment Building

- A **building** consisting of more than 4 **dwelling units**, which units have a common entrance from the street level and where the occupants have the right to use in common, halls, stairs, **yards**, and **accessory buildings**.

Automotive Commercial

- Uses involving the sale of automobiles and the repair and maintenance of automobiles and the sale of gasoline or similar products and **shall** include **small scale motor vehicle dealerships**, motor **vehicle** repair garages, car washes and service stations, and does not include **large scale motor vehicle dealerships**.

Bicycle Parking, Long-Term

- An area that is equipped with a bicycle rack or locker that is accessible, secure, weather protected and for use by occupants of a building and is not provided within a dwelling unit, suite, or on a balcony.

Bicycle Parking, Short-Term

- An area for the purpose of parking and securing bicycles at **grade** that is accessible for visitors to a building.

Body-Rub Parlour

- Any premises or part thereof where a body-rub is performed, offered, or solicited in pursuance of a trade, calling, business or occupation, but does not include any premises or part thereof where the

body-rubs performed are for the purpose of medical or therapeutic treatment and are performed or offered by persons otherwise duly qualified, licensed, or registered to do so under the laws of the Province of Ontario.

Building

- Means **building** as defined in the Ontario Building Code Act, S.O. 1992, Chapter 23.

Built Heritage Resource

- A **building**, structure, monument, installation or any manufactured or constructed part or remnant that contributes to a property's cultural heritage value or interest as identified by a community, including an Indigenous community.

Cannabis Production Facility

- Premises authorized by a license issued by the federal Minister of Health, pursuant to the Cannabis Regulations, SOR/2018-144, under the Cannabis Act, SC 2018, as amended, to obtain cannabis by any method or process, including by:

  (a) **manufacturing;**

  (b) synthesis;

  (c) altering its chemical or physical properties by any means; or

  (d) cultivating, propagating or harvesting it or any living thing from which it **may** be extracted or otherwise obtained.

Car-Share Parking Space

- A designated parking space reserved for use by persons commuting or travelling together.

City

- The Council of the Corporation of the **City** of Burlington; or alternatively, where an approval power has been delegated by the **City** of Burlington Council, the delegated approval authority, or the administration of the Corporation of the **City** of Burlington.

Community Garden

- A piece of land operated by the **City**, an individual or a group of people which is used collectively by a group of people for the growing of produce through individual or shared plots.

Community Planning Permit Application

- Formal request to the City of Burlington for a Community Planning Permit.

Complete Communities

- Places such as mixed-use neighbourhoods or other areas within cities, towns, and settlement areas that offer and support opportunities for people of all ages and abilities to conveniently access most of the necessities for daily living, including an appropriate mix of jobs, local stores, and services, a full range of housing, transportation options and public service facilities. **Complete communities** are age-friendly and **may** take different shapes and forms appropriate to their contexts.

Complete Street

- A street designed, built and operated to enable safe access for all users, in that pedestrians, cyclists, transit-users, and motorists of all ages and abilities are able to safely move along and across the right of way. **Complete streets** foster livability while enhancing the **public realm** and encouraging **sustainable** growth patterns.

Conservation or Conserved

- The identification, protection, management and use of **built heritage resources**, **cultural heritage resources** in a manner that ensures their cultural heritage value or interest is retained. This **may** be achieved by the implementation of recommendations set out in a **conservation** plan, archaeological assessment, and/or heritage impact assessment that has been approved, accepted or adopted by the relevant planning authority and/or decision-maker. Mitigative measures and/or alternative **development** approaches **should** be included in these plans and assessments.

Cultural Heritage Resources

- **Built heritage resources**, cultural heritage landscapes and archaeological resources that have been determined to have cultural heritage value or interest for the important contribution they make to our understanding of the history of a place, an event, or a people. While some **cultural heritage resources may** already be identified and inventoried by official sources, the significance of others can only be determined after evaluation.

Day Care Centre

- A facility where temporary care, protection, and supervision are provided to more than 5 children or elderly persons but which **shall** not provide overnight accommodation.

Daylight Triangle

- Areas providing clear visibility for safe vehicular movement between streets, **driveways**, and other intersections. **Daylight triangles** also present an opportunity for enhancing the street and integrating several modes of transportation safely.

Designed Electric Vehicle Parking Space

- A parking space designed and constructed to be **electric vehicle** ready, allowing for the future installation of **electric vehicle** supply equipment that conforms to Section 86 of the Electrical Safety Code.

Development

- In this By-law, "**development**" means:
  - the construction, erection or placing of one or more buildings or structures on land,
  - the making of an addition or alteration to a building or structure that has the effect of substantially increasing its size or usability,
  - the laying out and establishment of,
  - a commercial parking lot,
  - sites for the location of three or more mobile homes as defined in subsection 46 (1) of the *Planning Act*,
  - sites for the construction, erection or location of three or more land lease community homes as defined in subsection 46 (1) of the *Planning Act*, or
  - sites for the location of three or more **trailers** as defined in subsection 164 (4) of the *Municipal Act*, 2001,
  - site alteration, including but not limited to:

        - alteration of the **grade** of land, and
        - placing or dumping fill, or
    - the removal of vegetation.

Driveway

- A single passageway or series of interconnected passageways, for exclusive or shared private use, providing vehicular access between a street or condominium common element roadway and an area used for the parking, loading, or storage of a vehicle.

Dwelling Unit

- Means **dwelling unit** as defined and determined under the *Ontario Building Code Act, S.O. 1992*, Chapter 23.

Electric Vehicle

- Means a motor vehicle that uses electricity for propulsion, and that can use an external source of electricity to charge the vehicle's batteries.

Electric Vehicle Parking Space

- A parking space constructed and equipped with a minimum Level 2 **Electric Vehicle** Charging Device.

Encourage

- Reasonable efforts are made to accommodate the desired result.

Entertainment

- Any place devoted to the presentation of live **entertainment** and performances or for the commercial showing of films, including such facilities as movie theatre, dinner theatre, supper club or cabaret, but **shall** not include **adult entertainment establishment**, **gaming premises**, or video game & pinball machine arcade.

Floor Area

- Means **floor area** as defined and determined under the *Ontario Building Code Act, S.O. 1992*, Chapter 23.

Floor Area, Gross (GFA)

- The sum of each **floor area** of a **building**.

Gaming Premises

- Premises that are a gaming site as defined in the Ontario Lottery and Gaming Corporation Act, 1999.

Grade

- Means **grade** as defined and determined under the Ontario Building Code Act, S.O. 1992, Chapter 23.

Green Infrastructure

- Natural and human-made elements that provide ecological and hydrological functions and processes. **Green infrastructure** can include components such as **natural heritage features** and

systems, parklands, storm water management systems, street trees, urban forests, natural channels, permeable surfaces and green roofs.

Ground-Oriented Dwelling

- A **dwelling unit** which is designed to be accessible by direct access from the ground or by means of stairways. **Buildings** containing **ground-oriented dwelling** units usually do not exceed three **storeys** in height.

Group Home

- A single housekeeping unit supervised by staff on a daily basis which provides special care and treatment to persons for physical or mental deficiency, physical handicap or other such cause. A **Group Home shall** be funded, licensed, approved, or supervised by the Province of Ontario under a general or specific Act.

Hazardous Lands

- Property or lands that could be unsafe for development due to naturally occurring processes. Along river, stream and small inland lake systems, this means the land, including that covered by water, to the furthest landward limit of the flooding hazard or erosion hazard limits.

Hazardous Sites

Property or lands that could be unsafe for development and site alteration due to naturally occurring hazards. These may include unstable soils (sensitive marine clays [leda], organic soils) or unstable bedrock (karst topography.)

Hazardous Substances

- Substances which, individually, or in combination with other substances, are normally considered to pose a danger to public health, safety and the environment. These substances generally include a wide array of materials that are toxic, ignitable, corrosive, reactive, radioactive or pathological.

Height, Building

- Means building **height** as defined and determined under the Ontario Building Code Act, S.O. 1992, Chapter 23.

Home Occupation

- An activity that provides a service as an **accessory use** within a **dwelling unit** or in an **accessory building**.

Hotel

- Means **hotel** as defined under the Ontario Building Code Act, S.O. 1992, Chapter 23.

Human Scale

- The proportional relationship of the physical environment to human dimensions, acceptable to public perception and comprehension in terms of the size, height, bulk, and/or massing of **buildings** or other features of the built environment.

Impacts of a Changing Climate

- The present and future consequences from changes in weather patterns at local and regional levels including extreme weather events and increased climate variability.

Industrial

- Assembling, fabricating, **manufacturing**, processing, warehousing and distribution uses, repair activities, communications, utilities, transportation, storage, service trades and construction uses.

Infrastructure

- Physical structures (facilities and corridors) that form the foundation for **development**. **Infrastructure** includes: sewage and water systems, septage treatment systems, stormwater management systems, waste management systems, electricity generation facilities, electricity transmission and distribution systems, communications/telecommunications, transit and transportation corridors and facilities, oil and gas pipelines and associated facilities.

Institutional Uses

- Private services and/or facilities which provide a public health, education, **recreation** and/or social service related function to residents and which can be appropriately accommodated in most areas of the **city**. **Institutional uses may** include, but **shall** not be limited to, places of worship, cemeteries, private educational facilities, **day care centres** or long term care facilities, but **shall** not include **group homes**, private medical clinics or **public service facilities**.

Landscape Area

- An area of land within a **lot** dedicated to the planting of trees, shrubs, flower beds, or a combination thereof and which **may** include other decorative landscape features. A ground sign **may** be located within a **landscape area.** A **landscape buffer may** be included in the calculation of **landscape area**. Snow storage and transformers are not permitted in a required **landscape area.**

Landscape Buffer

- The area of a **lot** which serves to provide separation and to partially obstruct the view of adjacent land uses by means of a dense landscape screen consisting of evergreen trees or a combination of solid screen fencing and evergreen or deciduous trees. Snow storage and transformers are not permitted in a required **landscape buffer**.

Lane

- A public or private right-of-way providing a means of access to **lots** abutting thereon.

Large Scale Motor Vehicle Dealership

- A motor **vehicle** dealership greater than 0.2 ha in size which contains significant outside storage and a large proportion of associated automobile repair and service facilities.

Legal Non-Conforming Use

- The use of any land, **building** or structure for any purpose prohibited by this By-law if such land, building or structure was lawfully used for such purpose on the day of the passing of this By-law, so long as it continues to be used for that purpose.

Light Industrial

- Assembling, fabricating, **manufacturing**, or processing uses that have a low probability of fugitive emissions such as noise, odour, dust or vibration, and that are compatible with any abutting **sensitive land uses**.

Loading Space

- An off-street space or berth on the same **lot** with a **building** for the temporary parking of commercial vehicles while loading or unloading merchandise or materials.

Lot

- A parcel of land under one ownership which is established as a separate parcel of land in accordance with the provisions of the **lot** creation sections of the *Planning Act*, including a parcel acquired from Her Majesty in right of Canada, Her Majesty in right of Ontario, the Regional Municipality of Halton, or the Corporation of the City of Burlington, appropriated for the exclusive use of a **building** or a group of **buildings** comprising one undertaking or enterprise, and which abuts a public street, except if it has been created as a **parcel of tied land**, in which case, it **may** abut a common element condominium road.

Lot Area

- The total horizontal area with the **lot lines** of a **lot**.

Lot, Corner

- A **lot** situated at the intersection of and abutting two or more streets or parts of the same street, including any reserve area, where the angle at the intersection or projected angle at the intersection of the tangents of the **street lines** is not more than 135 degrees.

Lot Line

- Any boundary of a **lot**.

Lot Line, Front

- The **lot line** that divides a **lot** from the street provided that in the case of a **corner lot**, the shorter lot line that abuts a street **shall** be deemed to be the **front lot line**, and the longer **lot line** that abuts a street **shall** be deemed to be a **side lot line** abutting a street. In the case of a **through lot**, only one of the **lot lines shall** be deemed to be the **front lot line**. In the case of an irregular shaped **lot**, the straight line joining the two points where the **side lot lines** respectively intersect the **street line shall** be not less than 9.1 metres.

Lot Line, Rear

- The **lot line** or point of intersection of the **side lot lines** farthest from and opposite the **front lot line**.

Lot Line, Side

- A **lot line** other than a **front** or **rear lot line**. In the case of a **corner lot**, the longer **lot line** that abuts a street **shall** be known as the **side lot line** abutting a street.

Lot, Through

- A **lot** bounded on two opposite sides by streets.

Low-Rise Building

- A building four (4) storeys in height or less.

Major Facilities

- Facilities which **may** require separation from **sensitive land uses**, including but not limited to airports, **manufacturing** uses, transportation **infrastructure** and corridors, rail facilities, marine facilities, sewage treatment facilities, waste management systems, oil and gas pipelines, industries, energy generation facilities and transmission systems, and resource extraction activities.

Manufacturing

- The use of land, **building** or structures for the purpose of **manufacturing,** assembly, preparing, finishing, treating, repairing, warehousing, or adapting for sale of any goods, substance, article, or service.

May

- There is discretion and flexibility or that criteria are to be satisfied in the application of a provision or standard.

Mid–Rise Building

- A **building** five (5) to eleven (11) **storeys** in height.

Multi–Modal

- The availability or use of more than one form of transportation, such as automobiles, walking, cycling, buses, rapid transit, rail (such as commuter and freight), trucks, air, and marine, and the interconnection between modes.

Natural Heritage Features and Areas

- Features and areas, including significant wetlands, significant coastal wetlands, other coastal wetlands, fish habitat, significant woodlands, significant valleylands, significant habitat of endangered species and threatened species, significant wildlife habitat, and significant areas of natural and scientific interest, which are important for their environmental and social values as a legacy of the natural landscapes of an area.

Negative Impact

- In regard to potential risks to human health and safety and degradation to the quality and quantity of water, sensitive surface water features and sensitive ground water features, and their related hydrologic functions, due to single, multiple or successive **development**. **Negative impacts should** be assessed through environmental studies, including hydrogeological or water quality impact assessments, in accordance with Provincial standards;
- In regard to water resources, degradation to the quality and quantity of water, sensitive surface water features and sensitive ground water features, and their related hydrologic functions, due to single, multiple or successive **development** or **site alteration** activities;
- In regard to fish habitat, any permanent alteration to, or destruction of fish habitat, except where, in conjunction with the appropriate authorities, it has been authorized under *The Fisheries Act*;

- In regard to other **natural heritage features and areas**, degradation that threatens the health and integrity of the natural features or ecological functions for which an area is identified due to single, multiple or successive **development** or **site alteration** activities.

Night Club

- An establishment or part thereof, whose **principal** function is the provision of music, prerecorded or live music, for dancing by club patrons, having a minimum dance **floor area** of 10 m2, and where food and/or beverages **may** be served, but **shall** not include an **adult entertainment establishment**.

Noxious Use

- The use of any premises which is offensive or dangerous by reason of the emission of odour, smoke, dust, noise, gas, fumes, liquid, vibration or refuse matter.

Office

- A **building** or part of a **building** where administrative and clerical functions are carried out in the management of a business, profession, organization or public administration, and **may** include activities such as research, **development** and information processing.

Parcel of Tied Land (POTL)

- Any parcel of land legally bound and tied to a common element condominium. A parcel of tied land must front on either a public street or a condominium common element roadway.

Parcel of Urban Residential Land

- A parcel of land that is within an area of settlement on which residential use, other than ancillary residential use, is permitted by By-law and that is served by:
  - sewage works within the meaning of the *Ontario Water Resources Act* that are owned by
    - a municipality,
    - a municipal service board established under the *Municipal Act, 2001,*
    - a city board established under the *City of Toronto Act, 2006,*
    - a corporation established under sections 9, 10 and 11 of the *Municipal Act, 2001* in accordance with section 203 of that Act, or
    - a corporation established under sections 7 and 8 of the *City of Toronto Act, 2006* in accordance with sections 148 and 154 of that Act, and
  - a municipal drinking water system within the meaning of the *Safe Drinking Water Act, 2002*.

Park

- The use of any **lot** consisting largely of open space, which **may** include outdoor **recreation use** areas, sports fields, playgrounds, playfield, food concession, outdoor theatres, or other similar use in a manner that is accessible to the public.

Patio, Outdoor

- An outdoor area associated with a permitted **restaurant** located on the same **lot** as the **restaurant**, and which **shall** provide tables and seating for patrons to be served meals and/or refreshments for consumption on the premises.

Place of Assembly

- Means a building or part of a building used to accommodate the gathering of people for events such as trade shows, banquets, conferences, conventions, meetings, seminars, workshops or other similar events and **may** include accessory food preparation.

Podium

- The lower portion of a **tall building** or **mid-rise building**, which is clearly differentiated from the spaces above, designed to define and support adjacent streets, parks, and open space at an appropriate scale, integrate with adjacent **buildings**, achieve transition with nearby **buildings** and contribute to the pedestrian experience.

Primary Metals Industry

- A smelter, blast furnace, cupola, mill, or other factory used for the production of primary iron or steel, including, among other things, pig-iron, ferrous alloys, and other primary non-ferrous alloys.

Principal

- Means main or primary purpose for which any **lot** is used. **Principal building** means the **building** where the **principal** use is located.

Public Authority

- Any federal, provincial, regional, county or municipal agency including any commission, board, authority or department established by such agency exercising any power or authority under a Statute of Canada or Ontario.

Public Realm

- All spaces to which the public has unrestricted access, such as streets, parks and sidewalks.

Public Service Facilities

- Land, **buildings** and structures for the provision of programs and services provided or subsidized by a government or other body, such as social assistance, recreation, police and fire protection, health and educational programs, long-term care services and cultural services. **Public service facilities** do not include **infrastructure**.

Qualified Person

- An individual with qualifications and/or credentials related to a field of study and who is therefore appropriate for conducting a study and/or providing an expert opinion that has been required by the **City**. The **qualified person** must be to the satisfaction of the **City** or where appropriate, is/be defined by relevant legislation, regulation and/or standards.

Recreation Use

- A place designed and equipped for the consumer to actively participate in the conduct of sports, fitness and other leisure time activities, undertaken in built or natural settings for purposes of physical activity, health benefits, sport participation and skill development, personal enjoyment, positive social interaction and the achievement of human potential; but does not include a **night club**, **adult entertainment establishment**, video game & pinball machine arcade, **gaming premises** or public auditorium, community or recreational centre, or overnight accommodation.

Residential Amenity Area, Private

- An outdoor area reserved for the exclusive use of the occupants of a **dwelling unit**, such as a patio, deck, balcony, solarium, or other such area.

Residential Amenity Area, Common

- An interior area within a residential **building** or an outdoor area exterior to the residential **building** which is designed and intended primarily for the leisure and recreation of the occupants of the **building**.

Restaurant

- An eating establishment located in a **building** or structure or part thereof where food and beverages are prepared and served for consumption on or off the premises.

Retail

- A part of a **building** where merchandise is displayed, rented, or sold directly to the public.

Rowhouse

- A residential **building** that is divided vertically into three or more separate **dwelling units** where each **dwelling unit** has a separate external entrance. A **rowhouse** is also known as a townhouse.

Sensitive Land Uses

- **Buildings**, **common amenity areas**, or outdoor spaces where routine or normal activities occurring at reasonably expected times would experience one or more adverse effects from contaminant

discharges generated by a nearby **major facility**. **Sensitive land uses may** be a part of the natural or built environment. Examples **may** include, but are not limited to residences, **day care centres**, and educational and health facilities.

Service Commercial

- Non-**retail** commercial uses, including **animal care establishments**. **Service commercial** excludes **automotive commercial** uses.

Setback

- The horizontal distance between the boundary of a **lot**, parcel, or block of land, and the nearest point of any **building** or structure, measured perpendicular to the boundary.

Shall

- The provision or standard is mandatory or it is required to comply with a provision or standard.

Should

- The provision or standard is directive and a professional planning rationale is required in order not to fully comply with a provision or standard.

Site Alteration

- **Site alteration** is defined according to the City of Burlington Site Alteration By-law.

Small Scale Motor Vehicle Dealership

- A motor **vehicle** dealership of less than 0.2 ha in size in which the principal activity is the retail sale of vehicles.

Special Needs Housing

- Any housing, including dedicated facilities, in whole or in part, that is used by people who have specific needs beyond economic needs, and includes, but is not limited to, needs such as mobility requirements or support functions required for daily living. Examples **may** include, but are not limited to, housing for persons with disabilities such as physical, sensory or mental health disabilities, seniors' housing, **group homes**, emergency shelters, housing for the homeless, and independent permanent living arrangements, where support services such as meal preparation, grocery shopping, laundry, housekeeping, respite care and attendant services are provided. It does not include households that receive community–based support services in their own home.

Storey

- Means storey as defined and determined under the Ontario Building Code Act, S.O. 1992, Chapter 23.

Storey, First

- Means first storey as defined and determined under the Ontario Building Code Act, S.O. 1992, Chapter 23.

Street Line

- The division between a street and a **lot**.

Streetscape

- The visual appearance of a street formed by the location of physical features such as **buildings**, pedestrian, cycling, transit and vehicular facilities and landscaping.

Street Wall

- The condition of enclosure along a street created by the fronts of **buildings** and enhanced by the continuity and **height** of the lower building facades.

Sustainable and Sustainability and/or Sustainable Development

- A systems based approach to growth and **development** where economic, social and environmental factors are jointly considered and harmonized. **Development** must meet the needs of the present without compromising the ability of future generations to meet their own needs.

Tall Building

- A **building** twelve (12) **storeys** or higher.

Tandem Parking Space

- A parking space that can only be accessed by passing through another parking space from a street, **lane** or **driveway.**

Trailer

- A **vehicle** designed to be towed by a motor **vehicle** for the purpose of transporting or storage of goods, materials, equipment or livestock such as boat and snowmobile **trailers.**

Tree

- Tree is defined according to the **City** of Burlington Public Tree By-law and Private Tree By-law.

Urban Agriculture

- The growing of crops for food at a small scale, including **community gardens** and small-scale sales of urban agricultural products, and does not include the raising of livestock or a **cannabis production facility**.

Vegetation

- Vegetation is defined according to the City's Site Alteration By-law.

Vehicle

- A motor vehicle, traction engine, farm tractor, road building machine and any **vehicle** drawn, propelled, or driven by any kind of power, including muscular power, but not including the cars or electric or steam railways running only upon rails.

Yard

- An area extending from the lowest level below **grade** to the sky, open and uncovered, appurtenant to a **building** or structure and unoccupied by any **building** or structure, except as specifically

permitted in this By-law. In determining **yard** measurements the minimum horizontal distance from the respective **lot lines shall** be used.

Yard, Front

- A **yard** extending across the front of a l**ot** between the **side lot lines**, and between the **front lot line** and the nearest wall of any **building** above **grade**, produced to the **side lot lines**.

Yard, Rear

- A **yard** extending across the rear of a lot between **side lot lines** and between the **rear lot line** and the nearest wall of any **building** above **grade** produced to the **side lot lines**.

Yard, Side

- A **yard** extending from the **front yard** to the **rear yard** between the **side lot line** of the **lot** and the nearest wall, above **grade**, of any **building**.

Yard, Street Side

- A **side yard** immediately adjoining a public street.

Note: The defined terms do not exhaustively define the prohibited uses in Section 5.4. The City may consider whether this would support by-law implementation.

3 Administration

3.1 Application of this By-law

3.1.1 All **development** within the areas identified on Schedule A to which this By-law applies **shall** require a Community Planning Permit.

3.2 Exemptions

3.2.1 Notwithstanding provision 3.1.1, the following types of **development shall** not require a Community Planning Permit:

a. Any **development** consistent with Site Plan Control approval issued pursuant to the **City** of Burlington **Site Plan Control** By-law, as amended;

b. Any **development** consistent with a minor variance in place at the date of passing this by-law;

c. Placement of a portable classroom on a school site of a district school board if the school site was in existence on January 1, 2007;

d. Projects initiated by a public authority in accordance with provision 5.3.1; and

e. Repairing or rebuilding a **building** or structure which constitutes a **legal non-conforming use** if:

   i. the **Development** is solely limited to the repairing or rebuilding of a **building** or structure which constitutes a **legal non-conforming use;**
   ii. the **building** or structure is situated in the same location; and

iii. the **building** or structure maintains the same envelope.

3.2.2 For further clarity, the following activities do not constitute **development** and do not require a Community Planning Permit:

a) Interior alterations to an existing **building** provided that there is no change in use or intensification;
b) Repairs and maintenance of any existing lawfully established **buildings** or structures such as the replacement of windows, doors, stairs, and decks, that will not result in changes to the footprint, location, height, or **gross floor area** of the structure; and
c) Repairs and replacement of existing lawfully established **buildings** and foundations provided that the works do not involve the placement of fill, alteration of existing **grades**, or changes to the footprint, location, height, or **gross floor area** of the structure.

3.3 Community Planning Permit Classes and Delegated Authority

3.3.1 There are three classes of Community Planning Permits: Class 1 - Standards Met, Class 2 - Staff Variation, and Class 3 - Council Variation.

a) Class 1 Community Planning Permits capture the minimum requirements and objectives of this By-law and the Burlington Official Plan that must be met as part of a Community Planning Permit Application; and
b) Class 2 and Class 3 Community Planning Permits capture additional requirements that must be met as part of a Community Planning Permit Application and as outlined in provision 3.5.1.

3.3.2 Council delegates the authority to exercise **development** powers and duties on behalf of the **City** as set out in this By-law to the Approval Authority, in accordance with Table 3.1 below. Council **may** withdraw or amend this delegation at any time.

3.3.3 The Approval Authority for Provisional Approvals and Community Planning Permit applications **shall** be:

a) the Director of Community Planning for the **City** and/or delegate; and/or

b) the **City** Council/Community Planning Regulation and Mobility Committee ("Committee").

TABLE 3.1: Community Planning Permit Classes and Delegated Authority

Class of Permit	**Description**	**Approval Authority**	**Issuance of Provisional Approval of Community Planning Permit**
Class 1 Community Planning Permit	Application meets all **development** standards of the By-law. No variation is required.	**City** Staff	**City** Staff
Class 2 Community Planning Permit	Application generally meets the intent, standards and provisions of this By-law but requires a staff variation based on: ● one or more **development** standards within the established Class 2 Variation Limit identified in Tables 6.2, 7.2, or 8.2;	**City** Staff	**City** Staff

	• **building height** within the maximum Class 2 Threshold established on Schedules B-3, C-3, or D-3; and/or • approval of a listed Discretionary Use.		
Class 3 Community Planning Permit	Application generally meets the intent, standards and provisions of the By-law but requires a Council Variation based on: • one or more **development** standards above the Class 2 Variation Limit identified in Tables 6.2, 7.2, or 8.2; and/or • **building height** above the maximum Class 2 Threshold established on Schedules B-3, C-3 and D-3.	Council / Community Planning Regulation and Mobility Committee	**City** Staff

3.3.4 A Class 2 Community Planning Permit Application **may** be processed as a Class 3 Community Planning Permit at the discretion of the Director of Community Planning or designate, where they are of the opinion that the application would benefit from Council/Committee review.

3.3.5 Where an application has been referred to Council (or Committee), notice will be provided to the applicant during the pre-consultation stage outlined in Section 3.9.

3.3.6 At the time of submitting an application, an applicant **may** request that a Class 2 Community Planning Permit Application be processed as a Class 3 Community Planning Permit, where the applicant is of the opinion that the application would benefit from Council/Committee review.

3.4 Variations

3.4.1 Variations to standards of this By-law **may** be considered through the Class 2 or Class 3 Community Planning Permit process, in accordance with the requirements and objectives of this By-law and the Burlington Official Plan.

3.4.2 Variations to the general standards of this By-law found in Section 5.0 **may** be considered through a Class 2 or Class 3 Community Planning Permit process, in accordance with the requirements and objectives of this By-law and the Burlington Official Plan.

3.4.3 Variations are applied as a percentage of an eligible standard. The percentage referred to is the amount of the standard that **may** be varied.

3.4.4 A Community Planning Permit Application that requests a variation **shall** be subject to all requirements of this By-law.

3.4.5 For a Class 2 Community Planning Permit, Staff **may** vary the standards identified in Sections 5.0, 6.0, 7.0, and 8.0 of this By-law within the established limits and subject to the criteria in Section 3.5.

3.4.6 For a Class 2 or Class 3 Community Planning Permit, where a standard in Section 5.0 has no established limits within this By-law, Staff or Council **may** vary the standards identified in Section 5.0, subject to the criteria in Section 3.5.

3.4.7 For a Class 3 Community Planning Permit, Council **may** vary the standards identified in Sections 6.0, 7.0, and 8.0 of this By-law up to 100% subject to the criteria in Section 3.5, and subject to alignment with the Burlington Official Plan, provincial policy and any other applicable legislation.

3.4.8 A use **shall** not be added as a permitted use or a discretionary use through a Community Planning Permit. For any proposed new use within any Precinct, an Amendment to this By-law **shall** be required, in accordance with Section 4.2.

3.4.9 Despite provision 3.4.4 and 3.4.5, if in the opinion of the Approval Authority, the Community Planning Permit By-law criteria for variation from a standard are not met, the application **may** be refused.

3.5 Criteria for Variations from Standards

3.5.1 Where a Class 2 or Class 3 Permit is required, in addition to the requirements of this By-law and in accordance with the objectives of this By-law, the following variation criteria **shall** be addressed to the satisfaction of the Approval Authority, prior to the issuance of a Community Planning Permit;

a) the proposed **development** implements the Guiding Principles of this By-law;
b) the proposed **development** implements the **complete community** requirements and maintains the general intent of the Burlington Official Plan;
c) the proposed **development** does not result in significant off-site impacts, or any potential significant off-site impacts can be mitigated to the satisfaction of the Approval Authority;
d) the proposed **development** demonstrates consideration for provincial, regional and municipal guidelines and regard for technical studies; and
e) the proposed **development** is consistent with provincial policy, regulations and standards, as amended.

3.6 Discretionary Uses

3.6.1 A discretionary use, as identified in this By-law, **may** be allowed subject to applicable criteria as set out in this By-law, including any criteria listed as a note to any permitted discretionary use or permitted **accessory use** in Tables 6.2, 7.2, or 8.2.

3.6.2 Where a Community Planning Permit Application includes a discretionary use, the provisions of Section 3.5 (Criteria for Variation), Section 3.13 (Conditions Attached to Approval), Section 3.14 (Provisional Approvals) and Tables 6.2, 7.2, and 8.2 **shall** be used to evaluate the discretionary use.

3.7 Agreements

3.7.1 Where a Community Planning Permit is required, an applicant **may** be required, at the discretion of the Approval Authority, to enter into one or more agreements with the City to address conditions of approval.

3.7.2 In addition to provision 3.7.1, the agreement **may** be registered on title to the Owner's property at the Owner's expense.

3.7.3 Notwithstanding provision 3.7.1, the applicant is responsible to obtain all required approvals and permits beyond those provided as part of a Community Planning Permit.

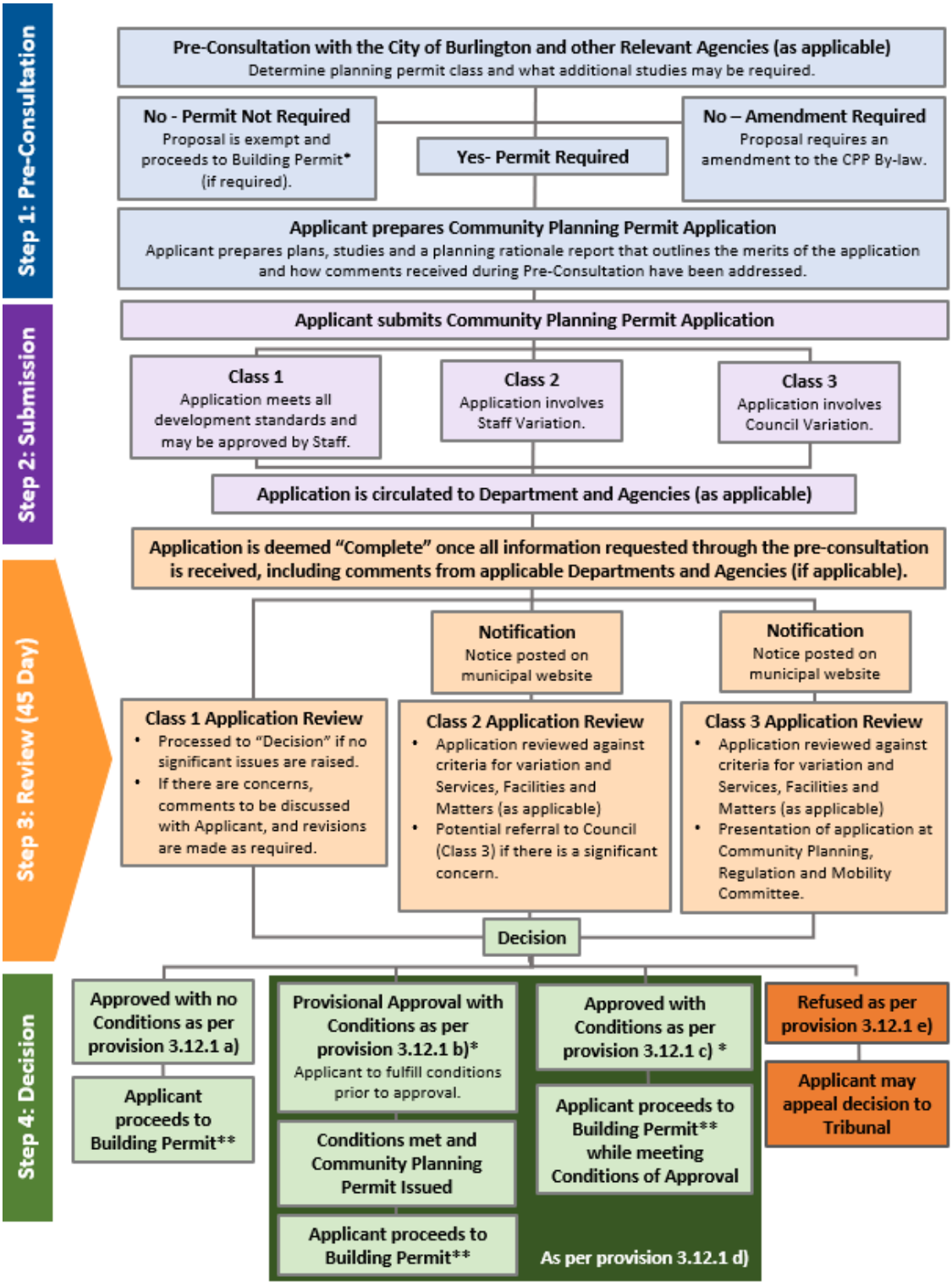
3.7.4 Council delegates the authority to City Staff to prepare, approve, execute and to amend, any Community Planning Permit Agreement required by the Community Planning Permit By-law.

3.7.5 Pre-existing development agreements continue to be valid and binding and **may** be amended under this By-law if subject to a Community Planning Permit.

3.8 Application Process

3.8.1 The Community Planning Permit Review process consists of the steps illustrated in Figure 3.1.

Figure 3.1: Community Planning Permit Review Process Diagram



**Agreement to be Registered on Title (if required)*
***Other permits may need to be obtained from the Ministry of Transportation and Conservation Halton.*

3.9 Pre-consultation

3.9.1 Prior to the submission of a Community Planning Permit Application, the applicant **shall** be required to meet with **City** staff through a formal pre-consultation to obtain the requirements for a complete Community Planning Permit Application, unless exempt from a permit as outlined in Section 3.2 of this By-law.

3.9.2 The **City shall** require that pre-consultation with applicable agencies occurs prior to the submission of a Community Planning Permit Application, where appropriate.

3.9.3 Where a technical study or report is required to support a Community Planning Permit Application, the extent of the issues to be addressed will be identified by applicable agencies and/or **City** staff, based on the Burlington Official Plan and any terms of reference during the pre-consultation meeting.

3.10 Complete Applications

3.10.1 Complete applications for a Community Planning Permit **shall** include:

a) a fully completed and signed Community Planning Permit Application Form;
b) submission of the required application fees;
c) the application submission requirements identified on Schedule 1 of *Ontario Regulation 173/16*;
d) all requirements identified through pre-consultation, in accordance with the Burlington Official Plan (2020), and subject to the provisions in Section 3.11; and
e) any applicable agency approvals or permits required to be provided to the Approval Authority as determined during the pre-consultation meeting.

3.10.2 An application for a Community Planning Permit **shall** be considered complete if it meets the submission requirements identified on Schedule 1 of *Ontario Regulation 173/16*, and only when the information and material as determined by the **City** and affected agencies in Section 3.9 and Section 3.10 above, have been provided.

3.11 Required Information, Materials, Studies and Reports

3.11.1 A list of technical studies and reports that **may** be required to be submitted at the time of a **Community Planning Permit Application** is contained in the Burlington Official Plan (2020). Additional technical reports **may** also be required for applicable agency approvals at the time of application.

3.11.2 All required reports and technical studies **shall** be carried out by a **qualified person** retained by and at the expense of the applicant.

3.11.3 At the discretion of the Approval Authority, any required technical studies and reports **may** be subject to peer review at the expense of the applicant.

3.12 Decision

3.12.1 Upon review of a complete application the Approval Authority **may:**

a) Approve the application without conditions and issue a Community Planning Permit;
b) Approve the application and issue a Community Planning Permit with conditions attached, subject to Section 3.13 (Conditions Attached to Approval);
c) Approve the application subject to conditions being met before the issuance of a Community Planning Permit, subject to Section 3.14 (Provisional Approval);

d) Approve the application subject to the conditions being met before the issuance of the Community Planning Permit, subject to Section 3.13 (Conditions Attached to Approval), subject to Section 3.14 (Provisional Approval) and with conditions attached; or
e) Refuse to approve the application.

3.12.2 Notwithstanding provision 3.9.2, when considering a Community Planning Permit, the Approval Authority **may** confer with any persons or public bodies that **may** have an interest in the application.

3.13 Conditions Attached to Approval

3.13.1 Where a Community Planning Permit is required in accordance with the provisions of this By-law, the **City may** approve an application with conditions. A condition **may** be imposed if:

a) The condition(s) are clear, precise and quantifiable; and
b) The condition **shall** include a clear statement of whether it must be complied with before the construction, renovation, demolition and certain changes for the use of buildings/structures.

3.13.2 Any recommendation within a technical study or report that is required as part of the Community Planning Permit Application or review process **may** be imposed as conditions of approval as appropriate and at the **City's** discretion.

3.13.3 A list of potential Conditions of Approval or Provisional Approval is found in Appendix A of this By-law.

3.13.4 In accordance with the *Planning Act*, the applicant **may** at any time, make a motion for directions to have the Tribunal determine whether a specified condition has been fulfilled or is valid.

3.14 Provisional Approval

3.14.1 Provisional Approval of a Community Planning Permit provides approval in principle, subject to certain conditions being met prior to issuance of a Community Planning Permit, as stipulated in this By-law.

3.14.2 The applicant **shall** fulfill the conditions associated with the Provisional Approval in advance of Community Planning Permit issuance, to the satisfaction of the Approval Authority.

3.14.3 Provisional Approval **shall** be valid for a period of one year, failing which the Provisional Approval will lapse.

3.14.4 Notwithstanding provision 3.14.3, requests for an extension of a Provisional Approval of a Community Planning Permit to meet a condition **may** be granted upon submission of a formal request to the **City**.

3.14.5 An extension of a Provisional Approval of a Community Planning Permit **may** be granted in one year intervals, to a maximum of three (3) requests, subject to this By-law and any provisions within, as amended.

3.15Notice of Decision

3.15.1 In accordance with the *Planning Act*, within 15 days of the date of decision, the **City shall** issue a written Notice of Decision to the applicant and to each person or public body that filed a written request to be informed of the decision with the clerk of the municipality.

3.15.2 The Notice of Decision **shall:**

a) include reasons for the decision; and

b) give reasons for any conditions imposed and include any imposed conditions.

3.16 Appeal Process

3.16.1 In accordance with the *Planning Act*, an applicant **may** appeal a decision on a Community Planning Permit Application in writing to the Tribunal, no later than 20 days after the day the Notice of Decision is given.

3.16.2 In accordance with the *Planning Act*, an applicant **may** appeal a non-decision on a Community Planning Permit Application in writing to the Tribunal if no decision was made within 45 days of an application being deemed complete.

3.16.3 Appeals must be made in accordance with *Planning Act* O. Reg. 173/16, s. 12 (3); O. Reg. 75/18, s. 5 (3); O. Reg. 366/21.

3.17 Modifications to Provisional Approvals of Community Planning Permits

3.17.1 At the request of the applicant, and where considered appropriate by the City, modifications to a Community Planning Permit with Provisional or Conditional Approval, including changes to the **development** concept and supporting materials or to the conditions of Provisional Approval, **may** be made at any time, subject to the provisions within this By-law and the Burlington Official Plan.

3.17.2 Proposed modifications to a Community Planning Permit with Provisional Approval will be reviewed in accordance with the relevant sections of this By-law.

3.17.3 Proposed modifications **may** be subject to additional submission requirements to support the application, to the satisfaction of the Approval Authority.

3.17.4 Where an applicant applies to modify a Community Planning Permit with Provisional Approval, the fee **should** be equal to that which would be charged if the application was new. At the discretion of the Approval Authority, the fees **may** be waived or reduced if the change is minor, or the application to modify is received a short time after the issuance of the Community Planning Permit.

4 Other Administrative Matters

4.1 Transitional Provisions

4.1.1 Any existing approved **development** and any existing site specific **development applications** in process at the time of passing this By-law, but not finally disposed of prior to the day this By-law comes into force and effect**, shall** be disposed of under the provisions of the former By-law, despite any repeal of such former By-law, and be incorporated in this By-law as appropriate as a site specific exception or Community Planning Permit.

4.1.2 Any site specific **development application** in process at the time of the passing of this By-law, and subsequently approved prior to the day that this By-law comes into force and effect **shall** prevail over the provisions of this By-law in the event of any conflict, and **shall** be incorporated into this By-law as a site specific exception or a Community Planning Permit.

4.1.3 Any site specific Community Planning Permit Application that are subject to a Tribunal appeal at the time of the passing of this By-law and subsequently approved by the Tribunal **shall** prevail over the provisions of this By-law in the event of any conflict, and **shall** be incorporated into this By-law as a site specific exception.

4.1.4 Any amendments to site specific **development** applications in progress **shall** be incorporated into this By-law and added to the Previous Site Specific Exceptions Table contained in Appendix E to this By-law. If applicable, Maps in the Schedules to this By-law **shall** also be updated to reference such Site Specific Exceptions.

4.2 By-law Amendment Process

4.2.1 An amendment to this By-law **shall** be required:

a) where a proposal exceeds the variation thresholds of a Class 3 Community Planning Permit for one or more development standards, or

b) where a proposal includes a use that is not a permitted or discretionary use (in this case, an amendment to the Burlington Official Plan **may** also be required), or

c) where a proposal includes a proposed amendment to the Protected MTSA boundary and/or an amendment to the boundary of a precinct (in this case, an amendment to the Burlington Official Plan **may** also be required).

4.2.2 An amendment to this By-law **may** be initiated by the City or by an applicant.

4.2.3 Any amendment to this By-law **shall:**

a) be supported by a comprehensive planning rationale and complete Official Plan Amendment Application, as required, within the context of the planned vision for all of the lands within the area, subject to the By-law; and
b) must provide details of public and community engagement.

4.2.4 The planning rationale to support any amendment to this By-law must evaluate the application in the context of the goals, objectives and intent of this By-law and conformity with the Burlington Official Plan, and applicable provincial and regional plans.

4.2.5 In accordance with the *Planning Act*, applications to amend this By-law **shall** not be made before the fifth anniversary of the day this by-law is passed unless in compliance with *O. Reg. 173/16, s. 17 (5)*.

4.2.6 Provided that the purpose, effect, intent, meaning and permissions of this By-law are in no way changed or altered, the following technical revisions to this By-law are permitted without an amendment:

a) Corrections to typographic or punctuation errors;
b) Additions to and revisions of technical information on the Schedules including but not limited to topographic information, street labels, notes, legends, colors, shading, title blocks, boundaries of Community Planning Permit Precincts abutting new or deleted streets;
c) Changes to figures, illustrations, diagrams, and Appendices which do not form an operative part of the By-law; or
d) Changes to any reference to legislation or regulations or sections thereof approved by another **public authority** to include any amendments or successor legislation.

4.3 Repeal of Other By-laws

4.3.1 On the day that this By-law comes into force and effect, the following by-laws **will** be deemed to no longer apply to lands within the Permit Areas defined by this By-law:

a) Zoning By-law 2020; and
b) City of Burlington By-law 35-2017 (site plan control);

4.3.2 Notwithstanding Section 4.3.1, the relevant provisions of the former By-laws noted in that section **shall** hereby be deemed to apply to lands within the Permit Areas defined by this By-law for the following purposes:

a) Disposal of site specific applications in process in accordance with Section 4.1;
b) Application of previous site specific amendments and minor variances; and
c) Application of previous site specific conditions imposed by Holding provisions in accordance with Section 4.4.

4.3.3 For the purposes of applying the provisions given in Section 4.3.2, where they are deemed to apply, the provisions of the by-laws noted in that section shall prevail over the provisions of this By-law.

4.4 Previous Holding Provisions

4.4.1 Where lands were deemed to be subject to a Holding provision by way of a by-law passed pursuant to Section 36 of the *Planning Act* on the day that this By-law comes into force and effect, the conditions associated with the applicable Holding provision **shall** be deemed to continue to apply.

4.4.2 Where there is a conflict between the provisions of this by-law and the specific provisions of any by-law imposing a Holding provision, the specific by-law imposing a Holding provision **shall** prevail.

4.4.3 Where a Community Planning Permit Application involves lands which are subject to conditions applied in accordance with Section 4.4.2, such conditions **shall** be applied in the same manner as if they were imposed by way of Section 3.13 of this By-law.

4.4.4 Previous Holding provisions are listed in Appendix E to this By-law.

4.5 Commencement of By-law

4.5.1 This By-law **shall** come into force and effect as follows:

a) the day after the last day for filing a notice of appeal, if there are no appeals; or,
b) the day after the day on which all of the appeals are disposed of by the Tribunal or such later date as Tribunal **may** otherwise order.

5 General Provisions

5.1 Permitted Uses

5.1.1 No **development may** be undertaken except in accordance with the provisions of this By-law.

5.2 Legal Non-Conforming Uses

5.2.1 The expansion of an existing **building**, structure or use which constitutes a **legal non-conforming use shall** require a Community Planning Permit.

5.2.2 The expansion of an existing **building**, structure or use which constitutes a **legal non-conforming use may** only be permitted if the Approval Authority is of the opinion that:

a) The proposed **development** is desirable for the appropriate **development** or use of the land; and
b) The proposed **development** will not result in undue adverse impacts on neighbours and the neighbourhood.

5.3 Uses Allowed in all Precincts

5.3.1 The following uses are allowed in any Precincts, subject to provision 5.3.2:

a) **Institutional uses**;
b) **Parks** and Open Space;
c) **Public service facilities**;
d) **Urban agriculture**; and

e) **Infrastructure**.

5.3.2 **Development** of any of the uses listed in provision 5.3.1 is subject to the following:

a) The **development** must comply with any other provisions or standards which are generally applicable and required elsewhere in this By-law; and
b) The **development** must comply with any other provisions or standards specified for the use and required elsewhere in this By-law.

5.4 Uses Prohibited in all Precincts

5.4.1 The following uses are prohibited in all Precincts:

a) **Accessory drive-throughs**;
b) Abattoirs;
c) **Adult entertainment establishments**;
d) Animal research facilities;
e) **Body-rub parlours**;
f) Energy from waste facility;
g) Explosives **manufacturing**;
h) **Manufacturing** of asbestos products;
i) **Manufacturing**, processing or storage of animal matter or by-products of animal matter;
j) Medical waste storage and disposal;
k) Motor **vehicle** wrecking yards;
l) Petroleum refining;
m) **Primary metals industries**;
n) Pulp and paper mills;

o) Research and **development** related to any prohibited use.
p) Sugar refinery; and
q) Vegetable oil mills.

5.4.2 The storage of **hazardous substances** and **noxious uses may** only be permitted subject to the completion of a land use compatibility assessment in accordance with provision 5.24.1 of this By-law and the provisions of the respective Precinct.

5.5 Specific Uses - Additional Residential Units

5.5.1 In addition to the **principal dwelling unit**, up to 2 **additional residential units** are permitted on a **parcel of urban residential land** where one **rowhouse** is permitted, for a total of three **dwelling units**. For greater clarity, **additional residential units** in association with a condominium are only permitted on a **parcel of tied land** where one **rowhouse** is permitted.

5.5.2 Only one **additional residential unit shall** be located within an **accessory building**.

5.5.3 Parking in relation to the **development** of **additional residential units shall** not be permitted in that portion of the **rear yard** defined as the area between the extension of the two lines projected backward from the two side walls of the **principal building**.

5.5.4 **Tandem parking spaces shall** be permitted in relation to the **development** of **additional residential units**.

5.5.5 **Additional residential units shall** not be included in the calculation of the minimum number of visitor parking spaces.

5.6 Specific Uses - Special Needs Housing

5.6.1 **Development** of **Special Needs Housing** is permitted in any Precinct where residential uses are permitted, subject to the following provisions:

a) The **development** must comply with any other provisions or standards which are generally applicable and required elsewhere in this By-law.

b) For the purposes of applying the provisions given in Sections 5.24 and 5.25, **Special Needs Housing shall** be considered a **sensitive land use**.
c) **Development** of **Special Needs Housing shall** not be permitted on **hazardous lands** or **hazardous sites**, as determined by Conservation Halton and generally depicted on Appendices B-1, B-2 and B-3.

5.7 Specific Uses - Day Care Centres

5.7.1 A **day care centre** is permitted as a **principal** use in all Precincts where residential uses are permitted, subject to provision 5.7.3.

5.7.2 A **day care centre** is permitted as an **accessory use** in all Precincts in relation to any permitted **principal** use, subject to the provisions given in provision 5.7.3.

5.7.3 Notwithstanding the permissions given in provisions of 5.7.1 and 5.7.2, **development** involving a **day care centre shall** be subject to the policies of the Burlington Official Plan and the following provisions:

a) For the purposes of applying the provisions given in Sections 5.24 and 5.25, a **day care centre shall** be considered a **sensitive land use**; and
b) **Development** of a **day care centre shall** not be permitted on **hazardous lands** or **hazardous sites**, as determined by Conservation Halton and generally depicted on Appendices B-1, B-2 and B-3.

5.8 Specific Uses - Home Occupations

5.8.1 A **home occupation** is permitted in all **dwelling units** and related **accessory buildings**, subject to the following provisions:

a) The **home occupation shall** be a home-based **office** or personal **service commercial** activity;
b) If the **home occupation** is located within a **dwelling unit**, then the **gross floor area** of the **home occupation** must be less than 50% of the **gross floor area** dedicated to the residential use;
c) Persons employed by the **home occupation shall** be limited to residents of the household from which the **home occupation** is conducted;
d) No **home occupation shall** interfere with the residential use of the **building** in which it is located;
e) No equipment or process **shall** be used which creates or becomes a public nuisance in regard to persistent noise, odour, fumes, vibration, glare, traffic or parking, nor **shall** it cause electrical interference or interference with telephone, television, radio or satellite equipment reception.

5.8.2 The following activities are prohibited on any **lot** in conjunction with the **home occupation**:

a) Outdoor display or sales activities;
b) Outdoor **manufacturing** or processing activities;
c) Outdoor storage of equipment, goods, materials; and
d) Exterior signage.

5.9 Specific Uses - Outdoor Patios

5.9.1 An **outdoor patio** is permitted as an **accessory use** in relation to any permitted **restaurant**, subject to the following provisions:

a) Patio seating **shall** not exceed 50% of the capacity of the **restaurant**;
b) An **outdoor patio shall** be used exclusively for dining and **shall** not include any recreational or entertainment use or activity; and
c) An outdoor patio **shall** be located a minimum distance of 45 metres from all Residential Precincts and lands zoned residential outside of the Community Planning Permit Area.

5.10 Specific Uses - Temporary Uses, Buildings and Structures

5.10.1 The **development** of a temporary **building**, structure or **trailer** is permitted for an **accessory use** in all Precincts where all of the following conditions are met:

a) The associated **principal** use is permitted;
b) The **development** must comply with any other provisions or standards which are generally applicable and required elsewhere in this By-law;
c) The **development** must comply with any other provisions or standards specified for the associated **principal** use and required elsewhere in this By-law;
d) The **building**, structure or **trailer** is to be used on a temporary basis and for a definite period of time not exceeding 90 days; and
e) Notwithstanding 5.10.1 d), the building, structure or trailer **may** be used for a period of time exceeding 90 days where:

i) It is used for the purpose of construction on the same **lot** for as long as any work which has neither been finished nor abandoned remains in progress; or

ii) It is used for the purpose of selling or leasing **dwelling units** on the same **lot** for as long as any work associated with an approved Community Planning Permit which has neither been finished nor abandoned remains in progress; or

iii) It is used for the purpose of selling or leasing **dwelling units** on a different **lot** subject to Council Approval of a Class 3 Community Planning Permit.

5.10.2 For the purposes of applying provision 5.10.1, a tent **shall** be considered a temporary structure.

5.10.3 A Community Planning Permit is not required for instances of **development** where all of the following conditions are met:

a) The **development** solely involves a tent;
b) The tent is to be used on a temporary basis and for a definite period of time not exceeding 90 days; and
c) The **development** qualifies for the exemption from the requirement for a Building Permit provided for in Sentence 1.3.1.1(5) of Division C of the Ontario Building Code.

5.11 Servicing and Utilities

5.11.1 The **City** and/or Halton Region **may**, at its sole discretion, require that an application for a Community Planning Permit demonstrate the following to the satisfaction of the **City** and/or Halton Region:

a) The **development** includes adequate access to municipal water and wastewater systems; and
b) There is sufficient available capacity in the municipal water and wastewater systems to service the proposed **development**.

5.11.2 Where an application involves **development** which must occur in phases, the phasing of **development shall** be planned so as to ensure there will be sufficient available capacity in the municipal water and wastewater systems to service the proposed **development**.

5.11.3 The **City** and/or Halton Region **may**, at its sole discretion, require that an application for a Community Planning Permit provide details regarding the following elements insofar as they relate to the proposed **development**:

a) The location and nature of existing and proposed utilities; and
b) The location and nature of connections to existing and proposed utilities.

5.11.4 In fulfilling the requirements given in provisions 5.11.1 and 5.11.3, the applicant **shall** provide the required information, materials, studies or reports in accordance with the provisions given in Section 3.11.

5.12 Mechanical Equipment

5.12.1 Mechanical and unitary equipment (including hot boxes, heating equipment, electrical equipment, air conditioners and pumps), and other similar mechanical equipment **may** be located within a **yard** subject to the following standards:

a) Such equipment **shall** be:
   i) Setback from a **street line**: 3.0 metres
   ii) Setback from a **side lot line** that does not abut a street: 0.6 metres
   iii) Setback from a **rear lot line**: 0.6 metres
b) Where such equipment is located within a **yard** that abuts a street, it **shall** be screened from the street by an enclosure or landscaping.

5.12.2 Mechanical and unitary equipment **shall** be located no lower than 1 metre below the regulatory flood level.

5.12.3 Notwithstanding provision 5.12.1, a mechanical penthouse **shall** be subject to the **yard setback** provisions and standards of Sections 6, 7 and 8 this By-law, and **shall** not be considered to be a storey or contribute to building height.

5.13 Transportation

5.13.1 The **City may**, at its sole discretion, require that an application for a Community Planning Permit demonstrate the following to the satisfaction of the **City**:

a) The **development** includes adequate access to road and transit infrastructure;
b) There is sufficient available capacity in the transportation network intended to service the proposed **development** such that Regional roads and the **City's** street network will function efficiently;

c) The design of all streets within the **development** conforms to the classification, function and general design requirements given in Burlington's Official Plan;
d) The design and location of streets and the location of **active transportation** connections conforms to Burlington's Official Plan and meets the intent conveyed by Figure 1a, Figure 2a, and Figure 3a of this By-law; and
e) The **development** conforms to best practices in **complete streets** or Burlington's Complete Streets Guidelines.

5.13.2 In fulfilling the requirements given in provision 5.13.1, the applicant **shall** provide the required information, materials, studies or reports in accordance with Section 3.11 of this By-law.

5.14 General Parking Provisions

5.14.1 The parking and loading requirements of this Section 5.14 to 5.23 **may** be varied in accordance with this By-law and the following:

a) Any variation to the required number of parking and **loading spaces shall** be considered a Class 2 variation.

5.14.2 Parking spaces, bicycle parking spaces and **loading spaces** required for a **development shall** be provided on-site, unless:

a) the spaces are on a **lot** that forms part of a comprehensive **development**; and
b) all **lots** forming part of the comprehensive **development** are indicated on the same Community Planning Permit.

5.14.3 Notwithstanding 5.14.2, required parking spaces, other than **accessible parking spaces** or visitor parking spaces, **may** be provided off-site on another **lot** within 400m of the **development**, provided that the owners of both **lots** enter into an agreement with the City to be registered on the title of both **lots** to guarantee that the land required for the parking spaces shall continue to be used for such purpose.

5.14.4 The surface treatment of parking areas and parking spaces **shall** be constructed and maintained with concrete, asphalt, or pavers, and curbed with a continuous poured concrete curb.

5.14.5 Above-**grade** parking allocated with four or more surface parking spaces should not be located in the **front** or **street side yard** for all **low-rise**, **mid-rise,** and **tall buildings**.

5.14.6 Where the number of required parking spaces, bicycle parking spaces or **loading spaces** results in a fractional number, the total number of required spaces or stalls **shall** be rounded down to the next whole number.

5.14.7 Servicing, loading, and parking access **should** be from a rear public lane, shared private lane and/or shared driveways, and not from the **Activated Street** frontage.

5.15 Parking Areas

5.15.1 Parking areas **shall** provide accesses to, and exits from, a road or **lane** such that backing or turning movements of motor vehicles entering or exiting the site avoid interference with traffic on the abutting roads or lanes.

5.15.2 Parking areas adjacent to a residential property **shall** require screening to the satisfaction of the Approval Authority.

5.15.3 Where there are four or more surface parking spaces, parking areas **should** be clearly marked to identify the location of the parking area.

5.15.4 Where there are four or more surface parking spaces in a parking area, a minimum 3.0 metre wide **landscape buffer shall** be required along the perimeter of the parking area, to the satisfaction of the Approval Authority.

5.16 Driveways and Parking Aisles

5.16.1 A **driveway** providing access to a parking area or parking garage **shall** comply with the following minimum dimensions:

a) 3.0 metres in width for a single traffic lane;
b) 6.7 metres in width for a double traffic lane, and
c) 2.0 metres of height clearance.

5.16.2 The minimum width of a parking aisle providing two-way access **shall** comply with the following minimum dimensions:

a) 6.5 metres for 90-degree angle parking; or

b) 6.1 metres for parallel parking spaces.

5.16.3 The minimum width of a parking aisle providing one-way access to angled parking spaces **shall** be provided in accordance with Table 5.1.

TABLE 5.1: One-way Parking Aisle Width

Angle of Parking Space	**Minimum parking aisle width (m) providing one-way access to angled parking space**
90 degrees - 60 degrees	6.5
59 degrees - 45 degrees	5.5
44 degrees or less (excluding parallel parking)	4.5
Parallel Parking	4.0

5.17 Parking Spaces

5.17.1 The total number of on-site parking spaces required for a **development shall** comply with the provisions or standards given in Table 5.2 and Table 5.3, unless otherwise stated in Section 5.19.

5.17.2 When applying the provisions or standards given in Table 5.2 and Table 5.3, the total minimum number of required on-site parking spaces **shall** be the sum of parking spaces for residents and visitors.

5.17.3 Parking spaces for visitors **shall** be reserved for the exclusive use of visitors and **shall** be clearly delineated between resident and visitor parking.

TABLE 5.2: Required Residential Parking Spaces

Type of Development	**Type of Parking**	**Minimum Number of Parking Spaces**	**Maximum Number of Parking Spaces**
Stand-alone **ground-oriented dwellings**	Resident parking	1.00 parking spaces per **dwelling unit**	1.20 parking spaces per **dwelling unit**
Bachelor unit in a mixed use building or **apartment building**	Resident parking	0.70 parking spaces per **dwelling unit**	0.85 parking spaces per **dwelling unit**
	Visitor parking	0.15 visitor spaces per **dwelling unit**	0.15 visitor spaces per **dwelling unit**
	Resident parking	0.80 parking spaces per **dwelling unit**	1.00 parking spaces per **dwelling unit**

1 bedroom unit in a mixed use building or **apartment building**	Visitor parking	0.15 visitor spaces per **dwelling unit**	0.15 visitor spaces per **dwelling unit**
2 bedroom unit in a mixed use building or **apartment building**	Resident parking	1.00 parking spaces per **dwelling unit**	1.20 parking spaces per **dwelling unit**
	Visitor parking	0.15 visitor spaces per **dwelling unit**	0.15 visitor spaces per **dwelling unit**
3 or more bedroom unit in a mixed use building or **apartment building**	Resident parking	1.00 parking spaces per **dwelling unit** plus	1.20 parking spaces per **dwelling unit** plus
	Visitor parking	0.15 visitor spaces per **dwelling unit**	0.15 visitor spaces per **dwelling unit**

TABLE 5.3: Required Non-Residential Parking Spaces

Type of Development	Minimum Number of Parking Spaces	Maximum Number of Parking Spaces
Day Care Centre	0.8 parking spaces per 100 square metres of GFA	0.95 parking space per 100 square metres of GFA
Entertainment	4.0 spaces per 100 square metres of GFA	4.4 spaces per 100 square metres of GFA
Hotel	0.75 parking spaces per unit plus 7.5 per 100 square metres of public areas	0.85 parking spaces per unit plus 8.5 per 100 square metres of public areas
Industrial	1.0 parking space per 100 square metres of GFA	1.5 spaces per 100 square metres of GFA
Institutional uses	3.0 parking spaces per 100 square metres of GFA	3.3 parking spaces per 100 square metres of GFA
Office/ Major Office/ Office for **Industrial**	3.0 parking spaces per 100 square metres of GFA	3.3 parking spaces per 100 square metres of GFA

Type of Development	Minimum Number of Parking Spaces	Maximum Number of Parking Spaces
Place of Assembly	2.0 parking spaces per 100 square metres of GFA	2.2 parking spaces per 100 square metres of GFA
Recreation use	4.0 spaces per 100 square metres of GFA	4.4 spaces per 100 square metres of GFA
Restaurant	3.0 parking spaces per 100 square metres of GFA	3.3 parking spaces per 100 square metres of GFA
Retail	1.5 parking spaces per 100 square metres of GFA	2.0 parking spaces per 100 square metres of GFA
Service Commercial	3.0 parking spaces per 100 square metres of GFA	3.3 parking spaces per 100 square metres of GFA

5.18 Parking Space Dimensions

5.18.1 Unless otherwise specified in this By-law, all parking spaces **shall** comply with the following minimum dimensions:

a) 2.7 metres in width; and

b) 5.8 metres in length.

5.18.2 The minimum width of a parking space shall increase by 0.3 metres for each wall, column or other obstruction that is adjacent to or within a parking space.

5.18.3 Notwithstanding provision 5.17.2 above, an additional 0.3 metres is not required when:

a) The maximum length of the wall, column or any other obstruction does not exceed 1.15 metres;
b) The wall, column or any other obstruction is located at the front or rear of the parking space; or
c) The wall, column or any other obstruction does not project more than 0.15 metres into the width of the parking space.

5.18.4 Up to 15% of the minimum required parking spaces **may** be designed for compact vehicles and shall be clearly identified as being reserved for the parking of small cars only.

5.18.5 Notwithstanding any other provision in this By-law, a parking space for compact vehicles **shall** comply with the following minimum dimensions:

a) 2.4 metres in width; and
b) 5.5 metres in length.

5.19 Parking Flexibility

5.19.1 Notwithstanding Section 5.15:

a) Where a **dwelling unit** qualifies as an affordable dwelling unit, the minimum number of required resident parking spaces for the **dwelling units may** be reduced by 30%for greater clarity, this reduction does not apply to the required visitor parking spaces, at the discretion of the Approval Authority;
b) The minimum number of required parking spaces **may** be reduced by 1 space for every 15 square metres of **gross floor area** of locker, change room or shower facility provided by a **development**, specifically accessible to all of the secure **long-term bicycle parking** spaces;

c) Where the minimum number of required parking spaces for residential and non-residential land uses are provided on the same **lot**, the number of required parking spaces **may** be reduced by 1 parking space for every 5 **dwelling units**, at the discretion of the Approval Authority.

5.20 Accessible Parking Spaces

5.20.1 **Accessible parking spaces** shall be provided in accordance with the requirements set out in the *Accessibility for Ontarians with Disabilities Act, 2005*, as amended.

5.21 Electric Vehicle Parking Space

5.21.1 **Electric vehicle parking spaces shall** be clearly identified and demarcated.

5.21.2 If a building has 4 or more **dwelling units**, 20% of the required parking spaces **shall** be provided as **electric vehicle parking spaces**, and 80% **shall** be provided as **designed electric vehicle parking spaces**.

5.21.3 For any non-residential use, a minimum of 10% of the required parking spaces **shall** be provided as **designed electric vehicle parking spaces**.

5.22 Loading Spaces

5.22.1 **Loading spaces shall** comply with the following minimum dimensions:

a) 2.7 metres in width;
b) 9.7 metres in length; and
c) 3.7 metres of height clearance.

5.22.2 The surface treatment of loading areas must be constructed and maintained with material suitable for their intended use (e.g., reinforced concrete).

5.22.3 A residential **building** containing 25 **dwelling units** or more **shall** provide and maintain on the same lot, at least 1 **loading space.**

5.22.4 A **building** with non-residential uses that requires the receiving, shipping, loading or unloading of goods, wares, merchandise or raw materials, **shall** comply with the following minimum provisions:

a) 1 **loading space** for **gross floor area** between 300 square metres and 2,300 square metres;
b) 2 **loading spaces** for **gross floor area** of 2,300 square metres to 7,360 square metres; and
c) 1 additional **loading space** for each **gross floor area** increment of 9,200 square metres (or part thereof) over 7,360 square metres.

5.22.5 The location of loading doors and associated loading facilities:

a) **Shall** not be allowed within a front yard; and
b) **Shall** not be allowed in a required **yard** abutting a residential use unless screened from view by a visual barrier.

5.23Bicycle Parking

5.23.1 A bicycle parking space not located in an enclosed locker must be separated from parking spaces, visitor parking spaces or **loading spaces** by 2.0 metres or a physical barrier.

5.23.2 Each horizontal bicycle parking space shall be a minimum of 0.6 metres wide, 1.8 metres deep with a vertical clearance of at least 2.0 metres.

5.23.3 Each vertical bicycle parking space **shall** be a minimum of 0.6 metres wide, 1.1 metres deep with a vertical clearance of at least 2.3 metres.

5.23.4 Each bicycle parking space **shall** be accessed by an aisle with a minimum width of 1.5 metres.

5.23.5 Bicycle parking spaces and accesses **shall** be located on hard-surfaced areas.

5.23.6 Bicycle parking spaces must be illuminated.

5.23.7 **Short-term bicycle spaces** and **long-term bicycle parking** spaces **shall** be provided in accordance with the minimum requirements in Table 5.3.

5.23.8 Where a **lot** contains more than one use, the required number of bicycle parking spaces is the sum of all bicycle parking spaces required for each use.

TABLE 5.3: Bicycle Space Requirements

Use	**Bicycle parking spaces, short term – minimum required**	**Bicycle parking spaces, long term – minimum required**
Apartment building	0.1 spaces per **dwelling unit**, 2 spaces minimum	0.5 space per **dwelling unit**, 2 spaces minimum
Residential mixed-use building	In addition to the non-residential requirement, 0.1 spaces per **dwelling unit** is required, 2 spaces minimum	In addition to the non-residential requirement, 0.1 spaces per **dwelling unit** is required, 2 spaces minimum
Commercial multi-unit building (includes individual buildings on the same lot as the multi-unit building)	0.2 spaces per 100 m2 GFA, 2 spaces minimum	0.1 spaces per 100 m2 GFA, 2 spaces minimum

Retail	0.2 spaces per 100 m2 GFA, 2 spaces minimum	0.1 spaces per 100 m2 GFA, 2 spaces minimum
Day care centre	0.1 spaces per 100 m2 GFA, 2 spaces minimum	0.2 spaces per 100 m2 GFA, 2 spaces minimum
Restaurant	2.0 spaces per 100 m2 GFA	0.1 spaces per 100 m2 GFA, 2 spaces minimum
Office/ Office for **Industrial**	0.13 spaces per 100 m2 GFA, 2 spaces minimum	0.2 spaces per 100 m2 GFA, 2 spaces minimum
Service Commercial	0.05 spaces per 100 m2 GFA	2 spaces minimum 0.09 spaces per 100 m2 GFA, 2 spaces minimum
Industrial	0.03 spaces per 100 m2 GFA, 2 spaces minimum	0.07 spaces per 100 m2 GFA, 2 spaces minimum
All other non-residential uses	2 spaces minimum	2 spaces minimum

5.24 Land Use Compatibility

5.24.1 Proponents of **development** containing **sensitive land uses** must incorporate measures to avoid, or if avoidance is not possible, minimize and mitigate potential impacts and ensure long-term operational and economic viability of **major facilities** in accordance with provincial guidelines, standards and procedures.

5.24.2 Notwithstanding Tables 6.1, 7.1, and 8.1, any proposed **development** containing **sensitive land uses shall** require a land use compatibility assessment to be prepared in accordance with a Terms of Reference approved by the **City** prior to submitting a Community Planning Permit Application, demonstrating that potential impacts to industrial, **manufacturing** or other uses are minimized and mitigated in accordance with provincial guidelines, standards and procedures.

5.24.3 On lands planned for industrial uses, where a development proposal contains a heavy industrial or manufacturing use, compatibility studies **may** be required as part of a development application, and an appropriate transition to adjacent non-industrial lands should be provided.

5.25 Development in Proximity to Rail

5.25.1 An application for a Community Planning Permit for a residential use or other **sensitive land use** within 30 metres from a property line abutting a rail right-of-way or 300 metres of a rail yard **shall** require an impact assessment to determine the compatibility of the proposed land use, to demonstrate the requirements of the Federation of Canadian Municipalities' Proximity to Rail Guidelines have been met and to recommend mitigation measures.

5.26 Activated Streets, Public Realm and Active Transportation Plan

5.26.1 Along Major Mixed Use Streets, retail, service commercial or **office** uses **shall** be required continuously at grade in **buildings** having frontage onto Major Mixed Use Streets, as identified on Figures 1a, 2a, and 3a.

5.26.2 **Public service facilities**, **institutional uses** and residential lobby entrances **may** be permitted along Major Mixed Use Streets in conjunction with other permitted uses.

5.26.3 An application for a Community Planning Permit for **development** in any Precinct **shall** demonstrate, to the satisfaction of the Approval Authority, how the proposed **development** will contribute to the **Public Realm** and Active Transportation Plan as identified in Figure 1a, 2a and 3a.

FIGURE 1a: Public Realm and Active Transportation Plan in the Downtown Burlington UGC / Burlington GO MTSA Permit Area

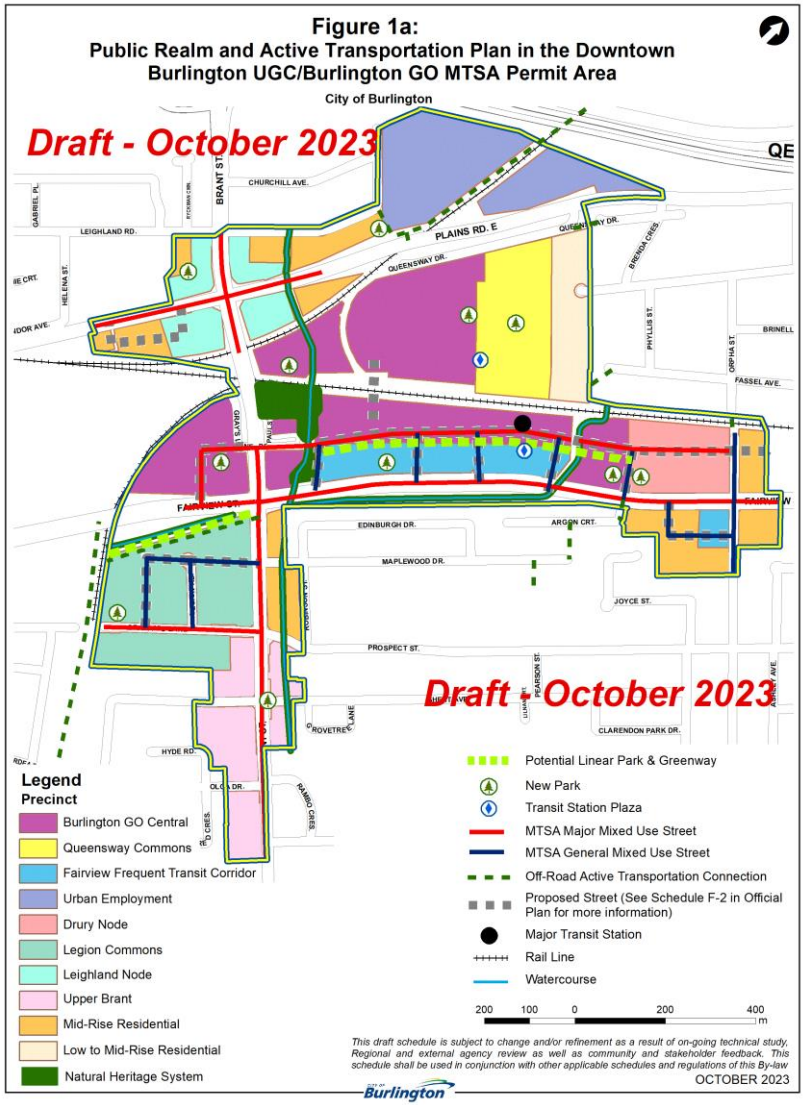


FIGURE 2a: Public Realm and Active Transportation Plan in the Aldershot GO MTSA Permit Area

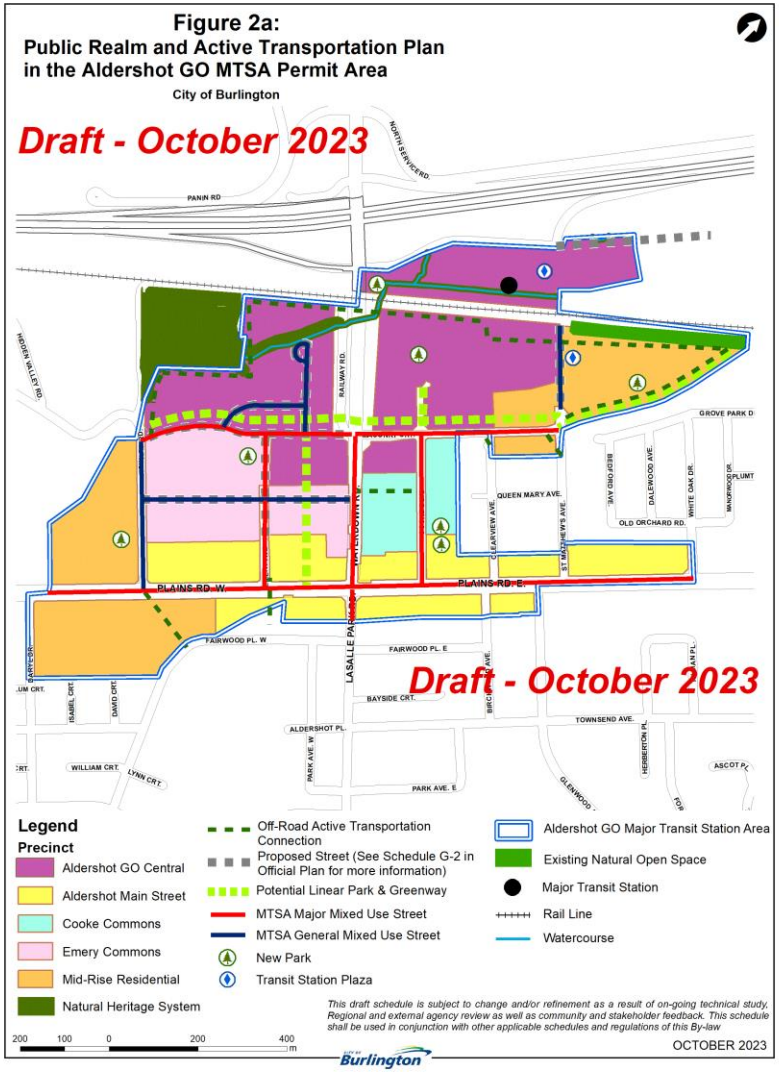


TABLE 3a: Public Realm and Active Transportation Plan in the Appleby GO MTSA Permit Area

5.27 Building Podium Design

5.27.1 An application for a Community Planning Permit for **development** in any Precinct adjacent to an **Activated Street**, as identified on Figure 1a, 2a and 3a, **shall** demonstrate consideration for the following, in addition to other applicable design guidelines:

a) The lower **building should** be constructed with the highest quality of architecture and design;
b) Facades **should** be designed using architectural elements as well as materials to define unique components within the **building** to create horizontal and vertical articulation at **podium** level;
c) Front facades **should** incorporate clear glazing on windows and doors;
d) Use of architectural elements and expressions such as arches, awnings, canopies, colonnades, doors, windows, lively colours and the highest quality material at street level **should** be used to highlight individual units, differentiate between residential and non-residential entrances in mixed use **buildings**, and engage the street;
e) The maximum frontage at **grade** for individual retail and service commercial units **should** not exceed 10 metres along an **Activated Street** to create a character of small shops and to achieve a vibrant, active and animated built environment;
f) On sites with multiple towers, mid-block pedestrian connections **should** be provided through the **podium** to enhance permeability, break up the podium, and create additional corner conditions;
g) Storefronts **should** be articulated externally to breakdown the apparent width with a frequent rhythm that supports the pedestrian experience at street level; and
h) **Buildings** which surround, have proximity to, or front onto **parks** and open space will have the highest level of architectural expression, articulation and use of materials.

5.27.2 A **public service facility**, retail or service commercial operation may occupy more than one individual retail and service commercial unit or storey along an **Activated Street**, as identified on Figure 1a, 2a and 3a.

5.28 Burlington Housing Targets

5.28.1 An application for a Community Planning Permit for **development** in any Precinct with a residential component proposed **shall** meet the minimum target for three-bedroom units as set out in the City of Burlington housing strategy; and demonstrate to the satisfaction of the Approval Authority how the proposed **development** will contribute to meeting the vision for housing in Burlington, targets for affordability, and other applicable targets for housing size and type, as outlined in the Burlington Housing Strategy.

5.29 Provision of Services, Facilities and Matters

5.29.1 In addition to the requirements of provision 5.28.1, a Community Planning Permit for **development** in any Precinct **shall** be required to provide services, facilities and matters, as specified in provision 5.29.2 and 5.29.3, as applicable.

5.29.2 Table 5.4 sets out the Services, Facilities and Matters which **shall** be provided for a Class 1 Community Planning Permit Application.

TABLE 5.4: Class 1 Services, Facilities and Matters

Services, Facilities and Matter Element	Contribution Requirement
Parkland Dedication	Contribution of Planning Act Section 42 Parkland Dedication as per City of Burlington Parkland Dedication By-law 55-2023 in addition to the following as required to meet the needs of the Park Provisioning Master Plan: • 3.3% of land value for low density*** • $22,090 per unit for medium density*** and • $15,610 per unit for 51 units/net hectare and more***
AND	
Contribution towards Complete Communities	• $488 per unit for apartment 2 bedrooms or more • $362 per unit for apartment bachelor and 1 bedroom
AND	
Residential Units, Ownership**	One of the following **shall** be provided: • At least 2% of units exceed the affordability threshold for low-income deciles on average or; • At least 7% of units are affordable dwelling units to moderate income deciles* (5% required to be within 4th and 5th deciles on average) or;

	• At least 15% of units are attainable to low-to moderate income deciles (10% required to be within 2nd, 3rd, 4th deciles on average).
OR	
Residential Units, Rental**	• At least 3% of units are attainable to low-to-moderate income deciles on average (1% required to be within 1st, 2nd, 3rd deciles on average)
** Affordability threshold values will be set out in Appendix C are subject to change. Appendix C will be updated on an annual basis to indicate the values to be applied. ***term as defined in the 1997 Burlington Official Plan	

5.29.3 For a Class 2 Community Planning Permit Application, the Approval Authority **may** grant **building height** up to those identified as a Class 2 maximum height on Schedules B-2, C-2, and D-2 based on the applicant demonstrating how the proposed development meets or exceeds one or more of the city-wide annual housing targets and provides one of the following services, facilities and matters in addition to those identified in Table 5.4:

a) An additional 1% of ownership units exceed the affordability threshold for low-income deciles on average; or
b) An additional 3% of ownership units are affordable to the 4th and 5th income deciles on average); or
c) An additional 10% of ownership units are attainable to the first five (5) income deciles on average (5% required to be attainable within the 2nd and 3rd income deciles on average); or
d) An additional 2% of rental units are attainable to low-to-moderate income deciles on average*; or

e) Contribution of land at or above the parkland service level target for the respective Major Transit Station Areas as outlined in the Park Provisioning Master Plan, and per below:
   - Downtown Burlington UGC / Burlington GO MTSA: 1 ha/1000 people
   - Aldershot GO MTSA 1 ha/1000 people
   - Appleby GO MTSA 1 ha/1000 people

5.29.4 An applicant **may** be required, at the discretion of the Approval Authority, to enter into one or more agreements registered on title with the City or another agency, for the provision of services, facilities and matters.

5.29.5 Notwithstanding the maximum height established on Schedules B-2, C-2, and D-2, the **City may** authorize a Class 3 variation provided the proposal satisfies all of the following conditions:

a) The proposal is consistent with the goals, objectives and other provisions or standards of this By-law;
b) The proposal provides facilities, services and matters that are above and beyond those that would otherwise be provided in Table 5.4; and
c) The proposal provides facilities, services and matters that are proportional in quantity or monetary value to the height of **development** that may be allowed.

5.29.6 The **City** may require the provision of additional services, facilities and matters when applying the provisions of 5.29.3:

a) Land to be conveyed to the **City** for municipal purposes;
b) **Residential units** comprised of 3 or more bedrooms, beyond those required in Section 5.28;

c) Accessible **dwelling units,**;
d) Purpose-built rental;
e) Additional affordable housing units, beyond those required for a Class 2 permit;
f) **Dwelling units** to be disposed of land to Halton Region or a not-for-profit housing provider for use as part of their housing portfolio;
g) Community or institutional facilities;
h) Public transportation infrastructure, facilities and services;
i) **Active transportation infrastructure** and facilities;
j) Public parking and improvements to existing public parking;
k) Improvements to off-site streetscaping, beyond the City's streetscape guidelines;
l) Public art;
m) Urban forestry;
n) Parkland and improvements to existing parks in excess of what is otherwise required in Table 5.4; and
o) **Conservation**, protection and preservation of **cultural heritage resources** or **natural heritage features** and systems.

6 Downtown Burlington UGC / Burlington GO MTSA Permit Area

6.1 Preamble

Burlington Junction is the **City's** Urban Growth Centre (UGC), the focal point for growth. It will have the greatest variety and **intensity** of uses in the **City**, from residential to commercial, cultural, recreation, **public service facilities, office** and other employment uses. Burlington Junction will be an urban destination for residents both within and beyond the MTSA for recreational, cultural, employment and day to day needs connected by a network of urban parks, linear parks and greenspaces.

6.2 Precincts

6.2.1 The Precincts established by the By-law within the Downtown Burlington UGC / Burlington GO MTSA Permit Area are as follows:

• Burlington GO Central (B) • Queensway Commons (Q) • Fairview Frequent Transit Corridor (F) • Urban Employment (UE) • Drury Node (D) • Legion Commons (LC)	• Leighland Node (LL) • Upper Brant (UB) • Mid-Rise Residential (M) • Low to Mid-Rise Residential (LM) • Natural Heritage System (NH)

6.3 Natural Heritage System Precinct

6.3.1 **Development shall** not be permitted within the Natural Heritage System Precinct(s) in accordance with applicable Burlington Official Plan policies or unless otherwise permitted in this By-law.

6.3.2 **Development** in proximity to the Natural Heritage System Precinct(s) **shall** consider the impacts on all components of the Natural Heritage System as identified on Schedule B-1 and as identified in the Regional Official Plan or Burlington Official Plan Schedules.

6.3.3 Applications for a Community Planning Permit in proximity to the Natural Heritage System Precinct **may** require additional studies or technical reports as outlined in Appendix A - Conditions of Approval of this By-law.

6.3.4 **Development** on lands located within the Conservation Halton Regulation Limit, as identified on Appendix B-1, **may** require additional studies to demonstrate that there will be no negative impacts on **natural heritage features.**

6.3.5 **Development** in or near sensitive surface water features and sensitive ground water features, and their related hydrologic functions must demonstrate how potential **negative impacts** will be avoided or mitigated through the completion of environmental studies, including hydrogeological or water quality impact assessments, in accordance with Provincial standards.

6.4 Conservation Halton Regulatory Limit

6.4.1 Lands within the Conservation Halton Regulatory Limit are depicted in Appendix B-1, B-2 and B-3 attached to this By-law, and include **hazardous lands**, **hazardous sites** and other natural features. Conservation Halton regulates lands in or adjacent to river or stream valleys, including (flooding and erosion hazards), wetlands, shorelines and other **hazardous lands**. The features mapped are approximate and there **may** be some **hazardous lands** and regulated areas which have not been included. Conservation Halton must be contacted to confirm the hazard limits.

6.4.2 **Development** in the Conservation Halton Regulatory Limit, as depicted in Appendix B-1, B-2 and B-3 attached to this By-law, **may** require additional studies to delineate and address technical requirements related to flooding and/or erosion hazards and any associated regulatory allowances/**setbacks**. **Development** in **hazardous lands** and **hazardous sites** must be consistent with provincial natural hazard policy and permission is required from Conservation Halton to undertake **development** within these areas, in accordance with Conservation Halton's regulation and regulatory policies.

6.5 Permitted and Discretionary Uses

6.5.1 Table 6.1 identifies the permitted and discretionary uses and associated conditions for each Precinct(s) within the Downtown Burlington UGC / Burlington GO MTSA Permit Area as follows:

- Permitted uses are identified by the symbol (P);
- Discretionary uses are identified by the letter (D); and
- Conditions are listed as notes below Table 6.1.

6.5.2 **Development** within the following Precincts **shall** contain a minimum of two permitted or discretionary uses as identified in Table 6.1 or as required by Section 5.0 of this By-law in the same **building,** on the same **lot**, or within the same **development** and **should** contain three permitted uses in the same **building** or on the same **lot** where feasible:

- Burlington GO Central (B);
- Queensway Commons (Q);
- Fairview Frequent Transit Corridor (F);
- Drury Node (D);
- Legion Commons (LC); and
- Leighland Node (LL).

6.5.3 Provision 6.5.2 **shall** not apply in the Burlington GO Central (B) and Drury Node (D) Precinct(s) where **office** is proposed.

6.5.4 **Development** within the Mid-Rise Residential Precinct **should** contain a minimum of two permitted or discretionary uses as identified in Table 6.1.

Table 6.1: Permitted and Discretionary Uses in the Downtown Burlington UGC / Burlington GO MTSA Permit Area

Permitted or Discretionary Use	Precincts									
	Burlington GO Central (B)	Queensway Commons (Q)	Fairview Frequent Transit Corridor (F)	Urban Employment (UE)	Drury Node (D)	Legion Commons (LC)	Leighland Node (LL)	Upper Brant (UB)	Mid-Rise Residential (M)	Low to Mid-Rise Residential (LM)
Rowhouse						D(b)		D(b)	D(b)	P
Dwelling units above the first two storeys in a mixed use building	D(c)	P	P		P	P	P	P	P	
Apartment building, single use		D(b)	D(b)			P	D(b)	D(b)	D	p
Office, single use building	P		P	P	P				D	
Office, mixed use building	P	P	P	P	P	P	P	P(a)	P	

Permitted or Discretionary Use	Precincts									
	Burlington GO Central (B)	Queensway Commons (Q)	Fairview Frequent Transit Corridor (F)	Urban Employment (UE)	Drury Node (D)	Legion Commons (LC)	Leighland Node (LL)	Upper Brant (UB)	Mid-Rise Residential (M)	Low to Mid-Rise Residential (LM)
Retail, mixed use building	P(a)	P(a)	P(a)		P(a)	P(a)	P(a)	P(a)	P(a)	
Service commercial, mixed use building	P(a)	P(a)	P(a)		P(a)	P(a)	P(a)	P(a)	P(a)	
Hotel, single use building	D(b)	D	D(b)					P		
Hotel, mixed use building	P	P	P					P		
Entertainment, mixed use building	P(a)	P(a)	P(a)		P(a)	P(a)	P(a)	P(a)		
Recreation Use, single use building				D						
Recreation Use, mixed use building	P(a)	P(a)		D	P		P(a)	P(a)	P(a)	

Permitted or Discretionary Use	Precincts									
	Burlington GO Central (B)	Queensway Commons (Q)	Fairview Frequent Transit Corridor (F)	Urban Employment (UE)	Drury Node (D)	Legion Commons (LC)	Leighland Node (LL)	Upper Brant (UB)	Mid-Rise Residential (M)	Low to Mid-Rise Residential (LM)
Industrial				**P(d)(e)**						
Accessory use - Retail				**D**						
Accessory use - Service commercial				**D**						
Other similar uses	**D**	**D**	**D**	**D**	**D**	**D**	**D**	**D**	**D**	**D**

(a) Limited to bottom two floors only.

(b) **May** be permitted if developed as part of a single application that also contains at least one non-residential use and is not located along an **Activated Street** (see Figure 1a).

(c) **May** be permitted as a discretionary use if **development** contains office or community space.

(d) A **cannabis production facility** is not permitted within a **building** where food that is to be sold is produced, packaged, labelled or stored.

(e) A Waste Container Facility is permitted in conjunction with a Waste Transfer Station, provided it is not located on a corner lot, and provided the waste containers are located at least 30 m from the street line and are screened from the street by the **building** or by a 3 m high masonry wall.

6.6 Development Standards

6.6.1 Table 6.2 identifies the **development** standards and provisions for all lots within the Precincts in the Downtown Burlington UGC / Burlington GO MTSA Permit Area.

6.6.2 Setbacks from a street are measured in accordance with the public right-of-way width outlined in the Burlington Official Plan.

Table 6.2: Development Standards in the Downtown Burlington UGC / Burlington GO MTSA Permit Area

Precinct	Burlington GO Central (B)	Queensway Commons (Q)	Fairview Frequent Transit Corridor (F)	Urban Employment (UE)	Drury Node (D)	Legion Commons (LC)	Leighland Node (LL)	Upper Brant (UB)	Mid-Rise Residential (M)	Low to Mid-Rise Residential (LM)	Class 2 Variation Limit
Front yard setback (minimum)	1.5m for **retail** at **grade**	1.5m for **retail** at **grade**	1.5m for **retail** at **grade**	3.0m	1.5m for **retail** at **grade**	1.5m for **retail** at **grade**	1.5m for **retail** at **grade**	1.5m for **retail** at **grade**	3.0m for **retail** at **grade**	4.5m	Up to 20%
	3.0m for residential (if permitted)	3.0m for residential (if permitted)	3.0m for residential (if permitted)		3.0m for residential (if permitted)	3.0m for residential (if permitted)	3.0m for residential (if permitted)	3.0m for residential (if permitted)	3.0m for residential (if permitted)		
Front yard setback (maximum)	3.0m(a)	3.0m(a)	3.0m(a)	--	3.0m(a)	3.0m(a)	3.0m(a)	3.0m(a)	7.0m	7.0m	Up to 20%

Precinct	Burlington GO Central (B)	Queensway Commons (Q)	Fairview Frequent Transit Corridor (F)	Urban Employment (UE)	Drury Node (D)	Legion Commons (LC)	Leighland Node (LL)	Upper Brant (UB)	Mid-Rise Residential (M)	Low to Mid-Rise Residential (LM)	Class 2 Variation Limit
Interior side yard setback (minimum)	3.0m, 7.5m(b)	3.0m, 7.5m(b)	3.0m, 7.5m(b)	3.0m, 10.0m (b)	3.0m, 7.5m(b)	3.0m, 7.5m(b)	3.0m, 7.5m(b)	3.0m, 7.5m(b)	3.0m, 7.5m(b)	3.0m	Up to 35%
Exterior side yard setback (minimum)	1.5m for **retail** at **grade**	1.5m for **retail** at **grade**	1.5m for **retail** at **grade**	3.0m	1.5m for retail at **grade**	1.5m for **retail** at **grade**	1.5m for **retail** at **grade**	1.5m for **retail** at **grade**	1.5m for **retail** at **grade**	4.5m	Up to 35%
	3.0m for residential (if permitted)	3.0m for residential (if permitted)	3.0m for residential (if permitted)		3.0m for residential (if permitted)	3.0m for residential (if permitted)	3.0m for residential (if permitted)	3.0m for residential (if permitted)	3.0m for residential (if permitted)		
Rear yard setback (minimum)	7.5m	7.5m	7.5m	7.5m	7.5m	7.5m	7.5m	7.5m	7.5m	7.5m	Up to 20%
Landscape area (minimum percent of lot area)	20%, with up to 10 % by vertical means	20%, with up to 10 % by vertical means	20%, with up to 10 % by vertical means	20%, with up to 10 % by vertical means	20%, with up to 10 % by vertical means	20%, with up to 10 % by vertical means	20%, with up to 10 % by vertical means	20%, with up to 10 % by vertical means	20%, with up to 10 % by vertical means	25%	Up to 5% of **lot area**

Precinct	Burlington GO Central (B)	Queensway Commons (Q)	Fairview Frequent Transit Corridor (F)	Urban Employment (UE)	Drury Node (D)	Legion Commons (LC)	Leighland Node (LL)	Upper Brant (UB)	Mid-Rise Residential (M)	Low to Mid-Rise Residential (LM)	Class 2 Variation Limit
Landscape buffer abutting Low-Mid Rise Residential Precinct and lands zoned residential outside of the Community Planning Permit Area (minimum)	3.0m (f)	3.0m (f)	3.0m (f)	3.0m (f)	3.0m (f)	3.0m (f)	3.0m (f)	3.0m (f)	3.0m (f)	--	Up to 20%
Private residential amenity area (3-10 dwelling units) (minimum)	4.0 sq. m for each **dwelling unit**	4.0 sq. m for each **dwelling unit**	4.0 sq. m for each **dwelling unit**	–	4.0 sq. m for each **dwelling unit**	4.0 sq. m for each **dwelling unit**	4.0 sq. m for each **dwelling unit**	4.0 sq. m for each **dwelling unit**	4.0 sq. m for each **dwelling unit**	4.0 sq. m for each **dwelling unit**	Up to 20% reduction
Common residential amenity area (over 10 dwelling units) (minimum)	4.0 sq. m for each **dwelling unit**	4.0 sq. m for each **dwelling unit**	4.0 sq. m for each **dwelling unit**	–	4.0 sq. m for each **dwelling unit**	4.0 sq. m for each **dwelling unit**	4.0 sq. m for each **dwelling unit**	4.0 sq. m for each **dwelling unit**	4.0 sq. m for each **dwelling unit**	4.0 sq. m for each **dwelling unit**	Up to 20% reduction Up to 50% may be provided outside of building
Minimum first floor height (i)	4.5m	4.5m	4.5m	--	4.5m	4.5m	4.5m	4.5m	4.5m	4.5m(c)	--

Precinct	Burlington GO Central (B)	Queensway Commons (Q)	Fairview Frequent Transit Corridor (F)	Urban Employment (UE)	Drury Node (D)	Legion Commons (LC)	Leighland Node (LL)	Upper Brant (UB)	Mid-Rise Residential (M)	Low to Mid-Rise Residential (LM)	Class 2 Variation Limit
Overall building length (maximum)	60m for buildings located within 15 m of a street for the portion of the **building** adjacent to the street.	60m for buildings located within 15 m of a street for the portion of the **building** adjacent to the street.	60m for buildings located within 15 m of a street for the portion of the **building** adjacent to the street.	60m for buildings located within 15 m of a street for the portion of the **building** adjacent to the street.	60m for buildings located within 15 m of a street for the portion of the **building** adjacent to the street.	60m for buildings located within 15 m of a street for the portion of the **building** adjacent to the street.	60m for buildings located within 15 m of a street for the portion of the **building** adjacent to the street.	60m for buildings located within 15 m of a street for the portion of the **building** adjacent to the street.	60m for buildings located within 15 m of a street for the portion of the **building** adjacent to the street.	60m for buildings located within 15 m of a street for the portion of the **building** adjacent to the street.	Up to 10%
Job-related GFA (minimum)	*TBD*(h)	*TBD*(h)	*TBD*(h)	*TBD*(h)	*TBD*(h)	*TBD*(h)	*TBD*(h)	*TBD*(h)			--
Height, building (minimum)	6 **storeys(d)**	6 **storeys**	6 **storeys**	3 **storeys** (d)	6 **storeys**	4 **storeys**	6 **storeys**	11 **storeys**	4 **storeys** (g)	2 **storeys**	--
Height, building (maximum)	See Schedule B-2 and Section 5.29 for Services, Facilities and Matters associated with permitted Heights (e)										See Schedule B-3 and Section 5.29

Precinct	Burlington GO Central (B)	Queensway Commons (Q)	Fairview Frequent Transit Corridor (F)	Urban Employment (UE)	Drury Node (D)	Legion Commons (LC)	Leighland Node (LL)	Upper Brant (UB)	Mid-Rise Residential (M)	Low to Mid-Rise Residential (LM)	Class 2 Variation Limit
Building setback from a flood hazard and/or erosion hazard	7.5m	--	7.5m	7.5m	--	7.5m	7.5m	7.5m	7.5m	7.5m	4.5 metres if block includes a 3m buffer
Parking (minimum and maximum)	See Section 5.13	See Section 5.13	See Section 5.13	See Section 5.13	See Section 5.13	See Section 5.13	See Section 5.13	See Section 5.13	See Section 5.13	See Section 5.13	–See Provision 5.13.1

(a) Maximum **front yard setback** does not apply where a **Daylight Triangle** is required for **driveway** access.
(b) The 7.5m requirement only applies when abutting a single detached dwelling, semi-detached dwelling or **rowhouse**, otherwise the 3.0m standard applies
(c) Only where a non-residential use is located on the ground floor. The **City may** consider an alternate first floor **height** for standalone residential buildings.
(d) Unless the use is **industrial,** then no minimum **height** is required.
(e) Where the integration and/or **conservation** of The Freeman House is incorporated into any future **development,** heights beyond the maximum **height** as identified on Schedule B-2 **may** be permitted.
(f) Does not apply to the **development** of a tall- and/or **mid-rise building** adjacent to a tall- and/or **mid-rise** building.
(g) Where **rowhouses** are proposed in conjunction with a larger **development,** the **rowhouse** component **shall** be a minimum **height** of 3 **storeys.**
(h) Minimum GFA applies to the **floor area** of the job-related use only.
(i) First floor height refers to the ground floor of a building and is measured from floor to ceiling.

6.7 Burlington GO Central Precinct

6.7.1 **Development** located adjacent to existing and potential parks **should** consider opportunities to provide for built-form transition and reduce shadowing.

6.7.2 The **built heritage resource** known as 906 Brant Street, The Freeman House, **shall** be integrated into any future **development** on or including the subject property, and **should** include a visible relationship to the proposed new park.

6.8 Queensway Commons Precinct

6.8.1 To provide appropriate **building** height transitions within the Queensway Common Precinct, the following provisions or standards will apply in accordance with Schedule B-2:

a) **Building** heights up to twenty (20) **storeys** are permitted to be located nearest the rail corridor; and

b) Adjacent to the Low to Mid-Rise Residential Precinct(s), the maximum **height shall** be six (6) **storeys.**

6.9 Building Transitions

6.9.1 Where a **tall** or **mid-rise building** is proposed that abuts a property identified as Residential-Low Density on Schedule C of the Burlington Official Plan, or abuts a property identified as Low to Mid-Rise Residential on Schedule B-1 of this By-Law, **development shall** incorporate transitions to minimize the impact of shadow and maximize access to sunlight, sky view, and privacy on neighbouring properties:

a) No **building should** extend beyond a 45 degree angular plane measured from the shared **lot line**; or

b) Where there is a compelling planning reason to consider an alternative approach to the 45 degree angular plane, one or more of the following methods to achieve transition **shall** be incorporated to the satisfaction of the Approval Authority, including but not limited to:

i) Increased **yard setbacks;**

ii) **Building** stepbacks;

iii) Reduction in **building** massing;

iv) Introduction of intervening **ground-oriented dwelling** or built form; or

v) Other approaches informed by relevant **City** approved Urban Design Guidelines.

6.10Linear Parks & Greenways

6.10.1 To support the design of **complete communities**, the following provisions apply to linear parks and greenways within the Burlington GO Central Precinct, Fairview Frequent Transit Corridor Precinct, and the Legion Commons Precinct, which are depicted on Figure 1a as "Potential Linear Park & Greenway" of this By-law:

a) Linear parks and greenways **should** respond to the context in which they are proposed and **should** focus on providing safe connections;
b) A **setback** of 12m-20m **should** be provided from the ROW to the building's edge in order to provide space for the linear park and greenways;
c) Linear parks and greenways **shall** be located on the side of the ROW that provides optimal conditions for plant growth and health;
d) The **height** of surrounding **development should** not overshadow the linear parks and greenways and provide appropriate sun and sky views; and
e) Linear parks and greenways **should** provide a repetition of elements such as pavers, lighting, seating, planters and trees.

*Additional provisions for the Downtown Burlington UGC / Burlington GO MTSA Permit Area **may** be identified, pending further review.*

7 Aldershot GO MTSA Permit Area

7.1 Preamble

Located minutes from Hamilton at the western edge of Burlington, Aldershot Corners is a visitor's first impression of Burlington when travelling from Hamilton and Niagara Region on the Lakeshore West GO line. The area is nestled within the Aldershot Village Business Improvement Area and focused at the corners of Plains Road, Waterdown Road and Cooke Boulevard. The vision for Aldershot Corners is to continue to evolve as an urban area with a distinct sense of neighbourhood character, supported by a mix of residential, commercial, and employment uses. The Aldershot GO MTSA is envisioned to consist of five distinct precincts with varying characteristics. New multi-modal urban streets and **active transportation** facilities will better connect the existing community, providing enhanced mobility and improved access to the GO Station, leisure and **recreation** opportunities in urban parks and open spaces, as well the many other amenities the Aldershot community already offers.

7.2 Precincts

7.2.1 The Precincts established by the By-law within the Aldershot GO MTSA Permit Area are as follows:

• Aldershot GO Central (A) • Aldershot Main Street (AM) • Cooke Commons (C)	• Emery Commons (E) • Mid-Rise Residential (M) • Natural Heritage System (NH)

7.3 Natural Heritage System Precinct

7.3.1 **Development shall** not be permitted within the Natural Heritage System Precinct in accordance with applicable Burlington Official Plan policies or unless otherwise permitted in this By-law.

7.3.2 **Development** in proximity to the Natural Heritage System Precinct **should** consider the impacts on all components of the Natural Heritage System as identified on Schedule C-1 and as identified in the Regional Official Plan or Burlington Official Plan Schedules.

7.3.3 Applications for a Community Planning Permit in proximity to the Natural Heritage System Precinct **may** require additional studies or technical reports as outlined in Appendix A - Conditions of Approval of this By-law.

7.3.4 **Development** on lands located within the Conservation Halton Regulation Limit, as identified in Appendix B-2, **may** require additional studies to demonstrate that there will be no negative impacts on **natural heritage features.**

7.3.5 **Development** in or near sensitive surface water features and sensitive ground water features, and their related hydrologic functions must demonstrate how potential **negative impacts** will be avoided or mitigated through the completion of environmental studies, including hydrogeological or water quality impact assessments, in accordance with Provincial standards.

7.4 Conservation Halton Regulatory Limit

7.4.1 Lands within the Conservation Halton Regulatory Limit are depicted in Appendix B-1, B-2 and B-3 attached to this By-law, and include **hazardous lands**, **hazardous sites** and other natural features. Conservation Halton regulates lands in or adjacent to river or stream valleys, including (flooding and erosion hazards), wetlands, shorelines and other **hazardous lands**. The features mapped are approximate and there **may** be some **hazardous lands** and regulated areas which have not been included. Conservation Halton must be contacted to confirm the hazard limits.

7.4.2 **Development** in the Conservation Halton Regulatory Limit, as depicted in Appendix B-1, B-2 and B-3 attached to this By-law, **may** require additional studies to delineate and address technical requirements related to flooding and/or erosion hazards and any associated regulatory allowances/**setbacks**. **Development** in **hazardous lands** and **hazardous sites** must be consistent with provincial natural hazard policy and permission is required from Conservation Halton to undertake **development** within these areas, in accordance with Conservation Halton's regulation and regulatory policies.

7.5 Permitted and Discretionary Uses

7.5.1 Table 7.1 identifies the permitted and discretionary uses and associated conditions for each Precinct(s) within the Aldershot GO MTSA Permit Area as follows:

- Permitted uses are identified by the symbol (P);
- Discretionary uses are identified by the letter (D); and
- Conditions are listed as notes below Table 7.1.

7.5.2 **Development** within the following Precincts **shall** contain a minimum of two permitted or discretionary uses as identified in Table 7.1 or as required by Section 5.0 of this By-law in the same **building,** on the same **lot**, or within the same **development** and **should** contain three permitted uses in the same **building** or on the same **lot** or within the same **development,** where feasible:

- Aldershot GO Central (except for **office development**); and
- Emery Commons.

7.5.3 **Development** within the **Mid-Rise** Residential Precinct **should** contain a minimum of two permitted or discretionary uses as identified in Table 7.1.

Table 7.1: Permitted and Discretionary Uses in the Aldershot GO MTSA Permit Area

Permitted or Discretionary Use	Precincts				
	Aldershot GO Central (A)	Aldershot Main Street (AM)	Cooke Commons (C)	Emery Commons (E)	Mid-Rise Residential (M)
Rowhouse			D(b)	D(b)	P(d) / D(d)(e)
Dwelling units above the first two storeys in a mixed use building	D(c)(d)(e)	P	P	P	P(d) / D(d)(e)

Permitted or Discretionary Use	Precincts				
	Aldershot GO Central (A)	Aldershot Main Street (AM)	Cooke Commons (C)	Emery Commons (E)	Mid-Rise Residential (M)
Apartment building, single use		D(b)	D(b)	D(b)	P(d) / D(d)(e)
Office, single use building	P				D
Office, mixed use building	P	P	P	P	P
Retail, mixed use building	P(a)	P(a)	P	P(a)	P(a)
Service commercial, mixed use building	P(a)	P(a)	P	P(a)	P(a)
Hotel, single use building	D(b)(d)			D(b)(d)	
Hotel, mixed use building	P(d)	P(d)	P(d)	P(d)	

Permitted or Discretionary Use	Precincts				
	Aldershot GO Central (A)	Aldershot Main Street (AM)	Cooke Commons (C)	Emery Commons (E)	Mid-Rise Residential (M)
Entertainment, mixed use building	P(a)	P(a)	P(a)	P(a)	
Recreation Use, mixed use building	P(a)	P(a)	P(a)	P(a)	P(a)
Light Industrial	P(f)				D (f)
Other similar uses	D	D	D	D	D

(a) Limited to bottom two floors only.
(b) **May** be permitted if developed as part of a single application that also contains at least one non-residential use and is not located along an **Activated** Street (see Figure 2a).
(c) **May** be permitted as a discretionary use if **development** contains office or community space.
(d) As set out in provision 5.24 of this By-law, any proposed **development** containing sensitive uses **shall** require a land use compatibility assessment to be prepared in accordance with a Terms of Reference approved by the **City** prior to submitting a **Community Planning Permit Application**, demonstrating consideration for applicable MECP guidelines and best practices, and demonstrating compliance with applicable provincial legislative requirements.
(e) Where the site is in proximity to an existing rail facility that is considered a **major facility,** the use **may** be permitted as a discretionary use if the **development** contains **light industrial,** or **office** as an intervening land use.
(f) **May** be permitted as a discretionary use if it can be demonstrated that the use does not preclude the development of adjacent **sensitive land uses** to the satisfaction of the Approval Authority.

7.6 Development Standards

7.6.1 Table 7.2 identifies the **development** standards and provisions for the Precincts in the Aldershot GO MTSA Permit Area.

7.6.2 Setbacks from a street are measured in accordance with the public right-of-way width outlined in the Burlington Official Plan.

Table 7.2: Development Standards in the Aldershot GO MTSA Permit Area

Precinct	Aldershot GO Central (A)	Aldershot Main Street (AM)	Cooke Commons (C)	Emery Commons (E)	Mid-Rise Residential (M)	Class 2 Variation Limit
Front Yard Setback (minimum)	1.5m for **retail** at **grade**	1.5m for **retail** at **grade**	1.5m for **retail** at **grade**	1.5m for **retail** at **grade**	3.0 m for **retail** at **grade**	Up to 20%
	3.0m for residential (if permitted)	3.0m for residential (if permitted)	3.0m for residential (if permitted)	3.0m for residential (if permitted)	3.0m for residential (if permitted)	
Front Yard Setback (maximum)	3.0m(a)	3.0m(a)	3.0m(a)	3.0m(a)	7.0m	Up to 20%
Interior Side Yard Setback (minimum)	3.0m, 7.5m(b)	3.0m, 7.5m(b)	3.0m, 7.5m(b)	3.0m, 7.5m(b)	3.0m, 7.5m(b)	Up to 35%

Precinct	Aldershot GO Central (A)	Aldershot Main Street (AM)	Cooke Commons (C)	Emery Commons (E)	Mid-Rise Residential (M)	Class 2 Variation Limit
Street Side Yard Setback (minimum)	1.5m for **retail** at **grade**	1.5m for **retail** at **grade**	1.5m for **retail** at **grade**	1.5m for **retail** at **grade**	1.5m for **retail** at **grade**	Up to 35%
	3.0m for residential (if permitted)	3.0m for residential (if permitted)	3.0m for residential (if permitted)	3.0m for residential (if permitted)	3.0m for residential (if permitted)	
Rear Yard Setback (minimum)	7.5m	7.5m	7.5m	7.5m	7.5m	--
Landscape Area (minimum percent of lot area)	20%, with up to 10% by vertical means	20%, with up to 10% by vertical means	20%, with up to 10% by vertical means	20%, with up to 10% by vertical means	20%, with up to 10% by vertical means	Up to 5% of **lot area**
Landscape Buffer abutting lands zoned residential outside of the Community Planning Permit Area (minimum)	3.0m (d)	3.0m (d)	3.0m (d)	3.0m (d)	3.0m (d)	Up to 20%

Precinct	Aldershot GO Central (A)	Aldershot Main Street (AM)	Cooke Commons (C)	Emery Commons (E)	Mid-Rise Residential (M)	Class 2 Variation Limit
Private Residential Amenity Area (3 - 10 dwelling units) (minimum)	4.0 sq. m for each **dwelling unit**	4.0 sq. m for each **dwelling unit**	4.0 sq. m for each **dwelling unit**	4.0 sq. m for each **dwelling unit**	4.0 sq. m for each **dwelling unit**	Up to 20% reduction
Common Residential Amenity Area (over 10 dwelling units) (minimum)	4.0 sq. m for each **dwelling unit**	4.0 sq. m for each **dwelling unit**	4.0 sq. m for each **dwelling unit**	4.0 sq. m for each **dwelling unit**	4.0 sq. m for each **dwelling unit**	Up to 20% reduction Up to 50% **may** be provided outside of building
Minimum First Floor Height (i)	4.5m	4.5m	4.5m	4.5m	4.5m(c)	--
Overall Building Length (maximum)	60m for buildings located within 15 m of a street for the portion of the **building** adjacent to the street.	60m for buildings located within 15 m of a street for the portion of the **building** adjacent to the street.	60m for buildings located within 15 m of a street for the portion of the **building** adjacent to the street.	60m for buildings located within 15 m of a street for the portion of the **building** adjacent to the street.	60m for buildings located within 15 m of a street for the portion of the **building** adjacent to the street.	Up to 5%

Precinct	Aldershot GO Central (A)	Aldershot Main Street (AM)	Cooke Commons (C)	Emery Commons (E)	Mid-Rise Residential (M)	Class 2 Variation Limit
Job-related GFA (minimum)	TBD(h)	TBD(h)	TBD(h)	TBD(h)		--
Building Height (minimum)	6 **storeys**	6 **storeys**	6 **storeys**	6 **storeys** (g)	4 **storeys** (g)	Up to 20%
Building Height (maximum)	See Schedule C-2 and Section 5.29 for Services, Facilities and Matters associated with permitted Heights (f)					See Schedule C-3 and Section 5.29
Building Setback from a Flood Hazard and/or Erosion Hazard (e)	7.5 m		--	--	7.5m	Up to 20%
Parking (minimum and maximum)	See Section 5.13	See Section 5.13	See Section 5.13	See Section 5.13	See Section 5.13	See Provision 5.13.1

Precinct	Aldershot GO Central (A)	Aldershot Main Street (AM)	Cooke Commons (C)	Emery Commons (E)	Mid-Rise Residential (M)	Class 2 Variation Limit
(a) Maximum **front yard setback** does not apply where a **Daylight Triangle** is required for **driveway** access. (b) The 7.5m requirement only applies when abutting a single detached dwelling, semi-detached dwelling or **rowhouse**, otherwise the 3.0m standard applies. (c) Only where a non-residential use is located on the ground floor. The **City may** consider an alternate first floor **height** for standalone residential buildings. (d) Does not apply to the **development** of a tall- and/or **mid-rise building** adjacent to a tall- and/or **mid-rise** building. (e) Conservation Halton regulates an allowance of 15 metres from Grindstone Creek in the Aldershot MTSA. (f) Within Aldershot Main Street Precinct where a **building** is adjacent to an existing Residential-Low Density designation as identified on Schedule C of the Burlington Official Plan, the maximum **height shall** be 6 **storeys.** (g) Where **rowhouse** are proposed in conjunction with a larger **development**, the **rowhouse** component **shall** be a minimum **height** of 3 **storeys.** (h) Minimum GFA applies to the **floor area** of the job-related use only. (i) First floor height refers to the ground floor of a building and is measured from floor to ceiling.						

7.7 Building Transitions

7.7.1 Where a **tall** or **mid-rise building i**s proposed that abuts a property identified as Residential-Low Density on Schedule C of the Official Plan, **development shall** incorporate transitions to minimize the impact of shadow and maximize access to sunlight, sky view, and privacy on neighbouring properties:

a) No **building should** extend beyond a 45 degree angular plane measured from the shared **lot line**; or

b) Where there is a compelling planning reason to consider one or more of the following methods to achieve transition:

i) Increased **yard setbacks;**

ii) **Building** stepbacks;

iii) Reduction in **building** massing;

iv) Introduction of intervening **ground-oriented dwelling** or built form; or

v) Other approaches.

7.8 Linear Parks & Greenways

7.8.1 To support the design of **complete communities**, the following provisions apply to linear parks and greenways within the Aldershot GO MTSA, which are depicted on Figure 2a as "Potential Linear Park & Greenway" of this By-law:

a) Linear parks and greenways **should** respond to the context in which they are proposed and **should** focus on providing safe connections;
b) A **setback** of 12m-20m **should** be provided from the ROW to the building's edge in order to provide space for the linear park and greenway;
c) Linear parks and greenways **shall** be located on the side of the ROW that provides optimal conditions for plant growth and health;
d) The **height** of surrounding **development should** not overshadow the linear parks and greenways and provide appropriate sun and sky views; and
e) Linear parks and greenways **should** provide a repetition of elements such as pavers, lighting, seating, planters and trees.

7.9 Appropriate Buffers for Hidden Valley Park

7.9.1 Appropriate buffers **shall** be incorporated for **development** along the boundary of Hidden Valley **Park** to protect the existing Natural Heritage System, in accordance with Section XX of this Plan and the policies in the Burlington Official Plan.

*Additional provisions for the Aldershot GO MTSA Permit Area **may** be identified, pending further review.*

8 Appleby GO MTSA Permit Area

8.1 Preamble

The Appleby Gateway is a key gateway into Burlington from Toronto at the eastern edge of Burlington, presenting a vital link between Burlington and the Greater Toronto Area and the first point of arrival for visitors travelling from Toronto on the Lakeshore West GO line. Traversed by a Metrolinx rail corridor, the Appleby Gateway North will grow to accommodate more intensive office and employment uses while continuing to support existing **major facilities.** Appleby Gateway South will evolve as an urban village with a balanced mix of employment, mid-rise residential and commercial opportunities. Transitions from the north to south are important and will focus on compatibility and will include mitigation measures to protect both existing employment uses and new sensitive uses. A network of new and enhanced **complete streets** and **active transportation** facilities will create additional options for riders travelling to and from the GO Station during peak periods, helping to manage congestion. The transportation network will provide access to recreation opportunities in nearby urban parks and open spaces, while also improving connectivity throughout the neighbourhood, to other MTSAs and beyond.

8.2 Precincts

8.2.1 The Precincts established by the By-law within the Appleby GO MTSA Permit Area are as follows:

• Appleby GO Central (AP) • Fairview Frequent Transit Corridor (F) • **Mid-Rise** Residential (M)	• Urban Employment (UE) • General Employment (GE) • Natural Heritage System (NH)

• Low to **Mid-Rise** Residential (LM)	

8.3 Natural Heritage System Precinct

8.3.1 **Development shall** not be permitted within the Natural Heritage System Precinct(s) in accordance with applicable Burlington Official Plan policies or unless otherwise permitted in this By-law.

8.3.2 **Development** in proximity to the Natural Heritage System Precinct(s) **should** consider the impacts on all components of the Natural Heritage System as identified on Schedule D-1 and as identified in the Regional Official Plan or Burlington Official Plan Schedules.

8.3.3 Applications for a Community Planning Permit in proximity to the **Natural Heritage System** Precinct **may** require additional studies or technical reports as outlined in Appendix A - Conditions of Approval of this By-law.

8.3.4 **Development** on lands located within the Conservation Halton Regulation Limit, as identified in Appendix B-3, **may** require additional studies to demonstrate that there will be no **negative impacts** on **natural heritage features.**

8.3.5 **Development** in or near sensitive surface water features and sensitive ground water features, and their related hydrologic functions must demonstrate how potential **negative impacts** will be avoided or mitigated through the completion of environmental studies, including hydrogeological or water quality impact assessments, in accordance with Provincial standards.

8.4 Conservation Halton Regulatory Limit

8.4.1 Lands within the Conservation Halton Regulatory Limit are depicted in Appendix B-3 attached to this By-law, and include **hazardous lands**, **hazardous sites** and other natural features. Conservation Halton regulates lands in or adjacent to river or stream valleys, including (flooding and erosion hazards), wetlands, shorelines and other **hazardous lands**. The features mapped are approximate and there **may** be some **hazardous lands** and regulated areas which have not been included. Conservation Halton must be contacted to confirm the hazard limits.

8.4.2 **Development** in the Conservation Halton Regulatory Limit, as depicted in Appendix B-3 attached to this By-law, **may** require additional studies to delineate and address technical requirements related to flooding and/or erosion hazards and any associated regulatory allowances/**setbacks**. **Development** in **hazardous lands** and **hazardous sites** must be consistent with provincial natural hazard policy and permission is required from Conservation Halton to undertake **development** within these areas, in accordance with Conservation Halton's regulation and regulatory policies.

8.5 Permitted and Discretionary Uses

8.5.1 Table 8.1 identifies the permitted and discretionary uses and conditions in specific Precinct(s) for the Appleby GO MTSA Permit Area as follows:

- Permitted uses are identified by the symbol (P);
- Discretionary uses are identified by the letter (D); and
- Conditions are listed as notes below Table 8.1.

8.5.2 **Development** within the following Precincts **shall** contain a minimum of two permitted or discretionary uses as identified in Table 8.1 or as required by Section 5.0 of this By-law in the same **building,** on the same lot, or within the same **development**, and **should** contain three permitted uses in the same **building,** on the same **lot** or within the same **development,** where feasible:

a) Appleby GO Central (AP) (except for **office development**); and
b) Fairview Frequent Transit Corridor (F).

8.5.3 **Development** within the **Mid-Rise** Residential Precinct **should** contain a minimum of two permitted or discretionary uses as identified in Table 8.1.

Table 8.1: Permitted and Discretionary Uses in the Appleby GO MTSA Permit Area

Permitted or Discretionary Use	Precincts					
	Appleby GO Central (AP)	Fairview Frequent Transit Corridor (F)	Mid-Rise Residential (M)	Low to Mid Rise Residential (LM)	General Employment (GE)	Urban Employment (UE)
Rowhouse in conjunction with a larger development, except single-detached, semi-detached dwelling			D(b)(d)	P(d)		

Permitted or Discretionary Use	Precincts					
	Appleby GO Central (AP)	Fairview Frequent Transit Corridor (F)	Mid-Rise Residential (M)	Low to Mid Rise Residential (LM)	General Employment (GE)	Urban Employment (UE)
Dwelling units above the first two storeys in a mixed use building	D(c)(d)	P(d)	P(d)			
Apartment building, single use		D(b)(d)	P(d)	P(d)		
Office, single use building	P	P	D		P	P
Office, mixed use building	P	P	P		P	P
Retail, mixed use building	P(a)	P(a)	P(a)			

Permitted or Discretionary Use	Precincts					
	Appleby GO Central (AP)	Fairview Frequent Transit Corridor (F)	Mid-Rise Residential (M)	Low to Mid Rise Residential (LM)	General Employment (GE)	Urban Employment (UE)
Service commercial, mixed use building	P(a)	P(a)	P(a)			
Hotel, single use building	D(b)(d)	D(b)				
Hotel, mixed use building	P(d)	P				
Entertainment, mixed use building	P(a)	P(a)				
Recreation use, mixed use building	P(a)		P(a)		D	D
Recreation use, single use building					D	D
Industrial					P(e)(f)	P(e)(f)
Accessory use - retail					D	D
Accessory use - service commercial					P	D

Permitted or Discretionary Use	Precincts					
	Appleby GO Central (AP)	Fairview Frequent Transit Corridor (F)	Mid-Rise Residential (M)	Low to Mid Rise Residential (LM)	General Employment (GE)	Urban Employment (UE)
Automotive commercial					P	
Other similar uses	D	D	D	D	D	D

(a) limited to bottom two floors only
(b) **May** be permitted if developed as part of a single application that also contains at least one non-residential use and is not located along an **Activated Street** (see Figure 3a).
(c) **May** be permitted as a discretionary use if **development** contains office or community space.
(d) As set out in provision 5.21 of this By-law, any proposed **development** containing sensitive uses **shall** require a land use compatibility assessment to be prepared in accordance with a Terms of Reference approved by the **City** prior to submitting a Community Planning Permit Application, demonstrating consideration for applicable MECP guidelines and best practices, and demonstrating compliance with applicable provincial legislative requirements.
(e) A **cannabis production facility** is not permitted within a **building** where food that is to be sold is produced, packaged, labelled or stored.
(f) A Waste Container Facility is permitted in conjunction with a Waste Transfer Station, provided it is not located on a corner lot, and provided the waste containers are located at least 30 m from the street line and are screened from the street by the **building** or by a 3 m high masonry wall.

8.6 Development Standards

8.6.1 Table 8.2 identifies the **development** standards and provisions for the Precincts in the Appleby GO MTSA Permit Area.

8.6.2 Setbacks from a street are measured in accordance with the public right-of-way width outlined in the Burlington Official Plan.

Table 8.2: Development Standards in the Appleby GO MTSA Permit Area

Precinct	Appleby GO Central (AP)	Fairview Frequent Transit Corridor (F)	Mid-Rise Residential (M)	Low to Mid-Rise Residential (LM)	General Employment (GE)	Urban Employment (UE)	Class 2 Variation Limit
Front Yard Setback (minimum)	1.5m for **retail** at **grade**	1.5m for **retail** at **grade**	3.0 m for **retail** at **grade**	4.5m	6.0m	3.0m	Up to 20%
	3.0m for residential (if permitted)	3.0m for residential (if permitted)	3.0m for residential (if permitted)				
Front Yard Setback (maximum)	3.0m(a)	3.0m(a)	7.0m	7.0m	--	--	Up to 20%

Precinct	Appleby GO Central (AP)	Fairview Frequent Transit Corridor (F)	Mid-Rise Residential (M)	Low to Mid-Rise Residential (LM)	General Employment (GE)	Urban Employment (UE)	Class 2 Variation Limit
Interior Side Yard Setback (minimum)	3.0m, 7.5m(b)	3.0m, 7.5m(b)	3.0m, 7.5m(b)	3.0m	3.0m, 10.0m(b)	3.0m, 10.0m(b)	Up to 35%
Street Side Yard Setback (minimum)	1.5m for **retail** at **grade**	1.5m for **retail** at **grade**	1.5m for **retail** at **grade**	4.5m	6.0m	3.0m	Up to 35%
	3.0m for residential (if permitted)	3.0m for residential (if permitted)	3.0m for residential (if permitted)				
Rear Yard Setback (minimum)	7.5m	7.5m	7.5m	7.5m	7.5m	7.5m	Up to 20%
Landscape Area (minimum percent of lot area)	20%, with up to 10 % by vertical means	20%, with up to 10 % by vertical means	20%, with up to 10 % by vertical means	25%, with up to 10 % by vertical means	20%, with up to 10 % by vertical means	20%, with up to 10 % by vertical means	Up to 5% of **lot area**

Precinct	Appleby GO Central (AP)	Fairview Frequent Transit Corridor (F)	Mid-Rise Residential (M)	Low to Mid-Rise Residential (LM)	General Employment (GE)	Urban Employment (UE)	Class 2 Variation Limit
Landscape Buffer abutting lands zoned Residential outside of the Community Planning Permit Area (minimum)	3.0m (e)	3.0m (e)	3.0m (e)	--	3.0m (e)	3.0m (e)	Up to 20%
Private Residential Amenity Area (3 - 10 dwelling units) (minimum)	4.0 sq. m for each **dwelling unit**	4.0 sq. m for each **dwelling unit**	4.0 sq. m for each **dwelling unit**	4.0 sq. m for each **dwelling unit**	—	—	Up to 20%
Common Residential Amenity Area (over 10 dwelling units) (minimum)	4.0 sq. m for each **dwelling unit**	4.0 sq. m for each **dwelling unit**	4.0 sq. m for each **dwelling unit**	4.0 sq. m for each **dwelling unit**	—	—	Up to 20% reduction Up to 50% **may** be provided outside of building

Precinct	Appleby GO Central (AP)	Fairview Frequent Transit Corridor (F)	Mid-Rise Residential (M)	Low to Mid-Rise Residential (LM)	General Employment (GE)	Urban Employment (UE)	Class 2 Variation Limit
Minimum First Floor Height (h)	4.5m	4.5m	4.5m	4.5m(c)	–	–	--
Overall Building Length (maximum)	60m for **buildings** located within 15 m of a street for the portion of the **building** adjacent to the street.	60m for **buildings** located within 15 m of a street for the portion of the **building** adjacent to the street.	60m for **buildings** located within 15 m of a street for the portion of the **building** adjacent to the street.	60m for **buildings** located within 15 m of a street for the portion of the **building** adjacent to the street.	60m for **buildings** located within 15 m of a street for the portion of the **building** adjacent to the street.	60m for **buildings** located within 15 m of a street for the portion of the **building** adjacent to the street.	Up to 5%
Job-related GFA (minimum)	*TBD(g)*	*TBD(g)*			*TBD(g)*	*TBD(g)*	--
Building Height (minimum)	6 **storeys**	6 **storeys**	4 **storeys** (f)	2 **storeys**	2 **storeys** (d)	3 **storeys** (d)	--

Precinct	Appleby GO Central (AP)	Fairview Frequent Transit Corridor (F)	Mid-Rise Residential (M)	Low to Mid-Rise Residential (LM)	General Employment (GE)	Urban Employment (UE)	Class 2 Variation Limit
Building Height (maximum)	See Schedule D-3 and Section 5.29 for Services, Facilities and Matters associated with permitted Heights						See Schedule D-3 and Section 5.29
Building Setback from a Flood Hazard and/or Erosion Hazard	7.5m	7.5m	7.5m	7.5m	7.5m	7.5m	4.5 metres if block includes a 3 m buffer
Parking (minimum and maximum)	See Section 5.13	See Section 5.13	See Section 5.13	See Section 5.13	See Section 5.13	See Section 5.13	See Provision 5.13.1

Precinct	Appleby GO Central (AP)	Fairview Frequent Transit Corridor (F)	Mid-Rise Residential (M)	Low to Mid-Rise Residential (LM)	General Employment (GE)	Urban Employment (UE)	Class 2 Variation Limit
(a) Maximum **front yard setback** does not apply where a **Daylight Triangle** is required for **driveway** access. (b) The 7.5m requirement only applies when abutting a single detached dwelling, semi-detached dwelling or **rowhouse**, otherwise the 3.0m standard applies. (c) Only where a non-residential use is located on the ground floor. The **City may** consider an alternate first floor **height** for standalone residential **buildings.** (d) Unless the use is **industrial,** then no minimum **height** is required. (e) Does not apply to the **development** of a tall- and/or **mid-rise building** adjacent to a tall- and/or **mid-rise building.** (f) Where **rowhouses** are proposed in conjunction with a larger **development,** the **rowhouse** component **shall** be a minimum **height** of 3 **storeys.** (g) Minimum GFA applies to the **floor area** of the job-related use only. (h) First floor height refers to the ground floor of a building and is measured from floor to ceiling.							

8.7 Building Transitions

8.7.1 Where a **tall** or **mid-rise building** is proposed that abuts a property identified Low to Mid Rise Residential Precinct(s) as shown on Schedule D-1 of this by-law, **development shall** incorporate transitions to minimize the impact of shadow and maximize access to sunlight, sky view, and privacy on neighbouring properties:

a) No **building** should extend beyond a 45 degree angular plane measured from the shared **lot line**; or

b) Where there is a compelling planning reason to consider an alternative approach to the 45 degree angular plane, one or more of the following methods to achieve transition **shall** be incorporated to the satisfaction of the Approval Authority, including but not limited to:

i) Increased **yard setbacks;**

ii) **Building** stepbacks;

iii) Reduction in **building** massing;

iv) Introduction of intervening **ground-oriented dwelling** or built form; or

v) Other approaches informed by relevant **City** approved Urban Design Guidelines.

8.8 Linear Parks & Greenways

8.8.1 To support the design of **complete communities**, the following provisions apply to linear parks and greenways within the Appleby GO Central Precinct and the Fairview Frequent Transit Corridor Precinct, which are depicted on Figure 3a as "Potential Linear Park & Greenway" of this By-law:

f) Linear parks and greenways **should** respond to the context in which they are proposed and **should** focus on providing safe connections;
g) A **setback** of 12m-20m **should** be provided from the ROW to the building's edge in order to provide space for the linear park and greenway;
h) Linear parks and greenways **shall** be located on the side of the ROW that provides optimal conditions for plant growth and health;
i) The **height** of surrounding **development should** not overshadow the linear parks & greenways and provide appropriate sun and sky views; and
j) Linear parks and greenways **should** provide a repetition of elements such as pavers, lighting, seating, planters and trees.

*Additional provisions for the Appleby GO MTSA Permit Area **may** be identified, pending further review.*

9 Site Specific Provisions

9.1 Site Specific Exceptions

9.1.1 Notwithstanding any provisions to the contrary in the CPP By-law , the following provisions apply to the properties identified in the specific exceptions noted in Table 9.1.

9.1.2 In all other respects, the provisions of the CPP By-law continue to apply.

Table 9.1 – Site Specific Exceptions

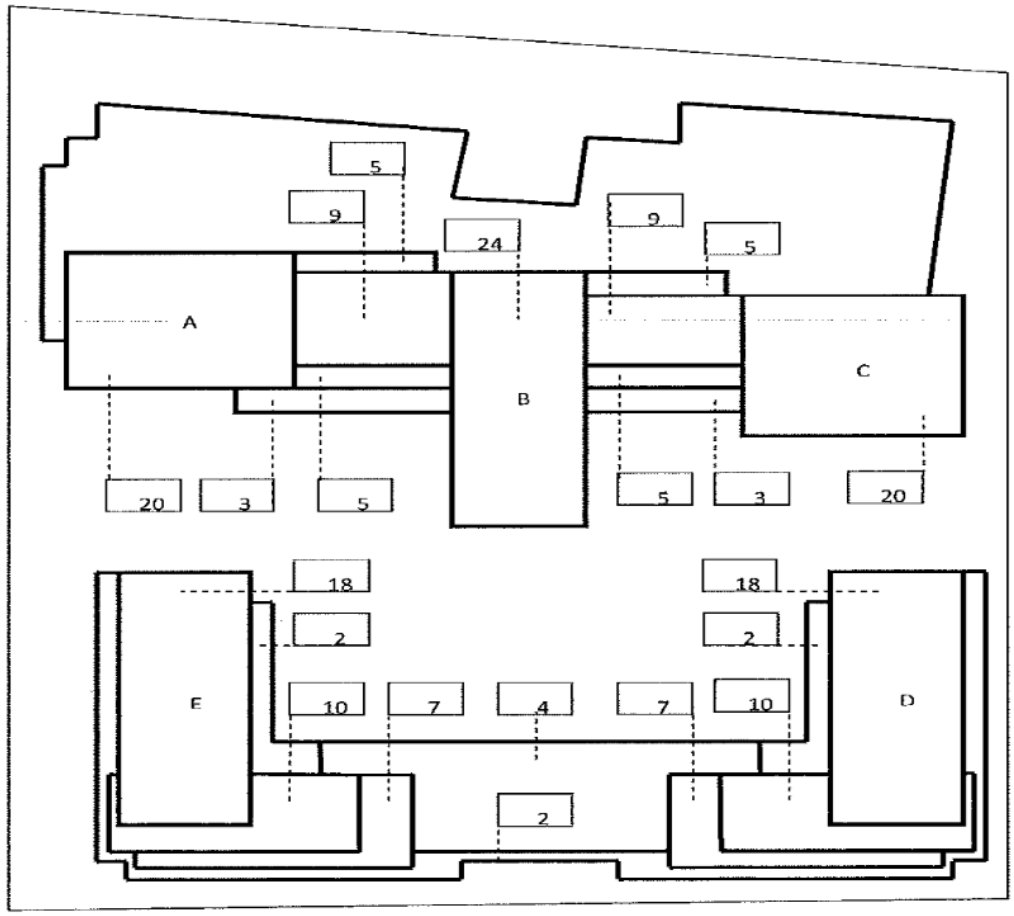
[Table begins on next page]

Exception No.	MTSA Permit Area	Precinct/Zone	By-law No.	Location	Schedule No.
0001	Downtown Burlington/ Burlington GO MTSA	Burlington GO (B) Fairview Frequent Transit Corridor (F)	(new)	2071, 2081, 2087, 2089, 2093, 2095 Fairview Street Legal Description Halton Condo Plan 703 PLAN 99 PT LOT 79 RP 20R21376 PARTS 2,3,4	B-1

	Provisions: 1. In addition to the uses permitted in an Burlington GO Central and Fairview Frequent Transit Corridor Precincts as set out in Table 6.1, Long Term Care Facilities and Community Institutions are permitted use. 2. Notwithstanding Section 5.3(Uses Allowed in all Permit Areas), only the following uses shall be permitted: • Home Day Care • Day Care • Group Home • Emergency Shelter • Residential Social Services • Miscellaneous 3. Maximum building height (storeys) shall be as shown on Diagram A provided that no more than four of the storeys consist of above-grade parking within the principal building. An attached parking structure is permitted north of the principal building, with a maximum height of 4 storeys. 4. A maximum of 36 parking spaces permitted in ground floor of Towers A, B, and C. The ground floor of Towers D and C cannot be used for parking. 5. There shall be a minimum average Floor Area Ratio of approximately 0.5:1 for the subject properties but no maximum Floor Area Ratio. 6. Notwithstanding Section 5.15, off-street parking standards for the following uses are as follows: a) Apartment building: • 1.00 occupant space per one bedroom unit • 1.00 occupant space per two bedroom unit • 1.00 occupant space per three or more bedroom unit

	• 0.18 visitor spaces per unit b) Retirement Home: • 0.60 spaces per unit (including 0.1 visitor spaces per unit) 7. Notwithstanding Part 5, Subsection 4.13, the Amenity Area shall be a minimum of 20 m2 per unit. 8. The maximum floor area per retail or service commercial unit is 3000 m2. 9. The minimum gross floor area requirement for ground floor retail and service commercial uses is 1550 m2. 10. The minimum gross floor area requirement for office uses is 2991 m2. 11. With the exception of a lobby to access office uses on upper levels, office uses are not permitted on the ground floor. 12. The maximum floor area for the ground floor lobby to access office uses on upper levels is 130 m2. 13. The maximum number of surface parking spaces is 255. 14. Section 5.20, bicycle parking shall not apply. Except as amended herein, all other provisions of this By-law, as amended, shall apply.

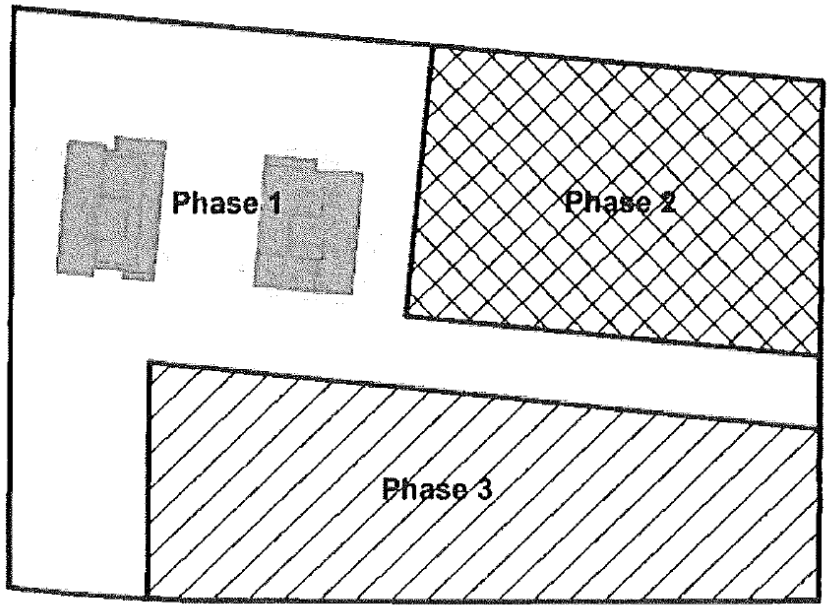
Diagram A



Exception No.	MTSA Permit Area	Precinct/Zone	By-law No.	Location	Schedule No.
0002	Downtown Burlington/Burlington GO MTSA	Drury Node (D)	(new)	2243 & 2269 Fairview Street, 864 Drury Lane Legal Description PLAN 203 LOT 7 PT LOTS 6,8 RP 20R8796 PART 3 RP 20R14862 PART 1 PLAN 203 PT LOT 6 RP 20R8796 PART 2 RP 20R14862 PART 2 PLAN 203 PT LOT 6 RP 20R8796 PART 1	B-1

Provisions:

Diagram B



1. **Regulations apply to the Phase 1, Phase 2 and Phase 3 on Diagram B:**

   a. The property zoned D-0002 shall be considered one lot for the purposes of applying Community Planning Permit By-law regulations.

   b. Parking

Apartment Building	1 occupant space per unit

	Shared visitor, commercial maintenance spaces: 0.16 spaces per unit c. Amenity Area per dwelling unit: 16m^2 2. **Regulations applying to Phase 1 on Diagram B**: a. No more than 4 storeys shall consist of above-grade parking structure within the buildings. b. Separation Distance for land uses sensitive to rail right-of-way Floors 1 to 5: 1 m Floors 6 to 39: 28 m c. Yard Abutting South-West Property Floors 1 to 5: 0.6 m Floors 6 to 35: 14.5 m d. Below-Grade Parking Structure i) Abutting Railway (north-west property line): 1 m ii) Abutting south-west property line: 0.8 m e. Maximum Heights Building C1: 36 storeys Building C2: 39 storeys

	f. Maximum Podium Height 5 storeys g. Maximum Building Floor Plates 890m2 h. The minimum separation distance between towers, excluding balconies, shall be 30 metres. **3. <u>Regulations applying to Phase 2 on Diagram B:</u>** a. Separate Distance for land uses sensitive for railway right-of-way Floor 1 to 5 1 m Floor 6 to 37 28 m b. Yard Abutting Drury Lane Floors 1 to 5 2.5 m Floors 6 to 37 11 m c. Below-Grade Parking Structure i) Abutting Railway (north-west Property line) 1 m ii) Abutting Drury Lane 1.2 m d. Maximum Height 37 storeys e. Maximum Podium height 5 storeys f. Maximum Building Floor Plates 890 m^2

	g. The minimum separation distance between towers, excluding balconies, shall be 30 metres. h. Landscape Area Abutting A Street 0 m 4. Regulations applying to Phase 3 on Diagram B: a. Maximum Height 36 storeys b. Maximum Podium height 4 storeys Except as amended herein, all other provisions of this By-law, as amended, shall apply

Exception No.	MTSA Permit Area	Precinct/Zone	By-law No.	Location	Schedule No.
0003	Downtown Burlington/Burlington GO MTSA	Upper Brant (UB)	(new)	688,694, and 698 Brant Street Legal Description PLAN 99 PT LOTS 65,66 PLAN 99 PT LOT 66	B-1

Provisions:

1. **Permitted Uses**

Retail and Service Commercial uses shall be permitted on the ground and second floor only with the second floor retail and service commercial uses tied to the primary use on the first floor. All non-residential uses, excluding ancillary residential uses, shall have direct access facing Brant Street.

Second storey floor area is prohibited in the first 9.0 metres of building depth, measured from the main wall facing the front lot line.

2. Regulations for Mixed Use Building

a. Maximum Building Height: m	13 storeys including mezzanine mechanical penthouse; 44
b. Maximum Floor Area Ratio:	4.11:1
c. Maximum 13th Storey Gross Floor Area:	472 m²
d. Amenity Area:	15.3 m² per unit
e. Landscape Area Abutting a Street:	1 m
f. Yard Abutting Any Other Street:	1 m
g. North Side Yard Setback:	10 m
h. South Side Yard Setback:	11 m
i. Underground Parking Setback Yard Abutting Brant Street:	0.7 m

	j. Underground Parking North Side Yard Setback: 0.7 m k. Underground Parking South Side Yard Setback: 0.9 m l. Maximum Balcony Projection: 2m m. Required Parking: 1.1 parking spaces per dwelling unit including visitor parking spaces n. Required Non-Residential Parking: 3.5 parking spaces per 100 m^2 of gross floor area o. Required Residential Bicycle Parking Spaces: 185 bicycle parking spaces Except as amended herein, all other provisions of this By-law, as amended, shall apply.

Exception No.	MTSA Permit Area	Precinct/Zone	By-law No.	Location	Schedule No.
0004	Aldershot GO MTSA	Aldershot Main Street (AM)	(new)	92 Plains Road East Legal Description PLAN 725 PT LOTS 34,35,36	C-1

Provisions:

1. Regulations for Apartment Building with Ground Floor Office:

a) Maximum Number of Dwelling Units: 49

b) Floor Area:

i) Floor Area for Ground Floor Office: 183 m2 maximum

ii) 7th Storey Area: Only a rooftop terrace (maximum 150 m2) and mechanical penthouse (maximum 205 m2) permitted on 7th storey

c) Yards:

i) Abutting Plains Road East:

Underground Parking Vent and guard:	1.6 m
Floor 7:	8 m to rooftop terrace
	8 m to mechanical penthouse

ii) Abutting East Property Line:

Floors 1-4:	3 m including balconies
Floor 5:	6 m to building; 3 m to terrace
Floor 6:	6 m including balconies
Floor 7:	22 m to rooftop terrace
	8.5 m to mechanical penthouse

iii) Abutting West Property Line:

	Underground Parking Vent and guard: 1.8 m Floors 1-6: 3 m; 2.6 m to balconies/terrace Floor 7: 13 m to rooftop terrace 21 m to mechanical penthouse iv) Abutting South Property Line: Underground Parking Vent and guard: 4.8 m Floors 1-4: 18 m Floor 5: 21 m; 18 m to terrace Floor 6: 21 m; 19.5 m to balconies Floor 7: 23 m to rooftop terrace 25 m to mechanical penthouse d) Landscape Buffer: i) Abutting East and West Property Line: 3 m ii) Abutting South Property Line: 6 m iii) Vent Encroachment into Landscape Buffer: 1.2 m maximum iv) Walkway Encroachment into East Landscape Buffer: 1.5 m maximum v) Retaining wall, transformer and utility box may encroach into landscape buffer e) Landscape Area Abutting a Street: 0.9 m f) Parking: i) Occupant Parking: 55 spaces ii) Shared Visitor/Office Parking: 16 spaces including 1 accessible parking space.

	May include Car Share and E/V spaces g) Floor Area Ratio: 2.5:1 Maximum h) Height: 7 Storeys Maximum i) Loading Spaces: None Required Except as amended herein, all other provisions of this By-law, as amended, shall apply.

Exception No.	MTSA Permit Area	Precinct/Zone	By-law No.	Location	Schedule No.
0005	Aldershot GO MTSA	Mid-Rise Residential (M)	(new)	40-70 Plains Road Legal Description CON BF PT LOT 6 PLAN 725 LOT 1	C-1

Provisions:

1. Additional Permitted Use:

    a. Supermarket/Grocery Store with a floor area greater than 365m^2

2. Commercial uses are only permitted on the ground floor facing Plains Road East.

3. For the purposes of this by-law, the following definitions shall apply:

    i. Rooftop Terrace – means an outdoor amenity area located on the roof of a building;

    ii. Balcony – means an unenclosed or partially enclosed attached platform projecting from the face of a wall that is only directly accessible from within a building, surrounded by a balustrade, partial wall, or railing where required and without direct exterior access to grade.

4. Regulations for an Apartment Building with ground floor Commercial uses:

a. Total ground floor retail and/or Service commercial area	1,027 m2
b. Lot Area	0.68 ha
c. Maximum Floor Area Ratio	4.41:1
d. Maximum Number of Residential Units	389 units
e. Separation Distance between Floors above the 6th storey	15 m
f. Yard Abutting Plains Road East:	

	i) Floor 1	3m
	ii) Floors 2 to 6	3m to building, 1.2m to balconies
	iii) Floor 7	6m to building, 3m to rooftop terrace
	iv) Floors 8 to 11	6m to building, 4.2m to balconies
	v) Floor 12	9m to building, 6m to rooftop terrace
	vi) Outdoor Pool	7m
	g. Rear Yard (south zone boundary):	
	i. Floor 1	10.5m
	ii. Floors 2 and 3 balconies	10.5 to the building, 10.1m to rooftop terrace, 8.7 to
	iii. Floor 4	13.3m to building, 10.5m to rooftop terrace
	iv. Floor 5	16.4m to building, 13.3m to rooftop terrace
	v. Floor 6	19.5m to building, 16.4m to rooftop terrace
	vi. Floor 7	22.5m to building, 19.2m to rooftop terrace
	vii. Floor 8	25.5m to building, 22.2m to rooftop terrace
	viii. Floor 9	28.5m to building, 25.5m to rooftop terrace
	ix. Floor 10	29m to building, 28.2m to rooftop terrace
	x. Floors 11 and 12	29m
	h. Side Yard (east zone boundary):	
	i. Floors 1 to 10	5.5m to building, 3.7 to balconies
	ii. Floor 11	11.2m
	i. Side Yard (west zone boundary):	
	i. Floors 1 to 6	2.7m
	ii. Floors 7 to 9	3.7m to building, 3m to rooftop terrace/balconies
	iii. Floors 10 to 12	3.7m
	j. Below-Grade Parking Structure:	

	i. Abutting Rear Yard (south zone boundary)	3m
	ii. Abutting all other property lines	0m
	k. Maximum Building Height	12 storeys up to 42m
	i. Floor 1 (minimum)	4.5m
	l. Amenity Area	21m^2 per unit
	m. Parking Requirements:	
	i. Occupant Parking	0.91 spaces per residential unit
	ii. Visitor and Commercial	0.06 spaces per residential unit
	n. Landscape Area:	
	i. Abutting a street	0m
	o. Landscape Buffer Abutting a Residential zone:	
	i. Rear Yard (south zone boundary)	3m (1.9m encroachment permitted for below-grade parking ramp drive aisle and 2 parking spaces)
	ii. Side Yard (east zone boundary)	0m
	p. Driveway and Parking Spaces abutting R1, R2 and R3 Zone in the City' Zoning By-law 2020	1.1m
	Except as amended herein, all other provisions of this By-law, as amended, shall apply.	

Exception No.	MTSA Permit Area	Precinct/Zone	By-law No.	Location	Schedule No.
0006	Aldershot GO MTSA	Mid-Rise Residential (M)	(new)	1085 Clearview Avenue; 1082, 1086 and 1090 St. Matthew's Avenue Legal Description PLAN 753 LOTS 26,27,28 PLAN 665 LT 64 RP 20R21465 PART 1 CON 1 EF PT LOT 6 CON 1 EF PT LOT 6 PLAN 665 LOT 66	C-1

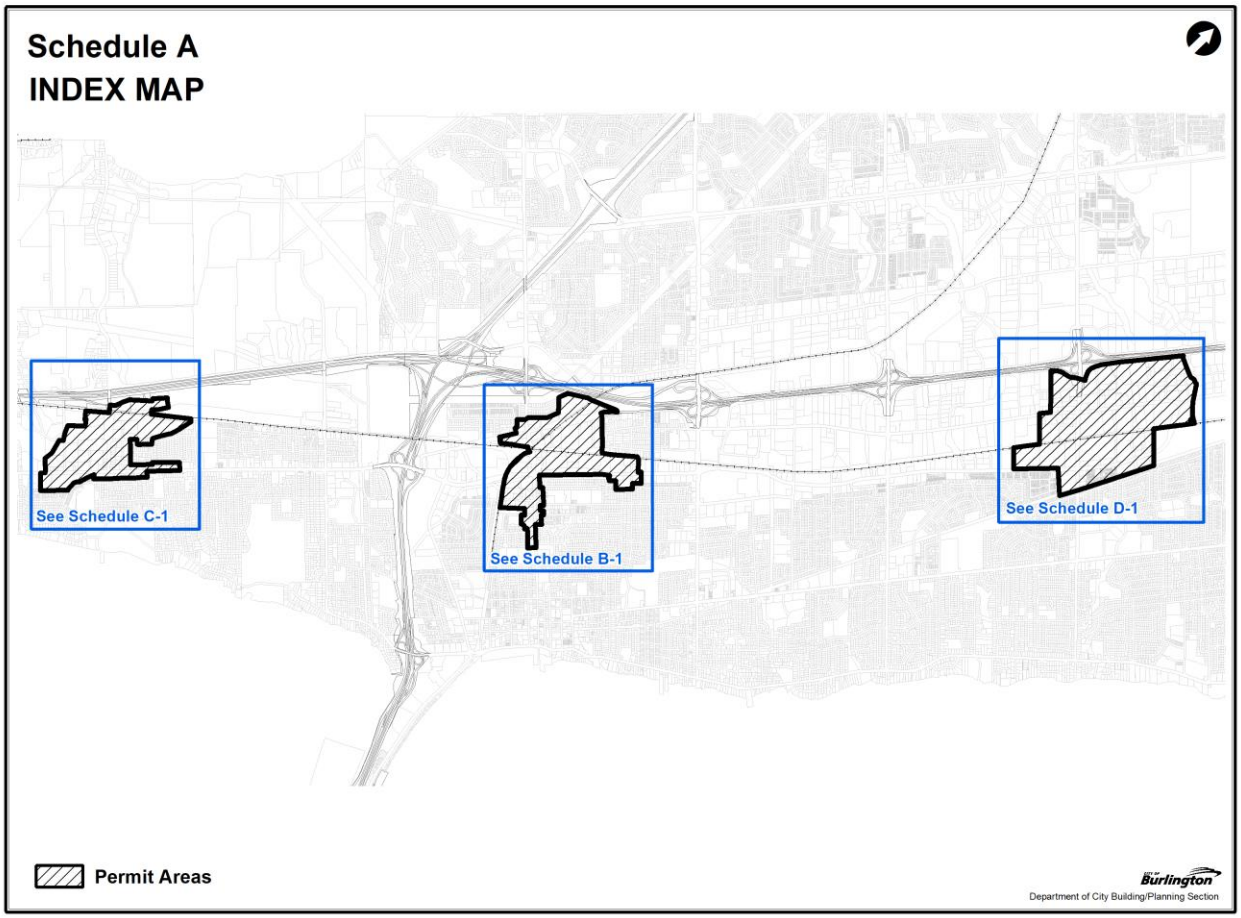
	Provisions: 1. **<u>Regulations for Apartment Building</u>** a) Yards: i) Abutting Masonry Court: 5 m ii) Abutting St. Matthew's Avenue: 4 m iii) Abutting Residential Zone: 13 m iv) Abutting Clearview Avenue: 17 m b) Setbacks for an Underground Parking Structure: i) Abutting Masonry Court: 1.0 m ii) Abutting St. Matthew's Avenue: 0.1 m iii) Abutting a Residential Zone: 2 m iv) Abutting Clearview Avenue: 0.5 m c) Landscape Buffers: i) Abutting a Residential Zone: 3 m ii) A hydro transformer and pad, underground parking garage, exhaust and intake vents associated with an underground parking garage, driveways, walkways, stairs, sod and amenity areas may encroach into required landscape buffers.

	d) Parking: i) Occupant — 152 spaces ii) Visitor — 29 spaces iii) Enclosed Occupant Parking — 99% e) Maximum Density: — 262 units/ha f) Height: i) 7 storeys up to 24 m ii) Height shall not include any mechanical penthouse, stairways or associated servicing structures or areas. g) Amenity Area: — 14.5 m^2 per unit h) Setback from Driveway or Parking Lot to Residential Zone: — 3 m Except as amended herein, all other provisions of this By-law, as amended, shall apply

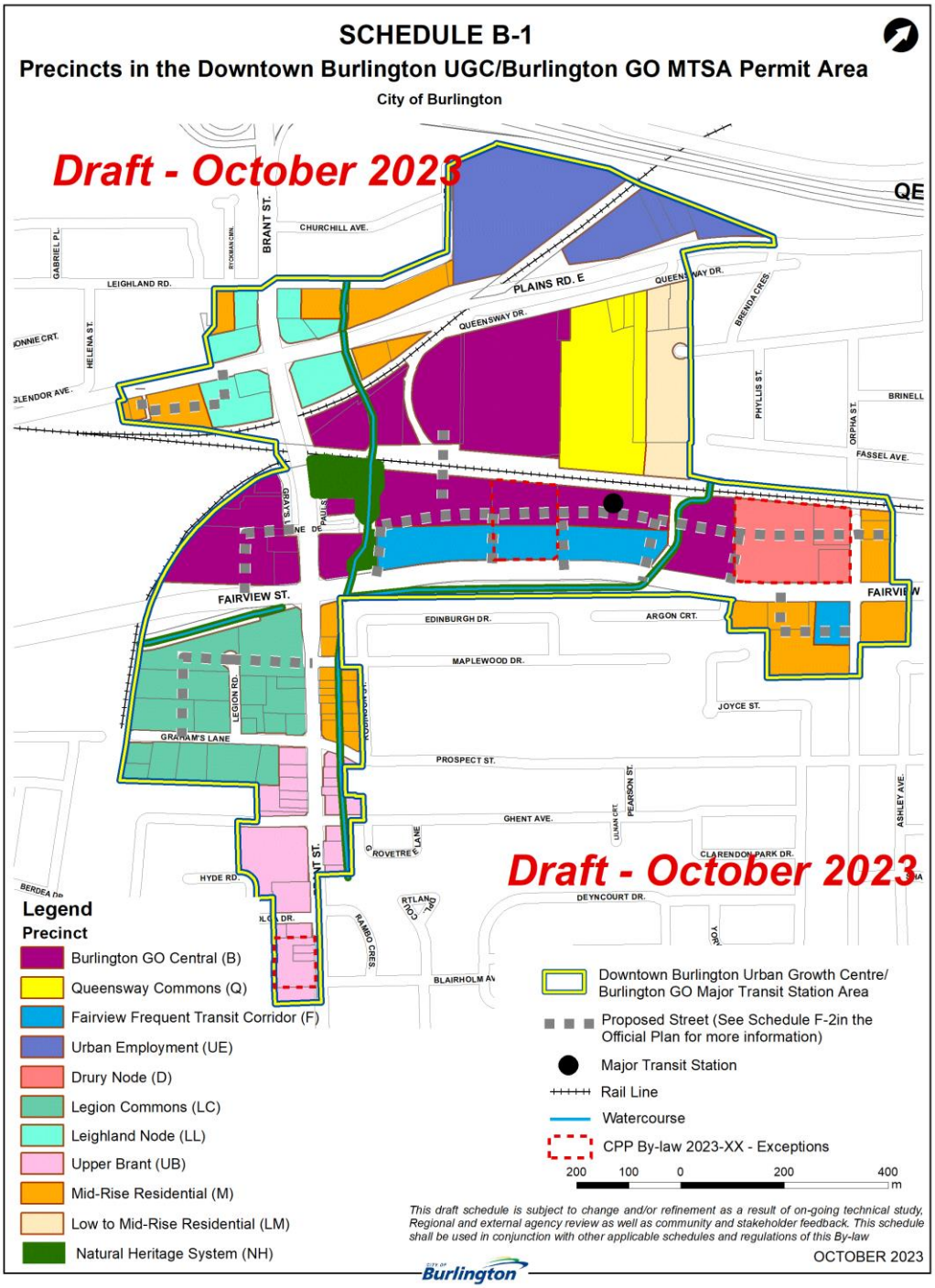
Exception No.	MTSA Permit Area	Precinct/Zone	By-law No.	Location	Schedule No.
0007	Appleby GO MTSA	General Employment (GE)	(new)	5180 & 5200 Harvester Road Legal Description CON 3 SDS PT LOT 4 RP 20R15991 PARTS 1,2,3,4,5,6 CON 3 SDS PT LOT 4 RP 20R9338 PARTS 1,3 SAVE AND EXCEPT RP 20R9768 PART 1 RP 20R15991 PARTS 3,4,5	D-1
	Provisions: 1. The following additional uses are permitted: Sporting Goods sales and service 2. Regulations: (a) Accessory Video Game & Pinball Machines: 40 machines maximum (b) Sporting Goods retail floor area: 200 m2 maximum (c) Parking: 630 spaces (d) Landscape area abutting an O2 zone: 3 m Except as amended herein, all other provisions of this By-law, as amended, shall apply				

10 Schedules

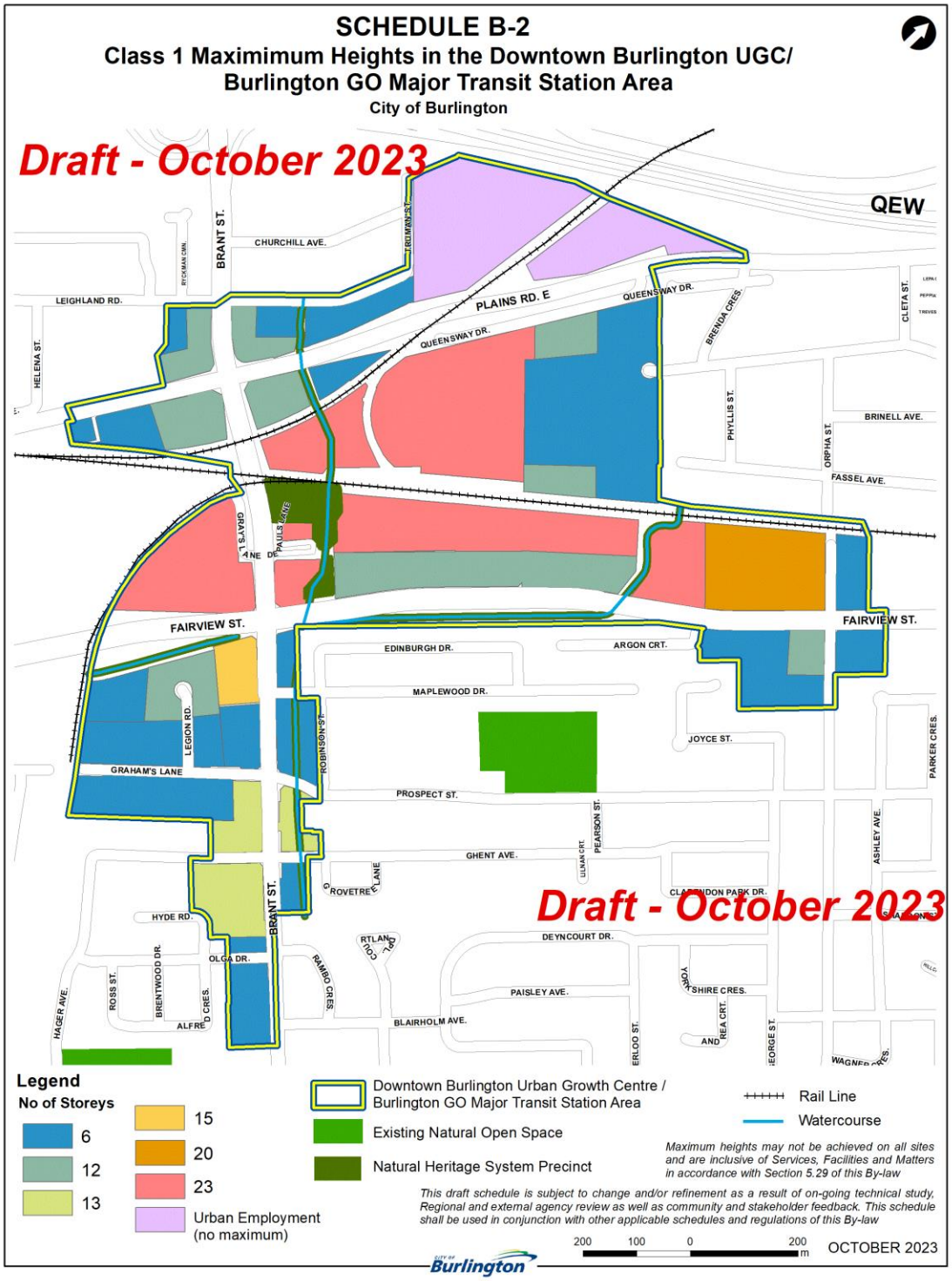
Schedule A: Index Map



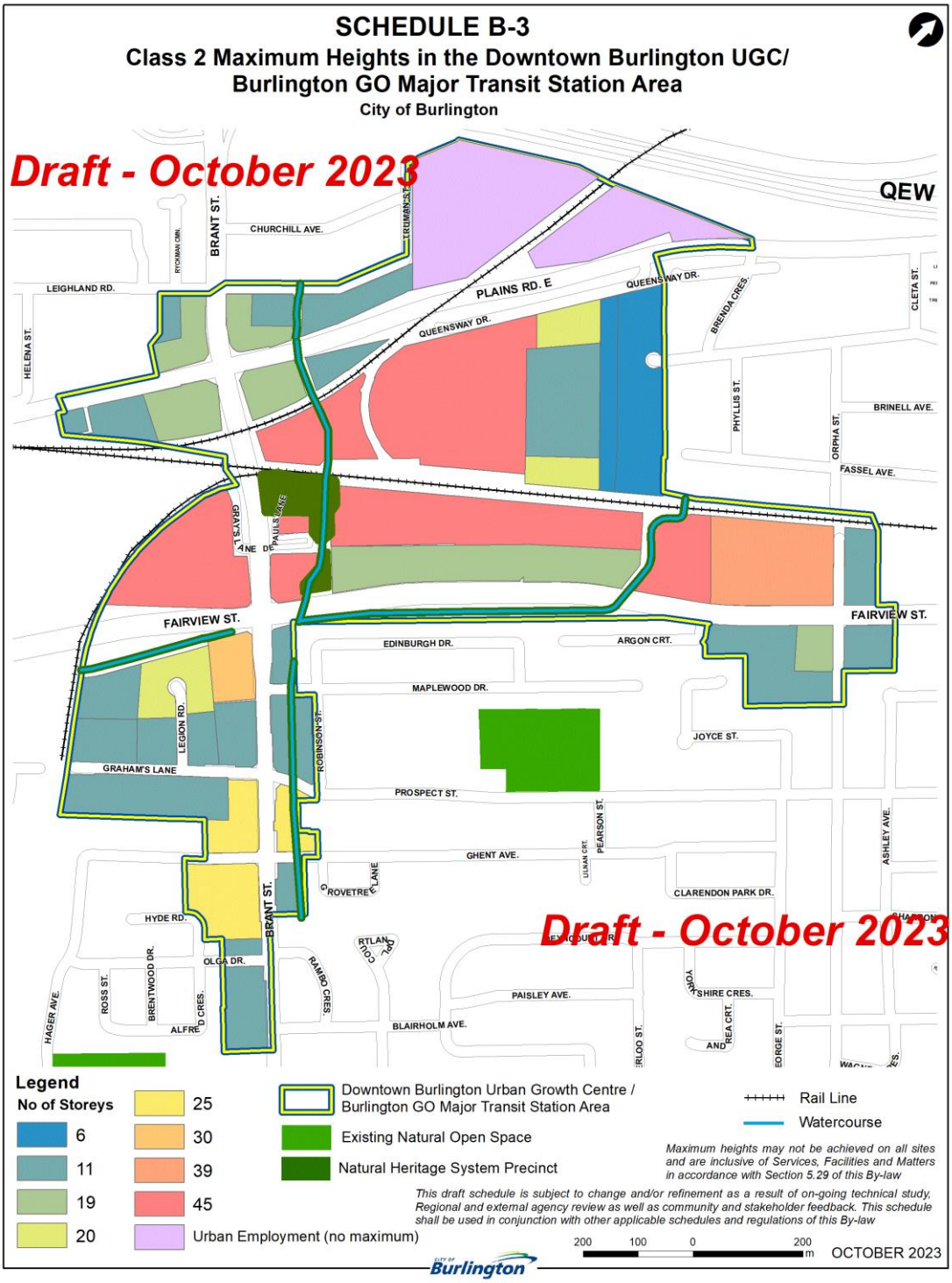
Schedule B-1: Precincts in the Downtown Burlington UGC / Burlington GO MTSA Permit Area



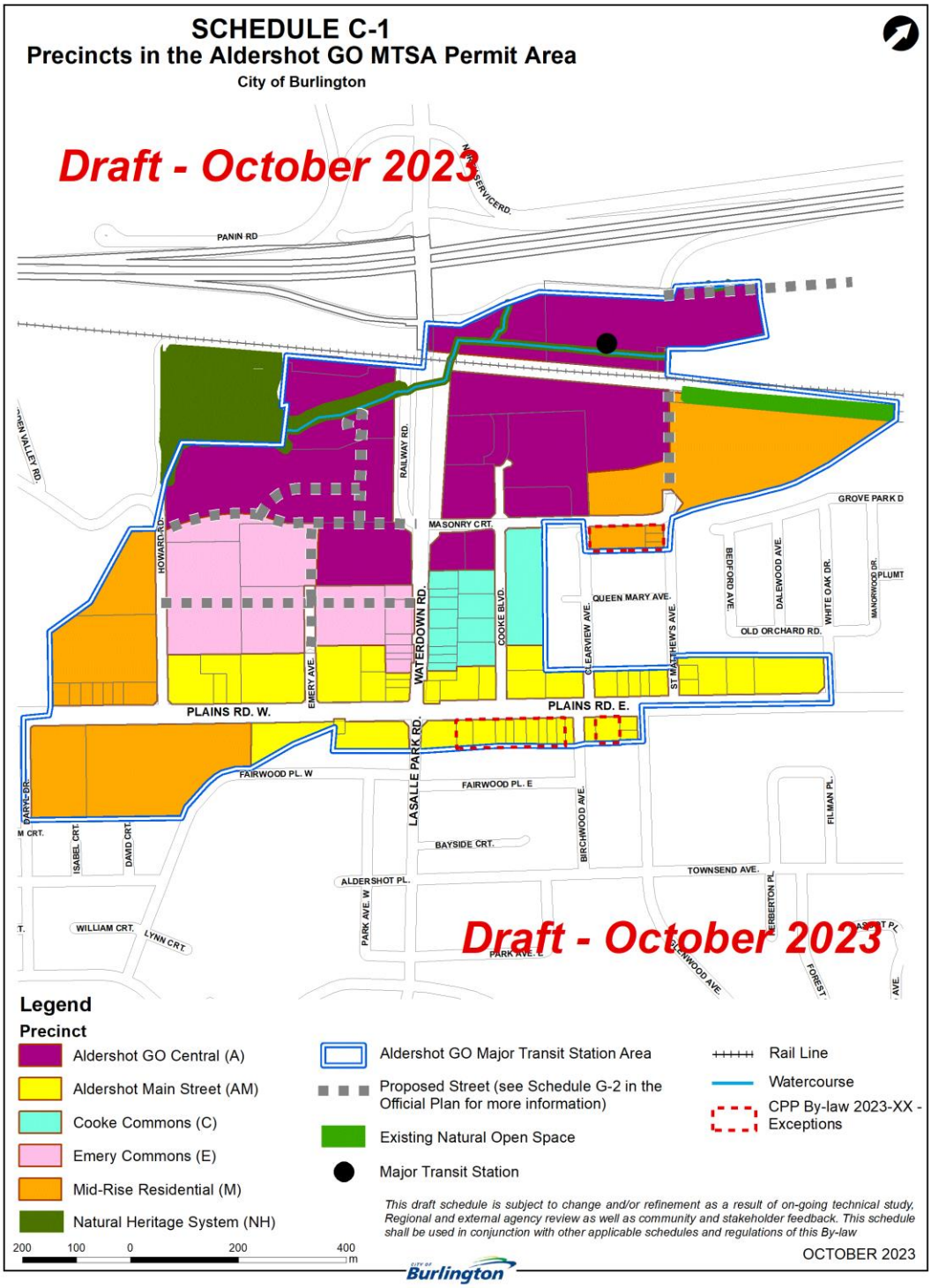
Schedule B-2: Class 1 Maximum Heights in the Downtown Burlington UGC / Burlington GO MTSA Permit Area



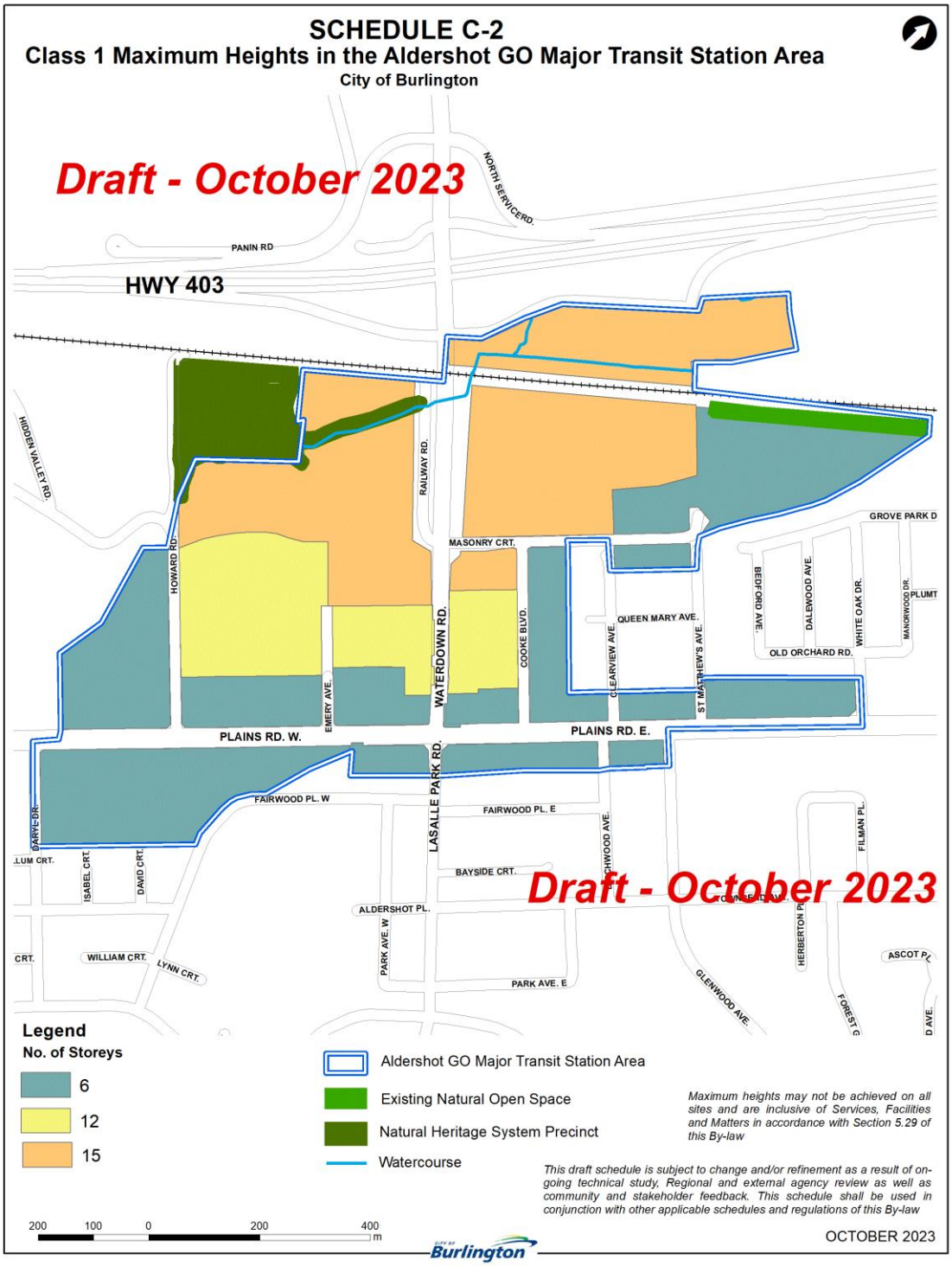
Schedule B-3: Class 2 Maximum Heights in the Downtown Burlington UGC / Burlington GO MTSA Permit Area



Schedule C-1: Precincts in the Aldershot GO MTSA Permit Area

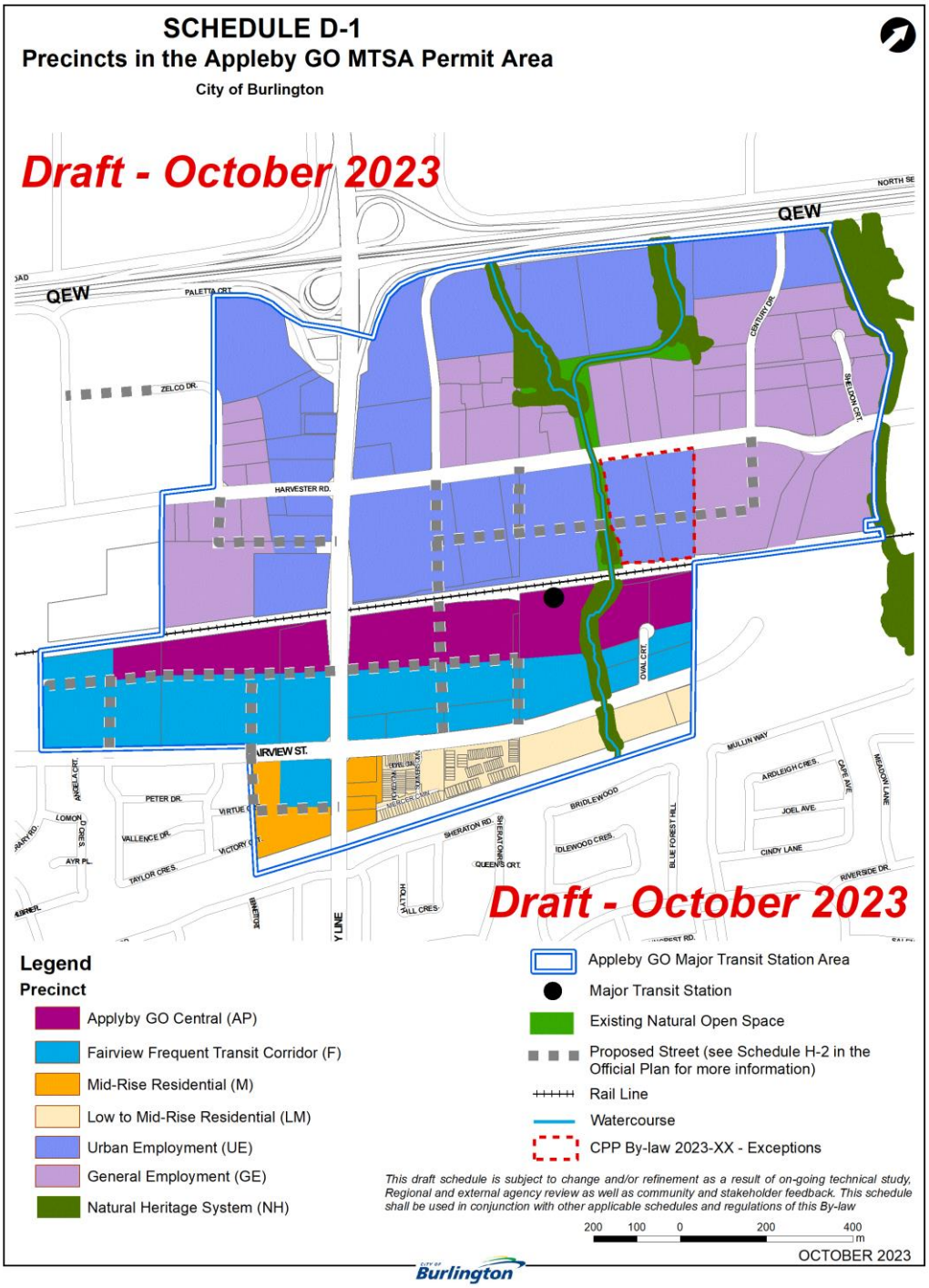


Schedule C-2: Class 1 Maximum Heights in the Aldershot GO MTSA Permit Area



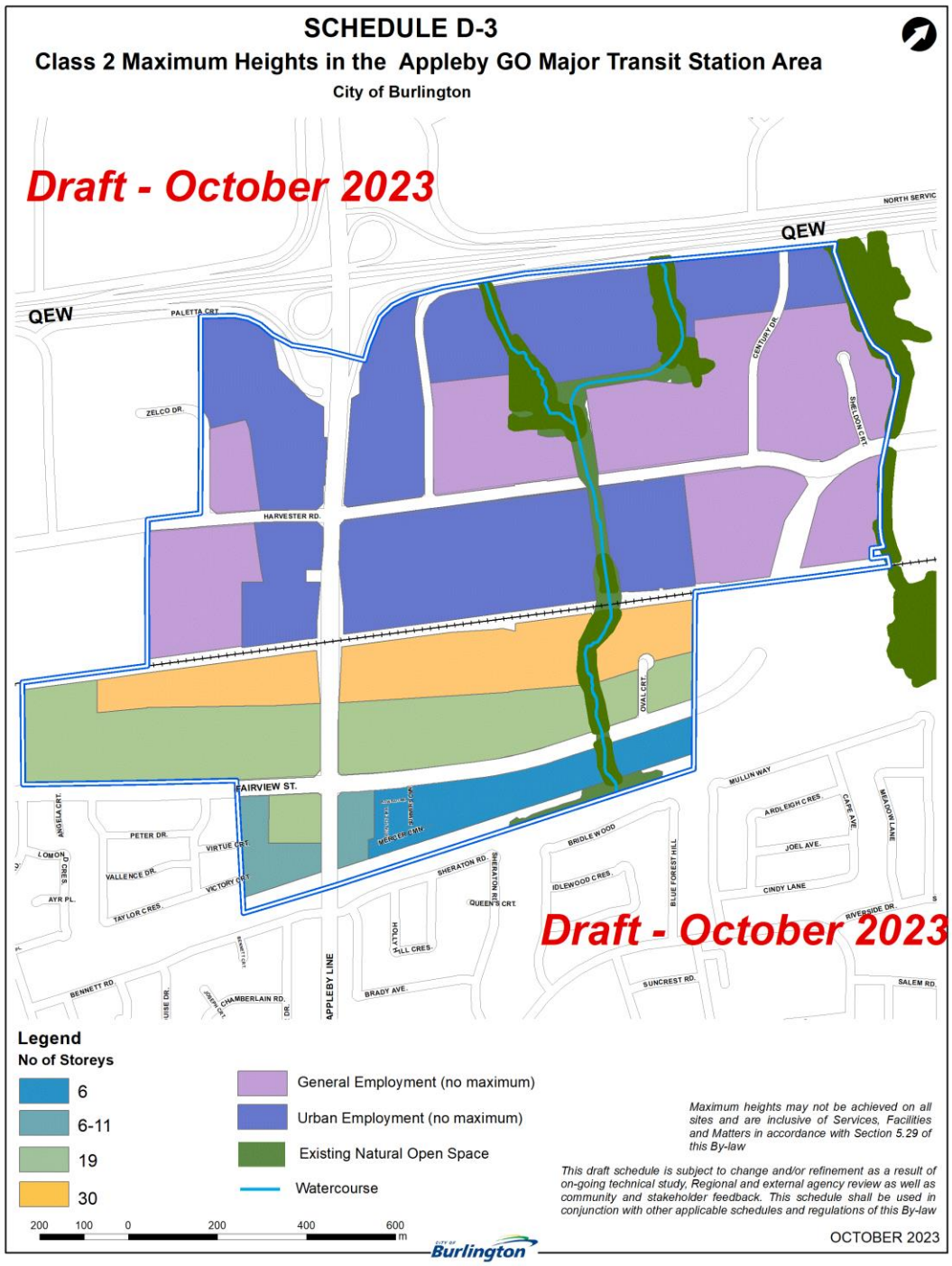
Schedule C-3: Class 2 Maximum Heights in the Aldershot GO MTSA Permit Area

Schedule D-1: Precincts in the Appleby GO MTSA Permit Area



Schedule D-2: Class 1 Maximum Heights in the Appleby GO MTSA Permit Area

Schedule D-3: Class 2 Maximum Heights in the Appleby GO MTSA Permit Area



11 Appendices

Appendix A - Conditions of Approval and/or Provisional Approval

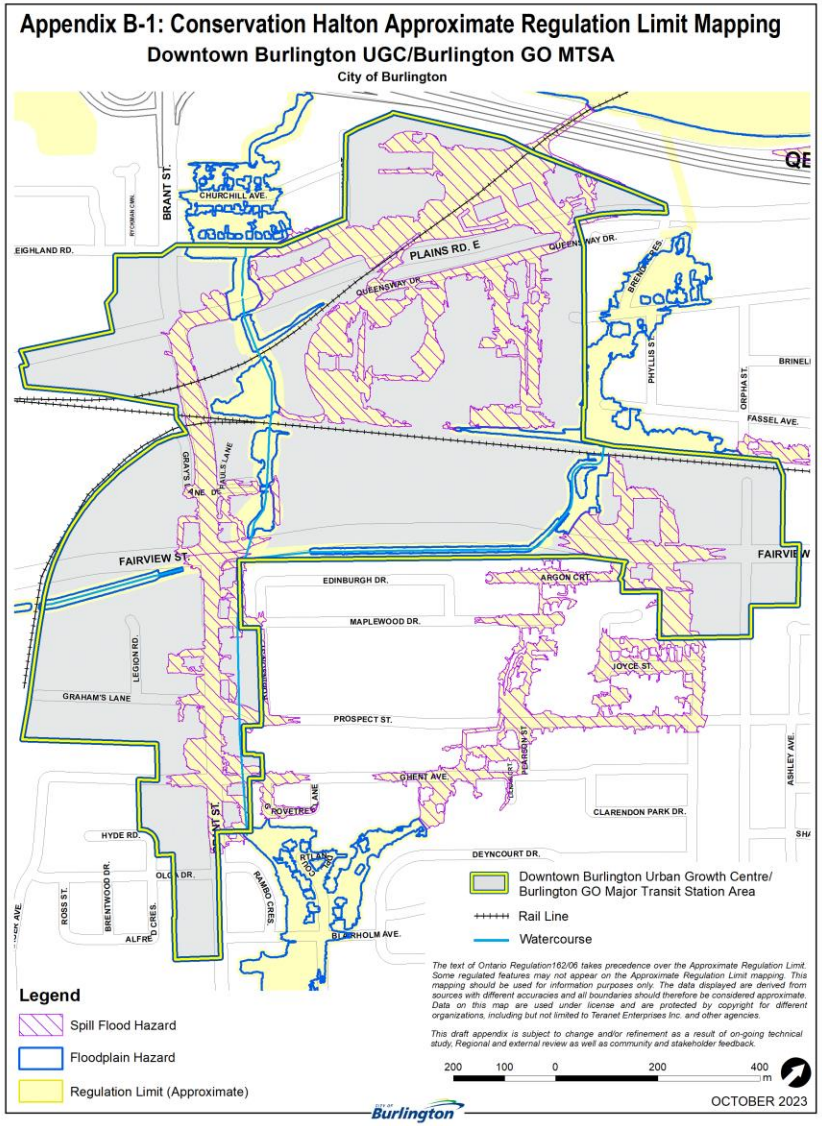
As a condition of approval of a Community Planning Permit, proponents **will** be required to enter in an agreement with the **City**, which **will** contain conditions of approval or of provisional approval. Those conditions **will** be identified and discussed through the permit review process and the resulting agreement **will** outline the nature of conditions, as well as when and how they are to be cleared, including at which stage of building permit application. Conditions **may** include any conditions authorized by section 4(5) of Ontario Regulation 173/16, including but not limited to the following:

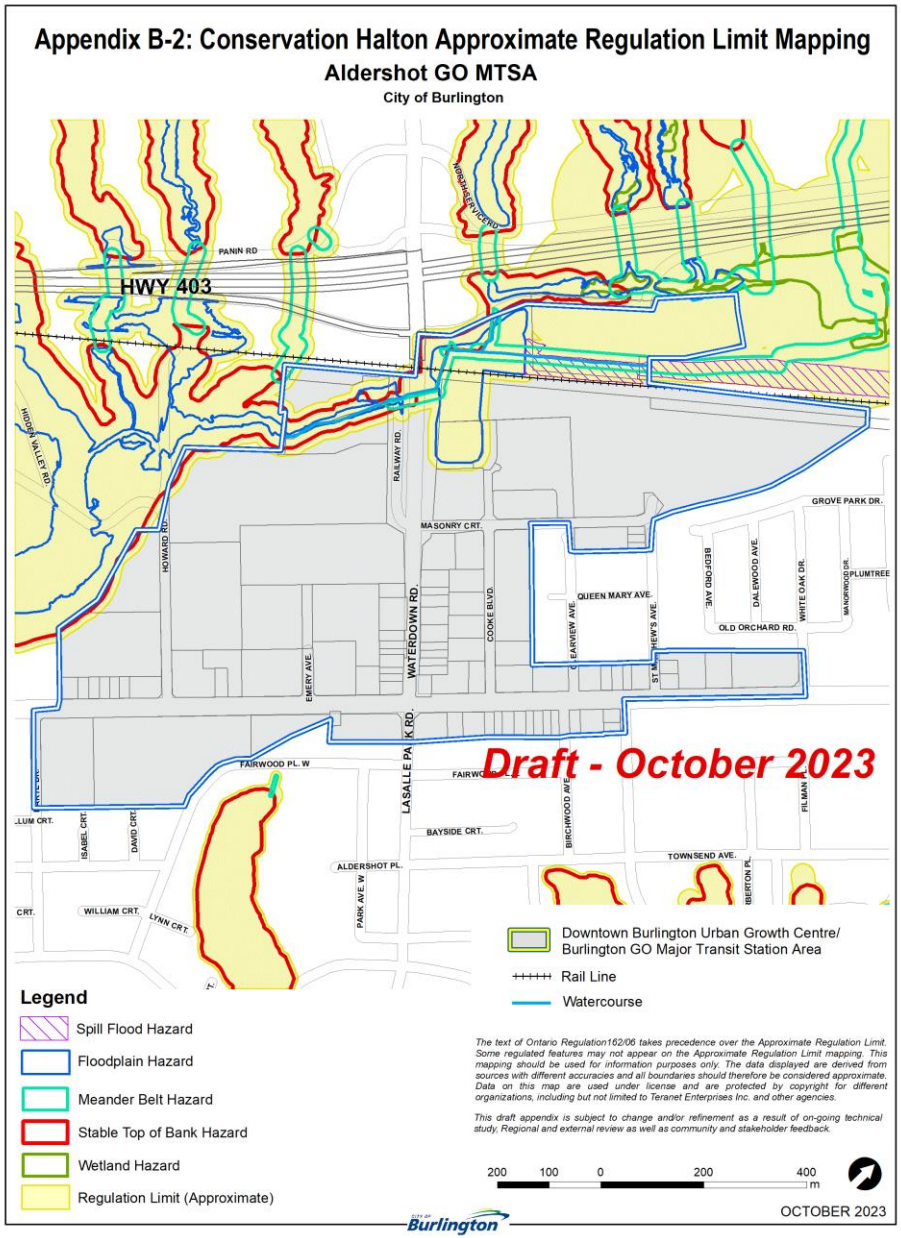
- Enter into an Agreement under Section 70.2 of the Planning Act;
- The submission of revisions to plans, architectural drawings, surveys, technical studies or a peer review of a technical study, submitted in support of a Community Planning Permit;
- The submission of letters of consent or agreements from adjacent property owners related to matters reviewed through the CPP process including encroachments, tree removals, mutual/shared access;
- Conveyances of creek blocks, road widening or new right of ways to the extent established in the Official Plan, 2020;
- Conveyances including easements in favour of the municipality including for the construction, maintenance or improvement of watercourses, ditches, land drainage works and other public utilities;
- Encroachment Agreements with the City;

- The dedication of parkland or the payment of cash-in-lieu, in accordance with City of Burlington By-law 55-2023;
- Obtaining permit for site alteration, in accordance with City of Burlington By-law 64-2014 or for tree removal in accordance with City of Burlington By-law 40-2022
- The provision of services facilities & matters in accordance with 5(2)c of O. Reg 173 and section 5.29 of this by-law;
- Provide confirmation of approvals or permits from other agencies, including Provincial Ministries and Conservation Halton, among others, as appropriate;
- Provide drawings and details related to but not limited to:
    - outdoor lighting;
    - an approved landscape plan, including cost estimates;
    - accessibility and fire safety including fire access routes;
    - transportation matters including a transportation monitoring plan, cost estimates, utility coordination;
    - site servicing matters including the submission of updated technical studies, condition assessment, updated drawings and cost assessments, Utility Coordination;
    - site preparation matters including export/disposal location of soil from excavation works, erosion and siltation control measures, existing conditions of the City's storm sewer (video);
    - waste management matters including outdoor and communal waste storage;
    - construction management matters including road occupancy, shoring and tie-backs; and
- Confirmation of property address;
- Conveyances including easements and dedications in the favour of the municipality (or agency or other public utilities) for the construction, maintenance or improvement of watercourses, ditches, land drainage works and other public utilities, or for the dedication of creek blocks, road widening or

new right of ways to the extent established in the Official Plan, 2020 and the supporting documentation or approvals;

Appendix B - Conservation Halton Regulatory Limit Maps




Appendix B-2: Conservation Halton Approximate Regulation Limit Mapping
Aldershot GO MTSA
City of Burlington
HWY 403
PANIN RD
HERSHEY WAY
HIDDEN VALLEY RD.
HOWARD RD.
RAILWAY RD.
MASONRY CRT.
WATERDOWN RD.
COOKE BLVD.
EMERY AVE.
QUEEN MARY AVE.
GROVE PARK DR.
BEDFORD AVE.
DALEWOOD AVE.
WHITE OAK DR.
MANORWOOD DR.
PLUMTREE
OLD ORCHARD RD.
FAIRWOOD PL. W
LASALLE PARK RD.
BAYSIDE CRT.
BIRCHWOOD AVE
TOWNSEND AVE.
ALDERSHOT PL.
PARK AVE W
WILLIAM CRT.
LYNN CRT.
ISABEL CRT.
DAVID CRT.
IBERTON PL.
Draft - October 2023
Downtown Burlington Urban Growth Centre/
Burlington GO Major Transit Station Area
Rail Line
Watercourse
Legend
Spill Flood Hazard
Floodplain Hazard
Meander Belt Hazard
Stable Top of Bank Hazard
Wetland Hazard
Regulation Limit (Approximate)
The text of Ontario Regulation162/06 takes precedence over the Approximate Regulation Limit. Some regulated features may not appear on the Approximate Regulation Limit mapping. This mapping should be used for information purposes only. The data displayed are derived from sources with different accuracies and all boundaries should therefore be considered approximate. Data on this map are used under license and are protected by copyright for different organizations, including but not limited to Teranet Enterprises Inc. and other agencies.
This draft appendix is subject to change and/or refinement as a result of on-going technical study, Regional and external review as well as community and stakeholder feedback.
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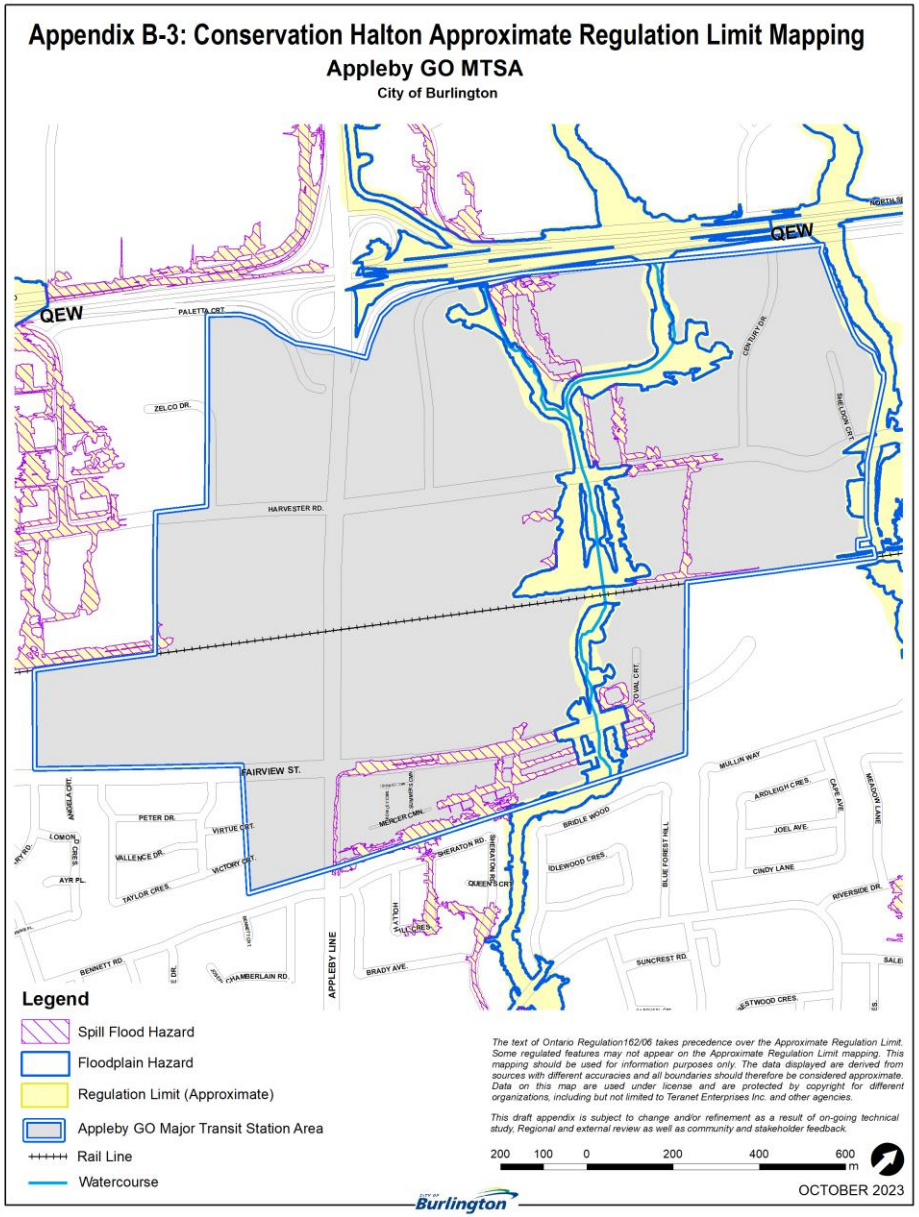
OCTOBER 2023
Burlington


Appendix B-3: Conservation Halton Approximate Regulation Limit Mapping
Appleby GO MTSA
City of Burlington
QEW
QEW
PALETTA CRT.
ZELCO DR.
HARVESTER RD.
FAIRVIEW ST.
APPLEBY LINE
BENNETT RD.
BRADY AVE.
SUNCREST RD.
Legend
Spill Flood Hazard
Floodplain Hazard
Regulation Limit (Approximate)
Appleby GO Major Transit Station Area
Rail Line
Watercourse
The text of Ontario Regulation162/06 takes precedence over the Approximate Regulation Limit. Some regulated features may not appear on the Approximate Regulation Limit mapping. This mapping should be used for information purposes only. The data displayed are derived from sources with different accuracies and all boundaries should therefore be considered approximate. Data on this map are used under license and are protected by copyright for different organizations, including but not limited to Teranet Enterprises Inc. and other agencies.
This draft appendix is subject to change and/or refinement as a result of on-going technical study, Regional and external review as well as community and stakeholder feedback.
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OCTOBER 2023
Burlington

Appendix C - Ownership and Rental Housing Income Deciles and Affordability Threshold Values

Table C.1 Owner Income Deciles, City of Burlington, 2016 and 2023

Owner Income Deciles, City of Burlington, 2016 and 2023

Income Decile	Total Income		Maximum Affordable Purchase Price (September, 2023 through September, 2024)		
	2016	2023	Deep Affordable	Affordable	Attainable
Low Income, 1st Decile	$39,637	$49,361	$141,032	$164,537	$246,805
Low Income, 2nd Decile	$58,895	$73,344	$209,553	$244,478	$366,718
Low Income, 3rd Decile	$75,205	$93,655	$267,585	$312,183	$468,274
Moderate Income, 4th Decile	$92,700	$115,442	$329,834	$384,806	$577,209
Moderate Income, 5th Decile	$109,851	$136,800	$390,858	$456,001	$684,002
Moderate Income, 6th Decile	$129,174	$160,864	$459,611	$536,213	$804,319
High Income, 7th Decile	$153,356	$190,978	$545,653	$636,595	$954,892
High Income, 8th Decile	$185,419	$230,907	$659,735	$769,691	$1,154,537
High Income, 9th Decile	$241,278	$300,470	$858,486	$1,001,567	$1,502,350
High Income, 10th Decile	$241,279	$300,471	$858,489	$1,001,571	$1,502,356

Source for Total Income, 2016 values: City of Burlington Innovative Housing Strategy, Housing Needs and Opportunities Report, Table 16, p. C-12
Source for Total Income, 2023 values: CPI factor calculated in cell D8 above is used to factor the 2016 values to September, 2023

Table C.2 Renter Income Deciles, City of Burlington, 2016 and 2023

Renter Income Deciles, City of Burlington, 2016 and 2023

Income Decile	Total Income		Total Income (Monthly)	Maximum Affordable Monthly Rent (September, 2023 through September, 2024)		
	2016	2023	2023	Deep Affordable	Affordable	Attainable
Low Income, 1st Decile	$18,849	$23,473	$1,956	$391	$587	$782
Low Income, 2nd Decile	$26,783	$33,354	$2,779	$556	$834	$1,112
Low Income, 3rd Decile	$35,798	$44,580	$3,715	$743	$1,115	$1,486
Moderate Income, 4th Decile	$44,808	$55,801	$4,650	$930	$1,395	$1,860
Moderate Income, 5th Decile	$53,815	$67,017	$5,585	$1,117	$1,675	$2,234
Moderate Income, 6th Decile	$63,919	$79,600	$6,633	$1,327	$1,990	$2,653
High Income, 7th Decile	$77,231	$96,178	$8,015	$1,603	$2,404	$3,206
High Income, 8th Decile	$93,514	$116,456	$9,705	$1,941	$2,911	$3,882
High Income, 9th Decile	$122,388	$152,413	$12,701	$2,540	$3,810	$5,080
High Income, 10th Decile	$122,389	$152,414	$12,701	$2,540	$3,810	$5,080

Source for Total Income, 2016 values: City of Burlington Innovative Housing Strategy, Housing Needs and Opportunities Report, Table 15, p. C-12
Source for Total Income, 2023 values: CPI factor calculated in cell D8 above is used to factor the 2016 values to September, 2023

Appendix D - Previous Holding Provisions from Part 11 of the Burlington Zoning By-law 2020

No building or structures shall be permitted in any zone followed by the symbol (H) or “Holding” until such time that the conditions outlined in Table D.1 have been fulfilled to the satisfaction of the Approval Authority, and/or where applicable the agency cited within the Holding Provision.

Table D.1 Previous Holding Provisions

[Table begins on next page]

Roll #(s)	Zone (Zoning By-law 2020)	Exception # (Zoning By-law 2020)	By-law No.	Location	Map No. (Zoning By-law 2020)	Provisions
2402050512028000000 **2402050512029000000** **2402050512030000000**	H-MXG	522	2020	688,694, and 698 Brant Street Legal Description: PLAN 99 PT LOTS 65,66 PLAN 99 PT LOT 66	Map 9	a) The owner submits a Record of Site Condition that indicates the site is suitable for the proposed land use to the satisfaction of Halton Region; b) The owner submits a Functional Servicing Report to the satisfaction of Halton Region; c) The owner submits a Waste Management Plan to the satisfaction of Halton Region; d) The owner demonstrates the replacement of the six (6) rental housing units within the subject property in accordance with Part 3, Subsection 2.3.2 f) of the Official Plan (1997, as amended) to the satisfaction of the Director of Community Planning and Halton Region.

Roll #(s)	Zone (Zoning By-law 2020)	Exception # (Zoning By-law 2020)	By-law No.	Location	Map No. (Zoning By-law 2020)	Provisions
2402010106022990000 **2402010106095000000** **2402010106094000000**	H-RH3	506	2020	1085 Clearview Avenue; 1082, 1086 and 1090 St. Matthew's Avenue Legal Description PLAN 753 LOTS 26,27,28 PLAN 665 LT 64 RP 20R21465 PART 1 CON 1 EF PT LOT 6 CON 1 EF PT LOT 6 PLAN 665 LOT 66	Map 3-E	1. A Record of Site Condition has been filed with and acknowledged by the Ministry of the Environment; and, 2. All environmental site condition requirements related to the Record of Site Condition have been met.

DILLON CONSULTING

CITY OF BURLINGTON

Major Transit Station Areas

Transportation Assessment

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A MTSA Proposed Street Type Design Concepts

1.0 Introduction and Background

1.1 Purpose

This transportation report identifies the existing and planned multimodal transportation conditions within and around the study areas that will influence the development and investment within Burlington's three Major Transit Station Areas (MTSA). MTSA specific infrastructure, services, programs and policies are identified to achieve the endorsed vision.

This report supports the Area-Specific Plans (ASP) for the three MTSAs within Burlington.

1.2 How the MTSA Transportation Study connects to the IMP

1.2.1 Burlington Integrated Mobility Plan

The Integrated Mobility Plan (IMP) guides long-term mobility policy and investment decisions in a manner that supports the overall strategic directions outlined in the City of Burlington Strategic Plan, Official Plan and other key policy documents. The IMP establishes a vision of an integrated and sustainable network of mobility options that will support a City that Grows, a City that Moves, a Healthy and Greener City and an Engaged City (the four Pillars of Burlington's Strategic Plan). The Burlington IMP is focussed on: making a shift towards sustainable modes that is grounded in policy (roads will not be widened to increase auto capacity); addressing the physical and cultural changes that the City is undergoing, including desire for more sustainable modes; addressing the current climate change emergency; and being cognizant of the fact that the City is made up of numerous diverse communities.

The IMP establishes the transportation framework for Burlington. This includes:

- Major transportation networks;
- City-wide transportation services; and
- Transportation programs and policies.

1.2.2 MTSA Transportation Plans

This document establishes the MTSA transportation plans for the finer transportation elements required to support development of the MTSA in a manner consistent with the Official Plan objectives for the MTSA and the transportation framework established by the IMP. The transportation plan for each MTSA includes:

- multimodal transportation networks within the MTSA and connections to boundary networks;
- points of emphasis for the transportation services to/ from/ within the MTSA to support intensification;
- program actions to be taken in the MTSA to adopt/ support/ extend the IMP programs; and

- additional policies required for the MTSA to support the IMP directions.

1.3 Background

The City of Burlington (the City) retained Dillon Consulting Limited (Dillon) to develop ASPs for the three MTSAs within the city; the Appleby GO MTSA, the Aldershot GO MTSA and the Burlington GO Urban Growth Centre/ MTSA that will present a comprehensive plan and set of policies for the areas to guide future development and investment and create complete communities.

The MTSA Area Specific Planning project identified the following objectives to guide the project:

- Leverage infrastructure investment and frequent transit service, including higher order transit and the development of public service facilities to support and accommodate increased densities and transit supportive densities.
- Provide a range and mix of transit-supportive uses, such as residential, retail, office, parks and public uses that supports the area in a pedestrian oriented urban environment.
- Plan and design the areas to be transit-supportive, complete communities and to achieve multi-modal access to stations and connections to nearby major trip generators.
- Plan for a diverse mix of uses, including additional residential units and affordable housing, where appropriate.
- Protect existing significant employment uses within Major Transit Station Areas by ensuring land use compatibility with adjacent new development is achieved.
- Develop a transportation network designed to support and integrate active transportation, local transit services and inter-municipal/ inter-regional higher order transit services.
- Plan for new public service facilities that support future population and job growth.
- Create new parks, trails, public realm and open spaces to serve residents and local workforce including the integration and connection of these spaces with the City's broader parks and trails network.
- Protect life and property from natural hazards.

1.4 Scope

This study provides a transportation plan for each of Burlington's three MTSA - Appleby, Aldershot and Burlington UGC. This study summarizes the IMP directions related to MTSA and, for each MTSA, identifies the:

- development concept and forecasted travel demands;
- IMP transportation network recommendations in the vicinity of the MTSA;
- recommended transportation networks within the MTSA boundaries;
- transportation services needed to support the MTSA;
- actions to be taken in the MTSA to adopt/ support/ extend the IMP programs; and
- additional policies required for the MTSA to support the IMP directions.

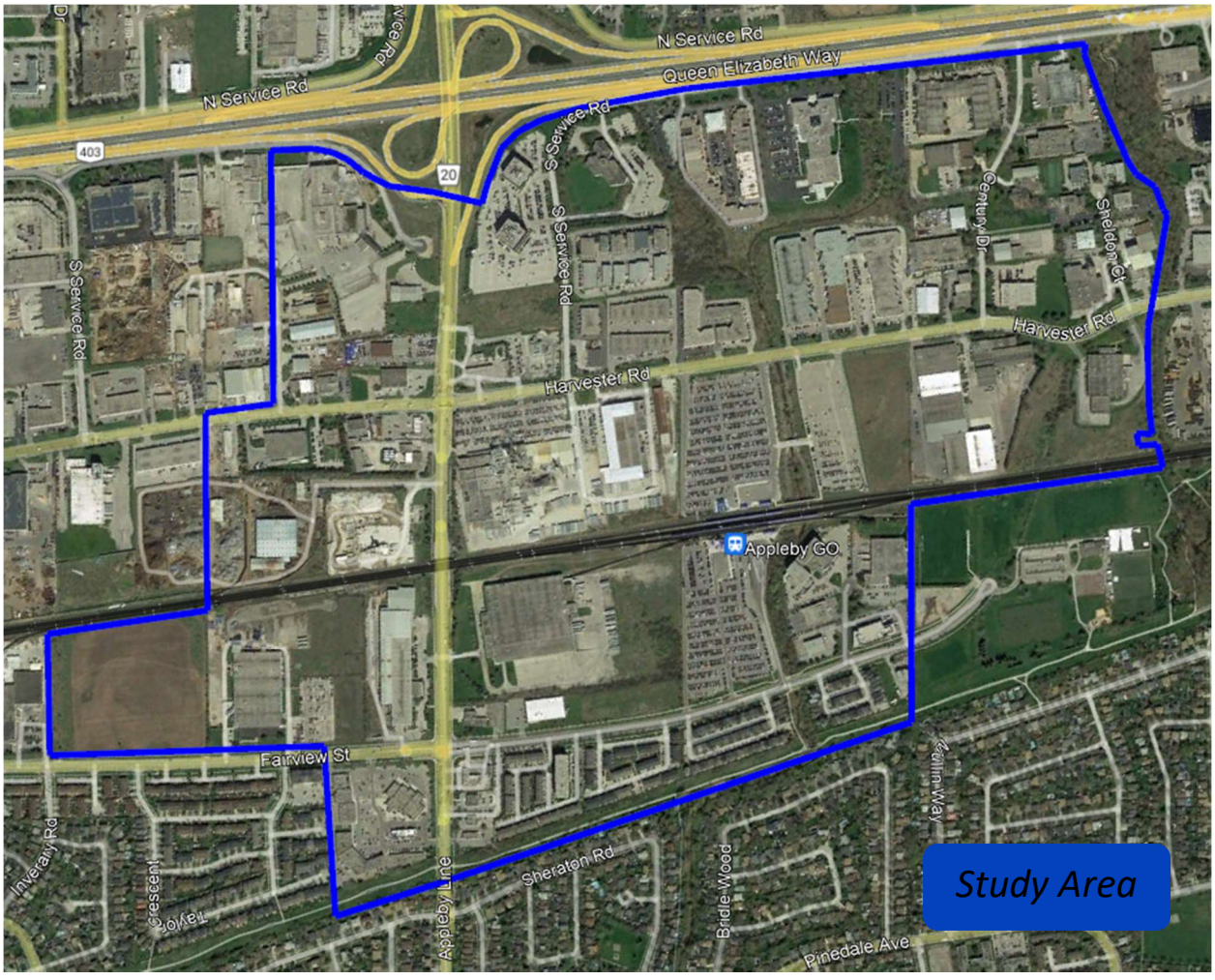
1.5 Study Areas/ Locations

The three MTSA study areas are located directly adjacent to a Highway 403 or Queen Elizabeth Way (QEW) interchange and contain a GO Transit Station. The Aldershot MTSA also contains a VIA Rail station. These are major entry points to the City of Burlington and distinguish the three MTSAs as prime locations to accommodate both population and employment growth.

1.5.1 Appleby GO MTSA

The Appleby GO MTSA is roughly centred on Appleby Line and Harvester Road as shown in **Figure 1** and is planned to accommodate a mix of uses with more intensive office and employment uses, while continuing to support existing major facilities north of the rail line. The area south of the GO rail line will evolve as an urban village with a balanced mix of employment, residential and commercial opportunities while balancing land use compatibility considerations to adjacent major facilities.

Figure 1: Appleby GO MTSA – Study Area



1.5.2 Aldershot GO MTSA

The Aldershot GO MTSA is centred on Waterdown Road largely between Highway 403 and Plains Road as shown in **Figure 2** and will continue to evolve as an urban area with a distinct sense of neighbourhood character, supported by a mix of residential, commercial and employment uses.

Figure 2: Aldershot GO MTSA – Study Area

1.5.3 Burlington GO MTSA

The Burlington GO MTSA is centred on key intersections located east of Brant Street between Highway 403/ Queen Elizabeth Way and Fairview Street as shown in **Figure 3**. The Burlington GO MTSA is also the City's Urban Growth Centre that is planned to be the focal point for growth with the greatest variety and intensity of uses from residential to commercial, cultural recreation, major office and other employment uses.

Figure 3: Burlington GO MTSA – Study Area

2.0 Summary of Burlington IMP

The City of Burlington is currently completing its first ever Transportation Master Plan, the Burlington Integrated Mobility Plan (IMP). The full IMP will be presented to Council for Approval in Fall 2023. Key decisions and recommendations (Vision/ Values/ Goals and Preferred Network) have already been endorsed and are taken as givens for the MTSA Transportation Plans, such as:

- The philosophy of the IMP is to reduce auto demand rather than widen roadways;
- The vision, values and goals of the IMP embrace a sustainable planning approach that is mode-share driven, rather than corridor-capacity driven (endorsed by Burlington Council Dec 2020);
- The IMP developed neighbourhood-specific mode share targets to guide future network and service planning;
- A preferred network concept was established for an integrated, multimodal transportation system that prioritized movement of people over vehicles (endorsed by Burlington Council Jan 2022); and
- Key supporting programs and policies were identified to guide delivery of transportation services in a manner that aligns with the IMP goals and supports the network concept.

IMP Program and Policy recommendations have not been reviewed by Council but, given that they are aligned with the IMP Vision/ Values/ Goals, they were assumed to be the framework for Programs and Policies for the MTSAs.

2.1 IMP Core Philosophy

The Burlington IMP core philosophy is as follows:

Reduce auto demand (via mode shift) rather than increasing auto roadway capacity.

This philosophy is a major paradigm shift from traditional Transportation Master Plans (TMP) that simply identified the roadways that required widening. Burlington needs to accommodate both commuter traffic and local users on its transportation network. The City wants to provide high quality, multimodal streets that serve the range of needs of its residents, but it must also acknowledge the sheer volume of peak period auto demands on its major roads. Cars need to be accommodated, but historically they have been prioritized. This balance of networks and neighborhoods has caused the demands of the surrounding region to compete with Burlington's local objectives. This IMP is balancing the creation of public place and a strong sense of community with the need to avoid the negative impacts of congestion.

2.2 IMP Vision, Values and Goals

The Burlington IMP Vision, which contains its Values, is as follows:

*Mobility in Burlington will be **safe**, **accessible**, **sustainable**, **balanced**, and **livable**.*

Safe – The movement of people and goods in Burlington will be safe for users of all modes. Special attention will be paid to ensuring the safety of vulnerable users – pedestrians and cyclists – as they are most likely to get seriously injured or killed in an incident. We will not accept transportation-related deaths and serious injuries as a normal part of our daily lives; our transportation system will be designed to minimize the risk of transportation-related deaths and serious injuries from occurring on our streets.

Accessible – Getting around Burlington will be accessible to people of all ages and abilities. There will be no infrastructure or service gaps in the networks of any mode, so each traveller can make a comfortable trip from point A to point B in Burlington, when they want, by their travel mode of choice. Our transportation system will allow our community members to travel comfortably within Burlington and to nearby communities to make sure that all residents of Burlington can fully participate in society, by the travel mode of their choice.

Sustainable – The transportation network will prioritize efforts to encourage transit, cycling, walking, and other non-car modes in order to encourage their use. By doing this, we will prioritize our community's health, improve the vibrancy of our city, and reduce pollution. We will also electrify our transportation network to reduce the emissions of all vehicles and to make modes like scooters or bikes more accessible for people with reduced mobility.

Balanced – We will prioritize travel by non-car modes. Our streets will allow comfortable travel for users of every mode.

Liveable – Streets in Burlington will be designed to fit within their surroundings. The design of our streets will support the environment and character we want to create in surrounding neighbourhoods and communities.

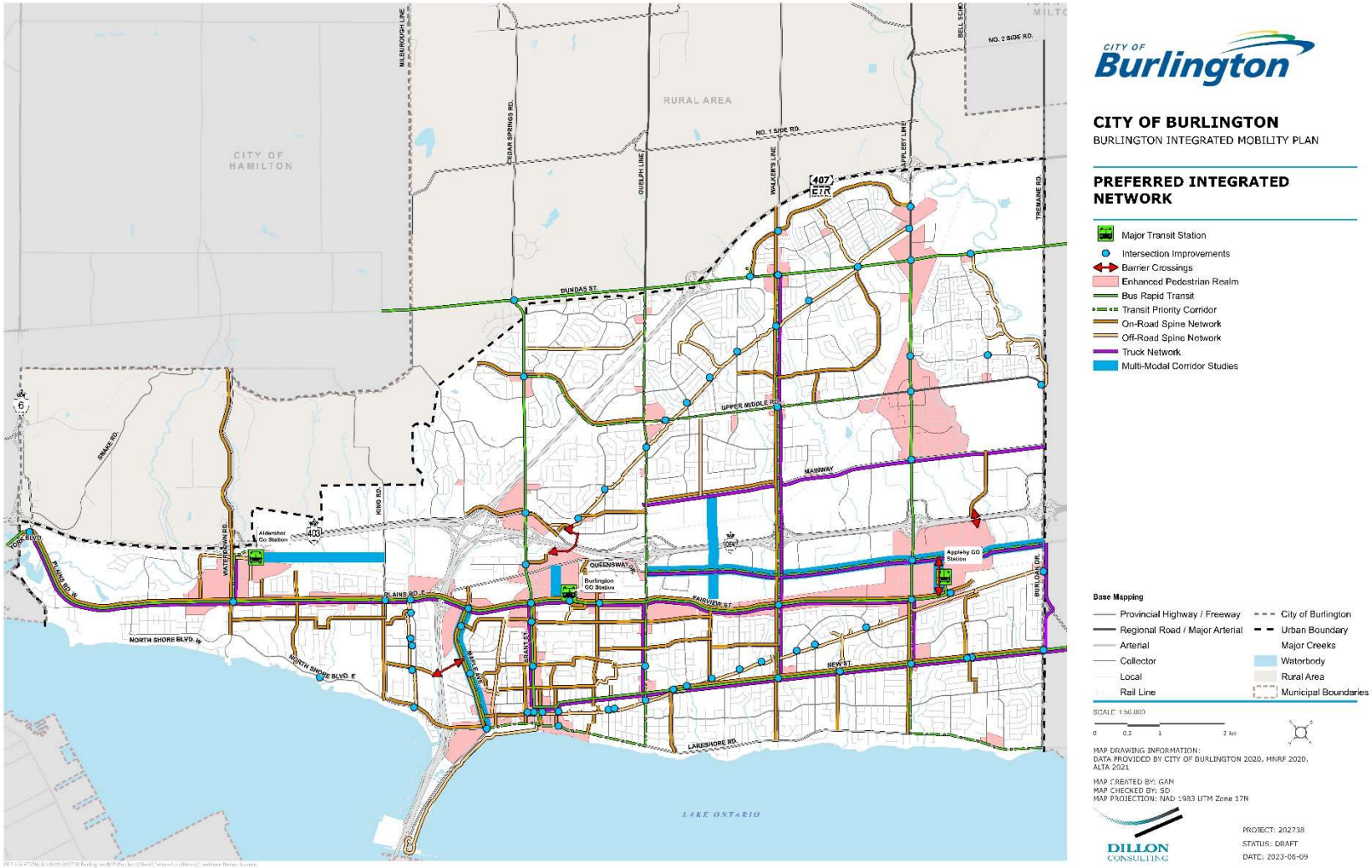
The Burlington IMP developed six Goals to explain how the Values will shape the transportation networks, policies and programs of the City of Burlington. They are as follows:

1. Burlington will eliminate transportation-related deaths and serious injuries.
2. Burlington's transportation system will be accessible and reliable for users regardless of factors like age, ability, income, or familiarity with the city.
3. Burlington will provide high quality transportation options to move people and goods wherever and whenever, while maintaining a high quality of life for residents.
4. Burlington will eliminate transportation-related carbon emissions.
5. Burlington's streets will support the intended roles of the communities they run through and help these communities be vibrant and prosperous.
6. Burlington will actively plan for the transportation changes of tomorrow while continuing to deliver great service today.

2.3 IMP Preferred Network Concept

The Burlington IMP preferred integrated network identifies the planned network elements for all modes of transportation. **Figure 4** shows the Preferred IMP Network

Figure 4: IMP Preferred Integration Network



3.0 Appleby MTSA Transportation Networks

3.1 Precinct Plan

This Transportation Report was prepared based on the land use plan and development concept for the MTSAs that was outlined in the MTSA ASP Planning Project Interim Report (December, 2021) based off a set of growth assumptions that were the best information available at the time for the purposes of analysis. As Dillon and the City continued to refine the land use plan and development concept into 2023, a sensitivity review showed that the refinements did not alter this report's recommendations.

3.1.1 Structure and Land Use

The land use plan for the Appleby GO MTSA contains a number of different precincts. **Figure 5** presents an overview of the study area and the Precinct Plan as shown in the MTSA ASP Planning Project Interim Report (December, 2021).

Figure 5: Appleby GO MTSA – Precinct Plan

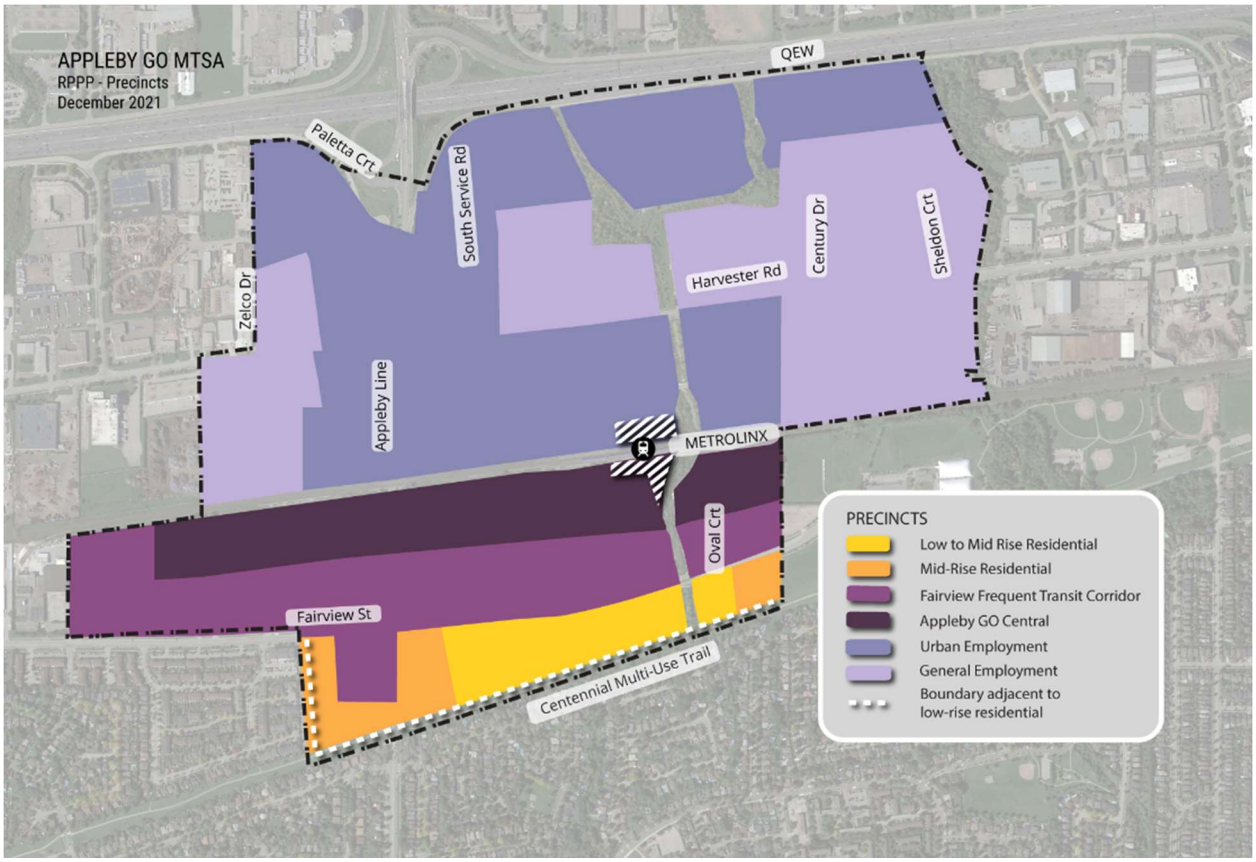


Table 1 presents a summary of the Precinct land use data, broken down by development data (Gross Floor Area (GFA), residents, and jobs per site).

Table 1: Appleby GO MTSA – Precinct Plan Development Data

Precinct	GFA (000 ft²)					Res. Units	# of Res.	# of Jobs			
	Res.	Office	Retail	Ind.	Total			Office	Retail	Ind.	Total
Appleby GO Central	1,767	1,325	1,325	0	4,417	1,728	2,074	5,324	1,331	0	6,655
Mid-Rise Residential*	525.5	11	16.5	0	553	513	615	50	19	0	69
Fairview Frequent Transit Corridor	4,927	616	616	0	6,159	4,818	5,782	2,474	619	0	3,093
Urban Employment	0	2,169	361.5	1,084.5	3,615	0	0	3,514	146	878	4,538
General Employment	0	609	0	2,434.5	3,043.5	0	0	1,274	0	2,547	3,821
Total	**7,219.5**	**4,730**	**2,319**	**3,519**	**17,787.5**	**7,059**	**8,471**	**12,636**	**2,115**	**3,425**	**18,176**

Source: MTSA ASP Planning Project Interim Report (December, 2021). The data used is based on the best information available at the time for the purposes of the transportation analysis and may not align with the overall growth assumptions that were refined in 2023.

Notes: Res. = Residential or Residents
Ind. = Industrial
*The 'Mid-Rise Residential' precinct is a consolidation of 'Low to Mid-Rise Residential' precinct and 'Mid-Rise Residential' precinct.

3.1.2 Mode Share Targets

The future mode shares targets for Appleby GO MTSA are based on existing conditions, policy directions, and case studies of similar developments. **Table 2** summarizes the existing and future neighbourhood mode shares for Pinedale and future recommended MTSA mode shares.

Table 2: Appleby GO MTSA – Existing and Future Daily Mode Shares

Travel Mode	Existing (2016) Mode Shares (TTS)	Future (2051) Mode Share Targets	
	Neighbourhood – Pinedale	Neighbourhood – Pinedale	MTSA – Appleby GO
Walking	3%	5%	13%
Cycling	1%	5%	9%
Transit	2%	17%	23%
Auto	95%	73%	55%

3.1.3 Trip Generation

For ease of analysis, the Appleby GO MTSA study area was subdivided into seven traffic zones based on the existing transportation network, access points, physical barriers and the proposed development concept. The traffic zones and assumed access points are displayed in **Figure 6.**

Figure 6: Appleby GO MTSA – Traffic Zones

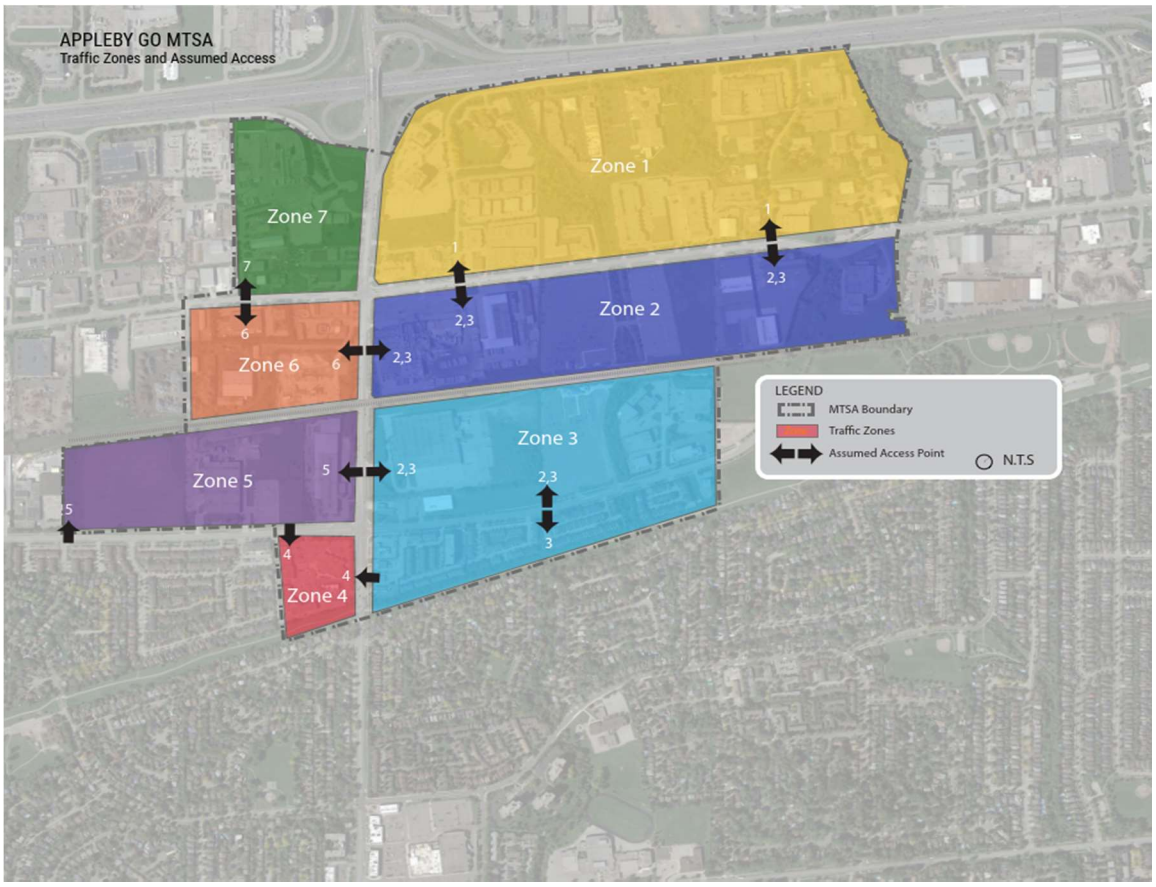


Table 3 summarizes the proposed precinct development data by traffic zone. The final AM and PM peak hour generated person trips by land use for each of the traffic zones are shown in **Table 4** and **Table 5**, respectively.

Table 3: Appleby GO MTSA – Proposed Precincts – Development Data by Traffic Zone

Traffic Zone	Precinct	Office (GFA - ft²)	Retail (GFA - ft²)	Industrial (GFA - ft²)	Residential (units)
1	Urban Employment	867,596	144,599	433,798	0
	General Employment	273,891	0	1,095,566	0
2	Urban Employment	759,146	126,524	379,573	0
	General Employment	152,162	0	608,648	0
3	Appleby GO Central	927,676	927,676	0	1,210
	Mid-Rise Residential	7,728	11,592	0	359
	Fairview Frequent Transit Corridor	369,524	369,524	0	2,891
4	Mid-Rise Residential	1,656	2,484	0	77
	Fairview Frequent Transit Corridor	61,587	61,587	0	482
5	Appleby GO Central	397,575	397,575	0	518
	Mid-Rise Residential	1,656	2,484	0	77
	Fairview Frequent Transit Corridor	184,762	184,762	0	1,445
6	Urban Employment	325,348	54,225	162,674	0
	General Employment	91,297	0	365,189	0
7	Urban Employment	216,899	36,150	108,449	0
	General Employment	91,297	0	365,189	0
Total		**4,729,802**	**2,319,183**	**3,519,086**	**7,059**

Table 4: Appleby GO MTSA – Person Trips by Traffic Zone and Land Use – AM Peak Hour

Traffic Zone	Office		Retail		Industrial		Residential		Total	
	In	Out	In	Out	In	Out	In	Out	In	Out
1	1,980	270	97	60	1,292	176	0	0	3,369	506
2	1,581	215	86	52	834	114	0	0	2,500	381
3	2,264	310	883	542	0	0	493	1,647	3,640	2,499
4	110	16	43	27	0	0	62	206	215	249
5	1,013	139	394	242	0	0	226	753	1,633	1,135
6	722	99	38	22	446	61	0	0	1,206	182
7	534	73	25	14	399	54	0	0	958	141
Total	8,204	1,120	1,565	960	2,971	406	781	2,606	**13,521**	**5,092**

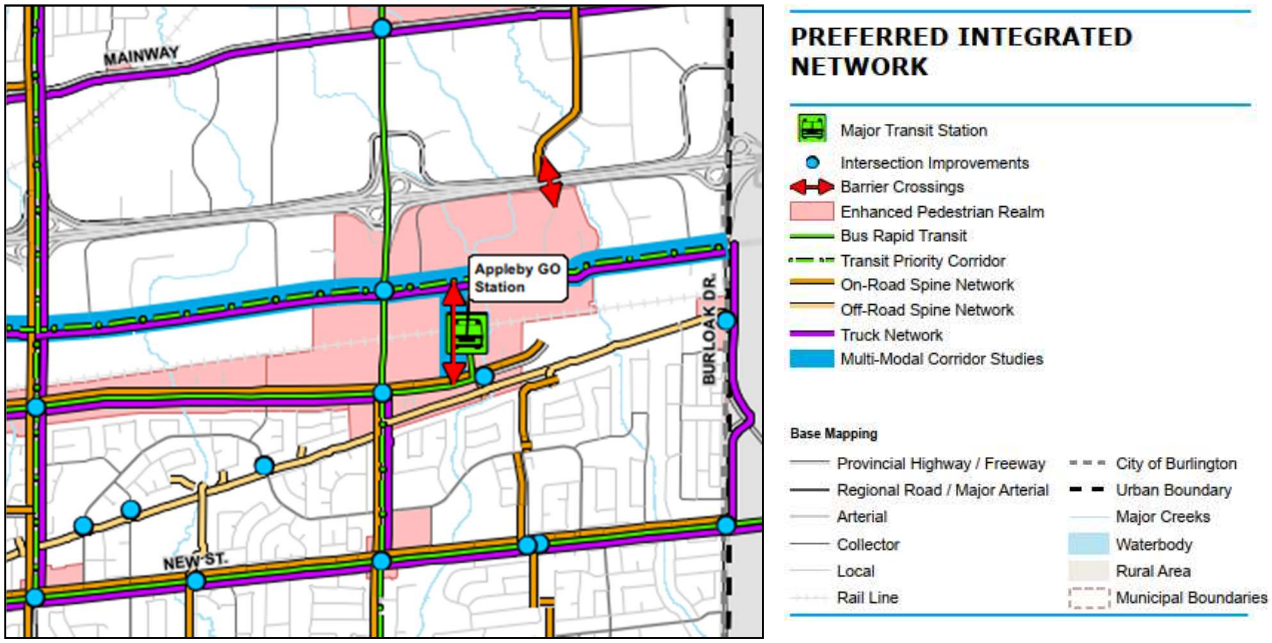
Table 5: Appleby GO MTSA – Person Trips by Traffic Zone and Land Use – PM Peak Hour

Traffic Zone	Office		Retail		Industrial		Residential		Total	
	In	Out	In	Out	In	Out	In	Out	In	Out
1	362	1,770	306	332	180	1,109	0	0	848	3,211
2	289	1,412	267	290	117	716	0	0	673	2,418
3	420	2,024	2,770	3,001	0	0	1,376	879	4,566	5,904
4	21	100	136	147	0	0	172	110	329	357
5	187	906	1,237	1,341	0	0	630	402	2,054	2,649
6	132	646	114	124	62	383	0	0	309	1,153
7	97	478	77	83	56	344	0	0	230	905
Total	1,508	7,337	4,907	5,318	415	2,551	2,178	1,391	**9,008**	**16,597**

3.2 IMP Network – Appleby

The IMP preferred integrated network (**Figure 7**) identifies a number of planned network elements in the vicinity of the Appleby GO MTSA. Planned network elements of particular importance include: the bus rapid transit and on-road cycling spine network on Fairview Street, the transit priority corridor and the on-road cycling spine network on Appleby Line (south of Fairview Street); the Bus Rapid Transit on Appleby Line (north of Fairview Street); the Transit Priority Corridor on Harvester Road; and the local off-road cycling spine network that is just south of the Appleby GO MTSA.

Figure 7: Appleby GO MTSA – IMP Preferred Integrated Network



3.2.1 Street Network

The IMP proposes a new north/south street connection across the rail corridor between Fairview Street and Harvester Road, east of Appleby Line to replace the extension of Fairview Street through Sherwood Forest Park. Although the connection is subject to future study to confirm the need, ultimate location, and cross-section requirements, this new north-south connection will provide many benefits to the transportation system and will improve access for all modes.

Appleby Line and Fairview Street are proposed as future Bus Rapid Transit (BRT) corridors with dedicated lanes, and Harvester Road is proposed as a future Transit Priority Corridor (as illustrated in **Figure 7**). The proposed BRT with dedicated lanes on Fairview Street will convert existing vehicle lanes (one lane per direction) to transit lanes, while the proposed BRT with dedicated lanes on Appleby Line will widen Appleby Line from 4 to 6 lanes to accommodate the additional transit lanes. Ultimately, the future BRT corridors with dedicated lanes will only happen if and when bus volumes dictate their need. BRT typically operate a more reliable and higher-frequency service when compared to a conventional bus route. The future Transit Priority Corridor may include various improvements including (but not limited to) transit signal priority.

3.2.1.1 Boundary Street Network Operations

The City, like all GTA municipalities, is going to continue to grow and develop through intensification. The Province of Ontario has made a number of legislative changes to the planning framework with the goal of delivering more homes faster. The City of Burlington, guided by the planning framework and vision of the City's Official Plan is planning to accommodate that growth in compact, sustainable and transit supportive complete communities in close proximity to existing and future infrastructure, including provincial investment in transportation infrastructure at the GO Stations.

Several of the movements at major intersections in the study area (i.e. Appleby Line at North Service Road, Appleby Line at Harvester Road and Appleby Line at Fairview Street) that show poor performance under total future conditions are either at, or nearing, capacity today. This means that any growth in vehicular demands in the study area (background or development-related) will cause heavily congested conditions in the near future. It is anticipated that the automobile road network within the Appleby GO MTSA will continue to perform poorly under total future conditions. With background traffic growth and the addition of thousands of site trips, the study area road network is expected to be very congested during the peak periods.

Mitigation will be required to address the significant congestion in the study area network. However, the selection of mitigation strategies must also consider that there are no plans, or desire, to widen City-owned roadways for the sole purpose of increasing auto capacity.

Given this limitation, the following is a discussion of recommended future actions and mitigation strategies to improve mobility under future total conditions.

Reduce Vehicular Travel Demands

Since the network is already nearing capacity today, reducing auto demands must be a key part of the strategy to minimize future congestion. When roughly comparing the existing condition volumes to the 2051 total future volumes at two key intersections – Appleby Line at Harvester Road and Appleby Line at Fairview Street – the total reduction in critical movement volumes required to bring all critical movements back to "just below capacity conditions" (i.e. v/c ratios less than 1.2) is a 30% critical movement volume reduction in the AM peak and a 20-40% critical movement volume reduction in the PM peak.

The 2051 Pinedale neighbourhood mode share profile targets an auto reduction of 17% over existing conditions. If achieved or slightly exceeded, this reduction in existing demands could provide a substantial portion of the auto capacity required to support additional development.

However, achieving such significant reductions in vehicle demands will require an aggressive, robust, and effective transportation demand management (TDM) program. Therefore, both the City and the Region should work to develop TDM programs to reduce vehicle demands on both City and Regional roads within the study area. Additionally, the City should require site-specific TDM strategies for the proposed concept.

Manage Peak Hour Congestion

Despite efforts, key arterial corridors are and will remain congested. A traffic management plan (formed in partnership with Region) will need to be enacted on Appleby Line, Harvester Road and Fairview Street. Establishing automated and responsive traffic signal control, digital data collection, Digital banners for real-time communication will ensure flow of passengers and goods is maintained.

3.2.2 Active Transportation

Fairview Street and Appleby Line (between Fairview Street and New Street) are proposed to be part of the on-road cycling spine network (as illustrated in **Figure 7**), while Harvester Road is proposed to be an on-road connector route. Both Fairview Street and Appleby Line (between Fairview Street and New Street) are proposed to have protected bikeways, while Harvester Road is proposed to have painted buffered bike lanes. Appleby Line north of Fairview Street (Regional Road 20) is proposed to have buffered bike lanes.

The intersections of Appleby Line and Fairview Street, and Appleby Line and Harvester Road are proposed to become protected intersections for cyclists (as illustrated in **Figure 7**), while intersection improvements for pedestrians and cyclists are proposed for mid-block crossings of Fairview Street (at

the Appleby GO Station driveway/ Centennial Bikeway) and Harvester Road (at the GO Station driveway).

The new north/south street connection across the rail corridor between Fairview Street and Harvester Road would also provide an AT crossing over the rail, as well as accommodate transit vehicles.

3.3 Appleby MTSA Transportation Network

The transportation networks in MTSA will change significantly with redevelopment and intensification of lands. The City requires a street and pathway network that provides access, and accommodates mobility safely for all modes of transportation.

3.3.1 Street Network

A street network was developed for the Appleby MTSA considering:

- Physical and operational constraints/ barriers;
- The general structure and land use concept for the MTSA;
- Efficient network layout principles, such as providing even spacing between collector roads to maximize future flexibility and connectivity; and
- The opportunity to maximize new access opportunities to boundary system because of significant increase in number of trips generated within the MTSA

Physical barriers included such things as rail lines, existing bridges/ underpasses, watercourses – things that cannot be connected to and can only be crossed under specific conditions. Operational constraints include such things as existing traffic signals and freeway ramp locations and design. For example, current thinking on roadway operations indicates that minimum preferred spacing between traffic signals in intensification areas is 200m; whereas MTO prefers a minimum 400m from ramp terminals.

Constraints/ barriers influencing the development of the Appleby MTSA network include:

- GO Rail line;
- Grade-separation on Appleby Line at GO Rail crossing;
- The watercourse/ creek east of Appleby Line; and
- The existing traffic signals.

3.3.1.1 Recommended Street Network

Figure 8 shows the recommended street network for the Appleby MTSA. The rationale for the recommended network is presented in **Table 6**.

Figure 8: Appleby GO MTSA – Street Network

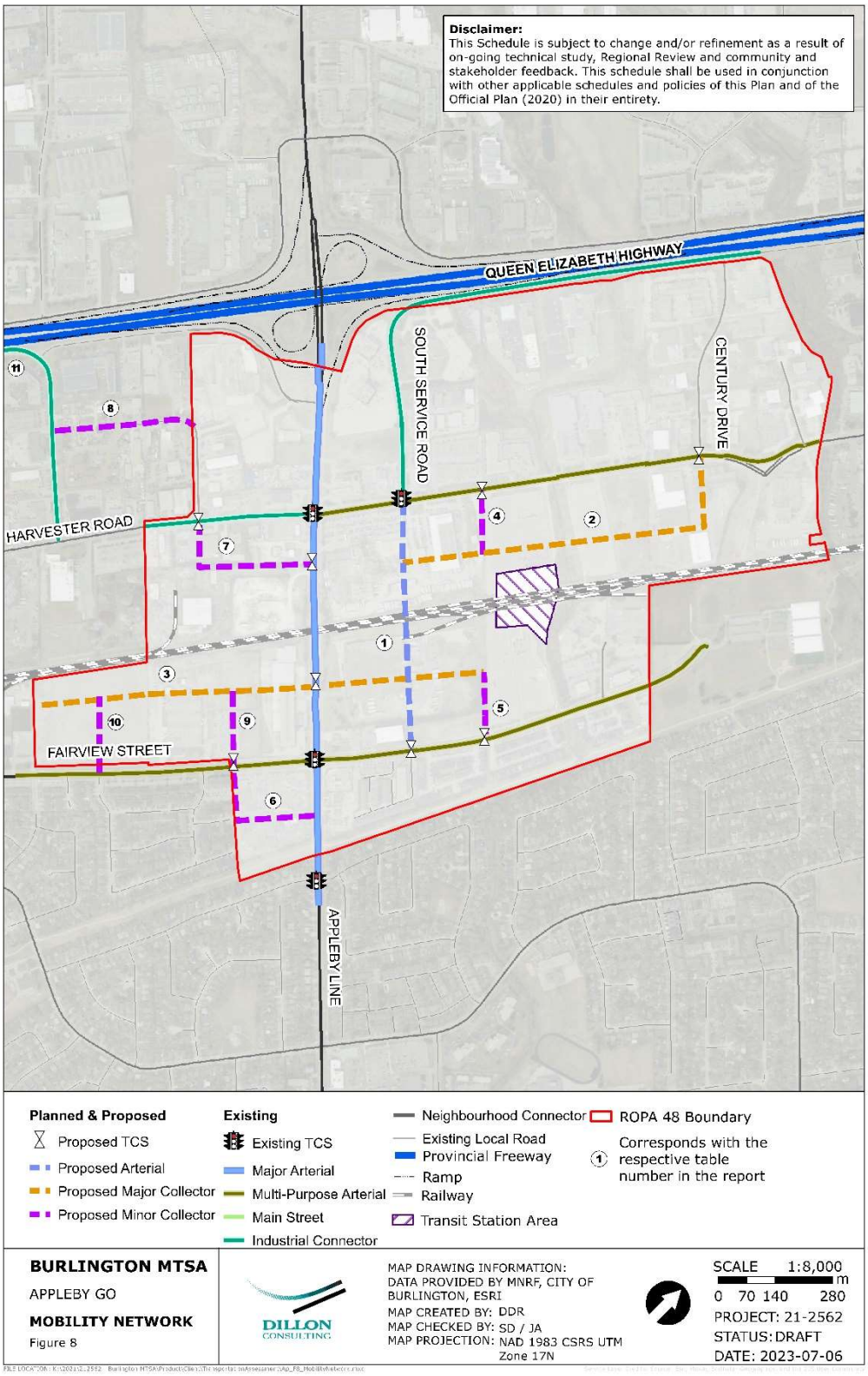


Table 6: Appleby GO MTSA – Planned/ Proposed Street Network Rationale

Street	Classification	ROW Width	Rationale
Street 1	Arterial	35m	• South Service Road Extension • Part of the IMP Network - replaces Fairview Street extension • Includes a new crossing of GO Rail line • Distributes travelers north-south between Appleby Line and creek and east-west south of the QEW • Creates a multimodal corridor to connect sustainable modes to development • Requires an EA study to confirm need, location and design
South Service Road	Major Collector	30m	• South Service Road Urbanization • May align with/ connect to new crossing of GO Rail line • Distributes travelers north-south east of Appleby Line and east-west south of the QEW • Creates a multimodal corridor to connect sustainable modes to development
Century Drive	Major Collector	30m	• Distributes travelers north-south east of Appleby Line • Creates a multimodal corridor to connect sustainable modes to development
Street 2	Major Collector	30m	• Distributes travelers east-west between Go Rail line and Harvester Road • Creates a multimodal corridor to connect sustainable modes to development
Street 3	Major Collector	30m	• Distributes travelers east-west between Go Rail line and Fairview Street • Creates a multimodal corridor to connect sustainable modes to development
Streets 4-7, 9 & 10	Minor Collector	26m	• Provides access to development parcels • Creates multimodal corridors to connect sustainable modes to development
Zelco Drive	Minor Collector	26m	• Provides access to development parcels • Creates multimodal corridors to connect sustainable modes to development
Zelco Drive extension (Street 8)	Minor Collector	26m	• Provides access to development parcels • Creates multimodal corridors to connect sustainable modes to development
South Service Road (Street 11)	Major Collector	30m	• South Service Road Modification • Distributes travelers north-south west of Appleby Line and east-west south of the QEW • Creates a multimodal corridor to connect sustainable modes to development and to the DeGroote School of Business

The IMP Preferred Solutions paper provides the following rationale for Street 1:

North-South Link east of Appleby Line (Fairview Street to Harvester Road)
The proposed new North-South link from Fairview Street and Harvester Road, east of Appleby Line, replaces the previous extension of Fairview Street through Sherwood Forest Park. It provides many benefits to the overall transportation system by providing an additional crossing of the GO rail corridor. The additional multimodal crossing of the GO rail corridor will provide additional automobile route choice flexibility for people accessing the area, which will spread auto demands to the greatest extent possible, ultimately reducing peak period auto demands through the Appleby Line/ Harvester Road and Appleby Line/ Fairview Street intersections. It will also provide an additional active transportation and transit link across the GO rail corridor thus providing additional transit route flexibility and providing cyclists with a safe option to cross the GO rail corridor without having to travel on Appleby Line. Given the possibility of a number of property constraints associated with this connection, the proposed North-South Link east of Appleby Line would be subject to a future Environmental Assessment study.

3.3.2 Active Transportation (AT) Network

An MTSA AT network must strongly support and promote sustainable transportation to accommodate the planned development levels. Right-of-way on the boundary streets is not available to increase auto capacity further; planning for sustainable transportation (including AT) infrastructure is the only way to move people in the quantities that are forecasted for peak commuter hours. Maximum capacity and service for AT trips will be created in the MTSA by implementing a network or complete streets with robust AT infrastructure complemented by major capital projects and pathways where necessary. A robust AT network is also critical to maximize the use of local and GO transit for people traveling longer distances to connect to the MTSA. A network that maximizes capacity and access to transport is critical to create sustainable transit options for the people of Burlington now, and in future growth.

Figure 9 shows the planned AT network for the Appleby GO MTSA. It features a network of complete streets that connects to Appleby Line, Harvester Road and Fairview Street and a number of off-road links in dedicated rights-of-way;

The rationale for the recommended off-street AT connections is presented in **Table 7**.

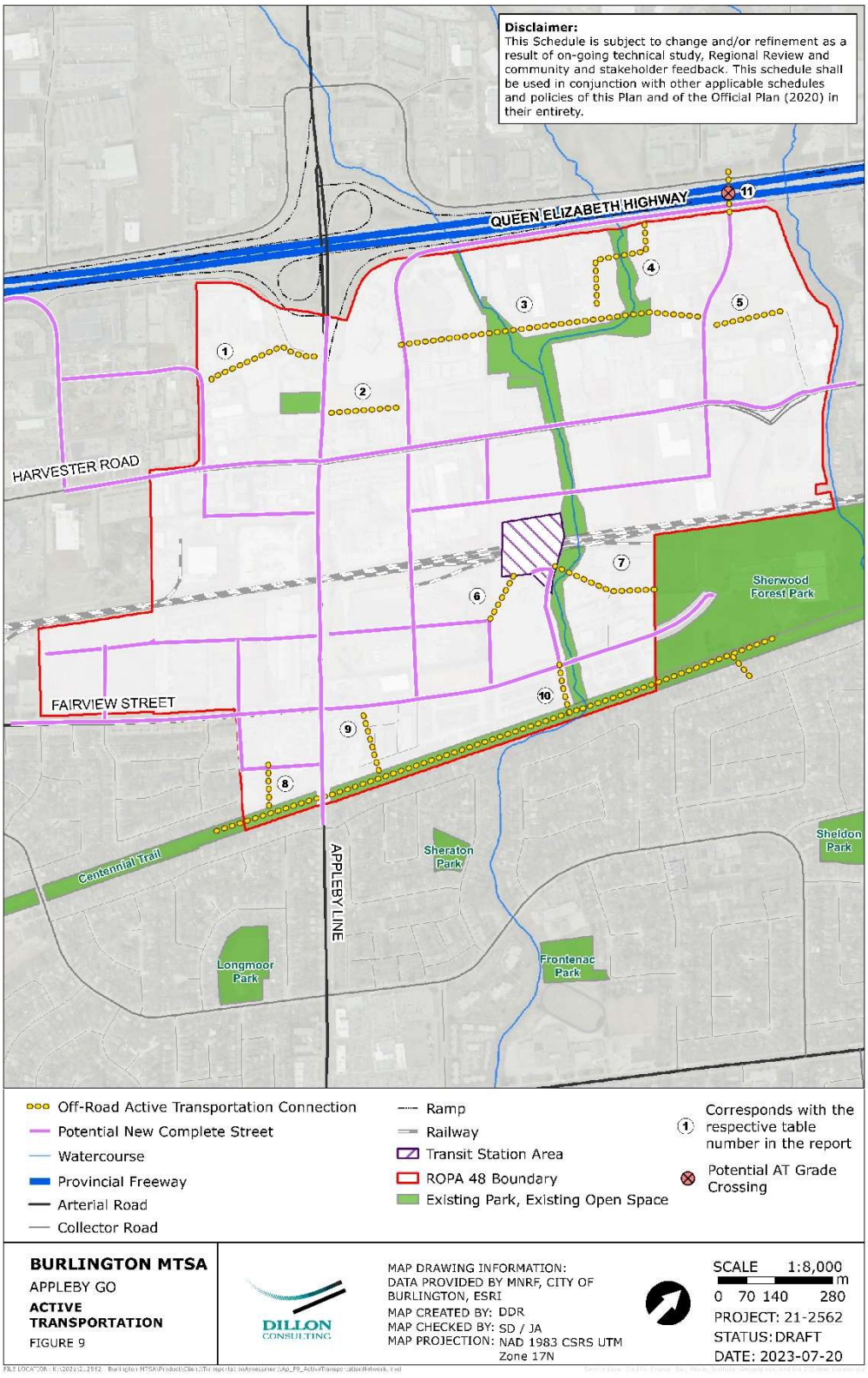
Table 7: Appleby GO MTSA – Active Transportation Network Rationale

Active Transportation Connection	Rationale
AT Connections 1 & 2	• Creates an off-road AT corridor that provides a shorter / more direct route to development parcels • Distributes AT travelers to/from Appleby Line east-west between the QEW and Harvester Road
AT Connection 3	• Creates an off-road AT corridor that provides a shorter / more direct route to development parcels • Distributes AT travelers east-west between the QEW and Harvester Road • Creates a linear connection for the purpose of recreational AT
AT Connections 4 & 5	• Creates an off-road AT corridor that provides a shorter / more direct route to development parcels
AT Connections 6 & 7	• Creates an off-road AT corridor that provides a shorter / more direct route to development parcels • Provides AT connections to/from Appleby GO Station
AT Connections 8 - 10	• Creates an off-road AT corridor that provides a shorter / more direct route to development parcels • Provides AT connections to/from the Centennial Bikeway
AT Connections 11	• Provides an AT connection to/from Appleby GO Station to the employment area north of the QEW

The off-road Active Transportation connections are conceptual in nature; the Transportation Study recommends these connections to improve sustainable transportation within the MTSA area, to support the City's efforts to increase sustainable mode shares and to provide direct high-quality connections to the GO Station areas. Location and design of each facility will be established through future conversations with Metrolinx and local landowners.

The MTSA Active Transportation network relies on the City's commitment to Complete Streets. A complete street is a street designed, built and operated to enable safe access for all users, in that pedestrians, cyclists, transit-users, and motorists of all ages and abilities are able to safely move along and across the right of way. Complete streets foster livability while enhancing the public realm and encouraging sustainable growth patterns.

Figure 9: Appleby GO MTSA – Active Transportation Network



4.0 Aldershot MTSA Transportation Network

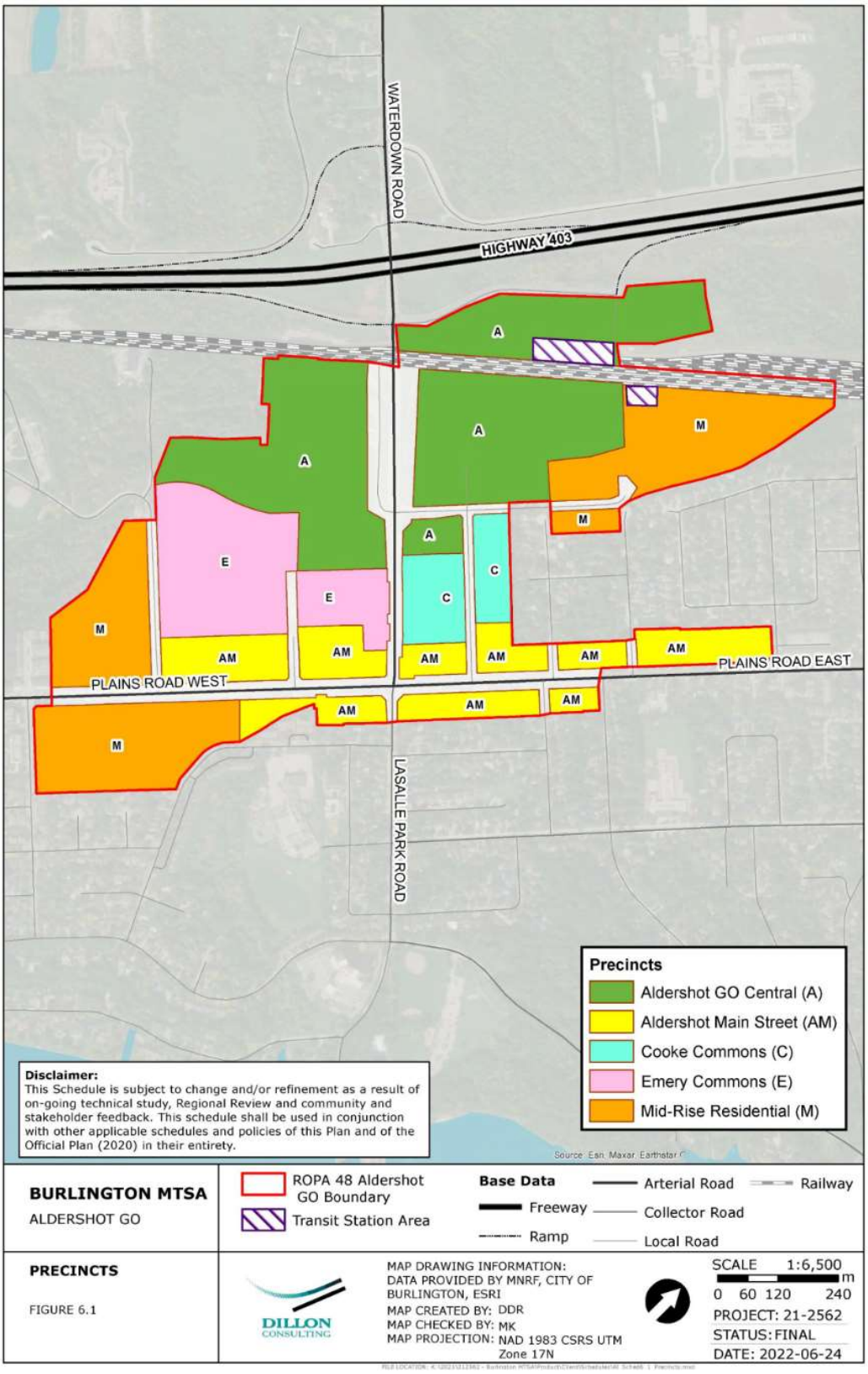
4.1 Precinct Plan

This Transportation Report was prepared based on the land use plan and development concepts for the MTSA that was outlined in the MTSA ASP Planning Study Final Report (June 2022), based off a set of growth assumptions that utilized the best information available at the time for the purposes of analysis. As Dillon and the City continued to refine the land use plan and development concept into 2023, a sensitivity review showed that the refinements did not alter this report's recommendations.

4.1.1 Structure and Land Use

The land use plan for the Aldershot GO MTSA contains a number of different precincts. **Figure 10** presents an overview of the study area and the Precinct land use plan as shown in the MTSA ASP Planning Study Final Report.

Figure 10: Aldershot GO MTSA – Precinct Plan



The precincts are broken down by the development data (Gross Floor Area (GFA), residents, and jobs per site) in **Table 8**.

Table 8: Aldershot GO MTSA – Precinct Plan Development Data

Precinct	000's GFA (ft^2)				Residential Units	# of Residents	# of Jobs		
	Residential	Office	Retail	Total			Office	Retail	Total
Aldershot GO Central	6,485	360	360	7,205	6,341	7,609	1,447	362	1,809
Mid-Rise Residential	1,777	0	0	1,777	1,738	2,086	0	0	0
Aldershot Main Street	1,587	54	123	1,764	1,552	1,862	280	163	443
Cooke Commons	685	14	23	722	670	804	66	25	91
Emery Commons	1,910	40	60	2,010	1,867	2,241	184	69	253
Total	**12,444**	**468**	**566**	**13,478**	**12,168**	**14,602**	**1,977**	**619**	**2,596**

Source: MTSA ASP Planning Study Final Report (June 2022). The data used is based on the best information available at the time for the purposes of the transportation analysis and may not align with the overall growth assumptions that were refined in 2023.

4.1.2 Mode Share Targets

The future mode shares targets for Aldershot GO MTSA are based on existing conditions, policy directions, and case studies of similar developments. **Table 9** summarizes the existing and future neighbourhood mode shares for Aldershot and future the recommended MTSA mode shares.

Table 9: Aldershot GO MTSA – Existing and Future Daily Mode Shares

Travel Mode	Existing (2016) Mode Shares (TTS)	Future (2051) Mode Share Targets	
	Neighbourhood – Aldershot	Neighbourhood – Aldershot	MTSA – Aldershot GO
Walking	3%	5%	13%
Cycling	1%	5%	9%
Transit	2%	17%	23%
Auto	95%	73%	55%

4.1.3 Trip Generation

For ease of analysis, the Aldershot GO MTSA study area was subdivided into seven traffic zones based on the existing transportation network, access points, physical barriers and the proposed development concept. The traffic zones and assumed access points are displayed in **Figure 11.**

Figure 11: Aldershot GO MTSA – Traffic Zones

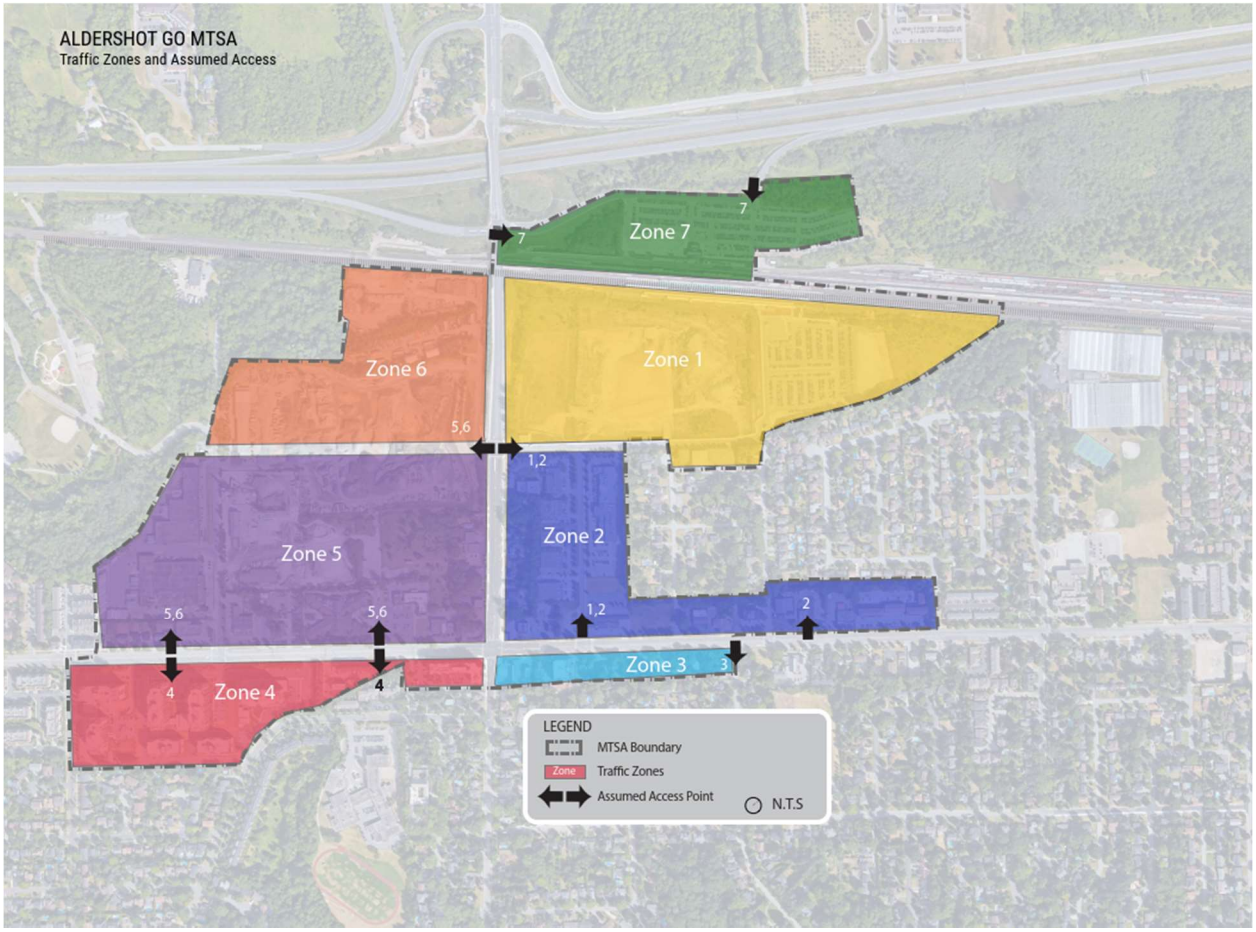


Table 10 summarizes the proposed precincts development data by traffic zone. The final AM and PM peak hour generated person trips by land use for each of the traffic zones are shown in **Table 11** and **Table 12**, respectively.

Table 10: Aldershot GO MTSA – Proposed Precincts – Development Data by Traffic Zone

Traffic Zone	Precinct	Office (GFA - ft²)	Retail (GFA - ft²)	Residential (units)
1	Mid-Rise Residential	0	0	869
	Aldershot GO Central	180,115	180,115	3,171
2	Aldershot Main Street	18,516	43,203	543
	Aldershot GO Central	18,012	18,012	317
	Cooke Commons	14,431	21,646	670
3	Aldershot Main Street	15,871	37,031	466
4	Mid-Rise Residential	0	0	521
	Aldershot Main Street	5,290	12,344	155
5	Mid-Rise Residential	0	0	348
	Aldershot Main Street	13,225	30,859	388
	Emery Commons	40,199	60,299	1,867
	Aldershot GO Central	36,023	36,023	634
6	Aldershot GO Central	90,058	90,058	1,585
7	Aldershot GO Central	36,023	36,023	634
Total		**467,762**	**565,613**	**12,169**

Table 11: Aldershot GO MTSA – Person Trips by Traffic Zone and Land Use – AM Peak Hour

Traffic Zone	Office		Retail		Residential		Total	
	In	Out	In	Out	In	Out	In	Out
1	313	43	122	74	446	1,493	880	1,609
2	88	12	56	35	169	565	313	612
3	27	4	25	16	52	171	104	191
4	9	3	8	5	75	249	92	257
5	156	21	86	53	358	1,196	599	1,269
6	157	21	61	38	175	585	393	643
7	62	9	25	14	70	235	157	258
Total	812	112	381	235	1,345	4,493	**2,538**	**4,839**

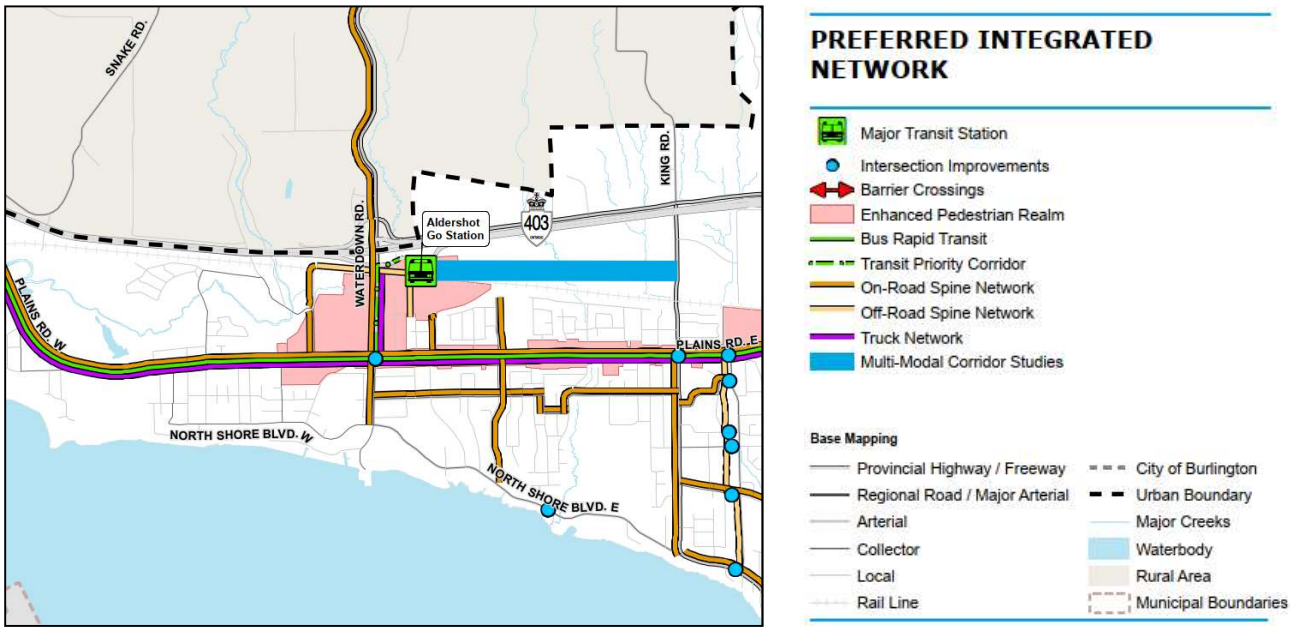
Table 12: Aldershot GO MTSA – Person Trips by Traffic Zone and Land Use – PM Peak Hour

Traffic Zone	Office		Retail		Residential		Total	
	In	Out	In	Out	In	Out	In	Out
1	57	279	381	412	1,246	797	1,684	1,489
2	16	79	175	191	472	302	663	572
3	5	25	78	86	144	92	227	202
4	5	9	26	29	209	134	240	171
5	29	139	268	292	998	638	1,295	1,068
6	29	140	191	206	489	313	708	659
7	12	56	77	82	196	124	284	262
Total	152	726	1,196	1,297	3,754	2,400	**5,101**	**4,423**

4.2 IMP Network – Aldershot

The IMP preferred integrated network (**Figure 12**) identifies a number of planned network elements in the vicinity of the Aldershot GO MTSA. Planned network elements of particular importance include: the Bus Rapid Transit and the on-road cycling spine network on Plains Road; the on-road cycling spine network on Waterdown Road; and the local on and off-road cycling spine network on a number of connector and local streets within the Aldershot GO MTSA.

Figure 12: Aldershot GO MTSA – IMP Preferred Integrated Network



4.2.1 Street Network

The IMP proposes a study to review the feasibility of constructing a new South Service Road extension (connecting the Aldershot GO Station and the Highway 403 eastbound on ramp to King Road - see 'Multimodal Corridor Studies' on **Figure 12**). Although the connection is subject to future study to confirm the need, ultimate location, and cross-section requirements, this new east-west connection will provide many benefits to the transportation system and will improve access for all modes.

Plains Road is proposed as a future Bus Rapid Transit (BRT) corridor with dedicated transit lanes (as illustrated in **Figure 12**). Ultimately, one vehicle lane per direction will be converted to a transit lane if and when bus volumes dictate the need for the conversion. BRT typically operate a more reliable and higher-frequency service when compared to a conventional bus route.

4.2.1.1 Boundary Street Network Operations

The City, like all GTA municipalities, is going to continue to grow and develop through intensification. The Province of Ontario has made a number of legislative changes to the planning framework with the goal of delivering more homes faster. The City of Burlington, guided by the planning framework and vision of the City's Official Plan is planning to accommodate that growth in compact, sustainable and transit supportive complete communities in close proximity to existing and future infrastructure, including provincial investment in transportation infrastructure at the GO Stations.

Several of the turning movements at major intersections in the study area (i.e. Waterdown Road at Highway 403 Off-Ramp (EB)/ Aldershot GO Access and Waterdown Road at Plains Road) that show poor performance under future total conditions are nearing capacity today. This means that any growth in vehicular demands (background or development-related) attributed to these turning movements will cause congested conditions in the near future. It is anticipated that the automobile road network within the Aldershot GO MTSA will continue to perform poorly under total future conditions. With background traffic growth and the addition of thousands of site trips, the study area road network is expected to be very congested during the peak periods.

Mitigation will be required to address the significant congestion in the study area network. However, the selection of mitigation strategies must also take into account that there are no plans, or desire, to widen City owned roadways for the sole purpose of increasing auto capacity.

Given this limitation, the following is a discussion of recommended future actions and mitigation strategies to improve mobility under future total conditions.

Reduce Vehicular Travel Demands

Since there are already a number of turning movements nearing capacity today, reducing auto demands must be a key part of the strategy to minimize future congestion. When roughly comparing the existing

condition volumes to the 2051 total future volumes at two key intersections – Waterdown Road at Highway 403 Off-Ramp (EB)/ Aldershot GO Access and Waterdown Road at Plains Road – the total reduction in critical movement volumes required to bring all critical movements back to "just below capacity conditions" (i.e. v/c ratios less than 1.2) is a 5-25% critical movement volume reduction in the AM peak and a 15% critical movement volume reduction in the PM peak.

The 2051 Aldershot neighbourhood mode share profile targets an auto reduction of 22% over existing conditions. If achieved or slightly exceeded, this reduction in existing demands could provide a substantial portion of the auto capacity required to support additional development.

However, achieving such significant reductions in vehicle demands will require an aggressive, robust, and effective transportation demand management (TDM) program. Therefore, the City should work to develop TDM programs to reduce vehicle demands on roads within the study area. Additionally, the City should require site-specific TDM strategies for the proposed concept.

Manage Peak Hour Congestion
Despite efforts, key arterial corridors are and will remain congested. A traffic management plan (formed in partnership with Region) will need to be enacted on Waterdown Road and Plains Road. Establishing automated and responsive traffic signal control, digital data collection, Digital banners for real-time communication will ensure flow of passengers and goods is maintained.

4.2.2 Active Transportation (AT)

Both Waterdown Road and Plains Road are proposed to be part of the on-road cycling spine network (as illustrated in **Figure 12**). A protected bikeway is currently being constructed along Plains Road (first phase to be complete in 2023), while Waterdown Road is proposed to have a protected bikeway between Plains Road and Highway 403 and conventional painted bike lanes between Highway 403 and Craven Avenue. North of the Aldershot GO MTSA, Waterdown Road between Craven Avenue and Mountain Brow Road will be rehabilitated and widened to include an in-boulevard multi-use path.

The intersection of Waterdown Road and Plains Road is being redesigned to become a protected intersection for cyclists (as illustrated in **Figure 12**).

4.3 Aldershot MTSA Transportation Networks

The transportation networks in MTSA will change significantly with redevelopment and intensification of lands. The City requires a street and pathway network that provides access, and accommodates mobility safely for all modes of transportation.

4.3.1 Street Network

A street network was developed for the Aldershot MTSA considering:

- Physical and operational constraints/ barriers;
- The general structure and land use concept for the MTSA;
- Efficient network layout principles, such as providing even spacing between collector roads to maximize future flexibility and connectivity; and
- The opportunity to maximize new access opportunities to boundary system because of significant increase in number of trips generated within the MTSA.

Physical barriers included such things as rail lines, existing bridges/ underpasses, watercourses – things that cannot be connected to and can only be crossed under specific conditions. Operational constraints include such things as existing traffic signals and freeway ramp locations and design. For example, current thinking on roadway operations indicates that minimum preferred spacing between traffic signals in intensification areas is 200m; whereas MTO prefers a minimum 400m from ramp terminals.

Constraints/ barriers influencing the development of the Aldershot MTSA network include:

- GO Rail line;
- Grade-separation on Waterdown Road at GO Rail crossing and QEW crossing; and
- The existing traffic signals.

4.3.1.1 Recommended Street Network

Figure 13 shows the recommended street network for the Aldershot MTSA. The rationale for the recommended network is presented in **Table 13.**

Figure 13: Aldershot GO MTSA – Street Network

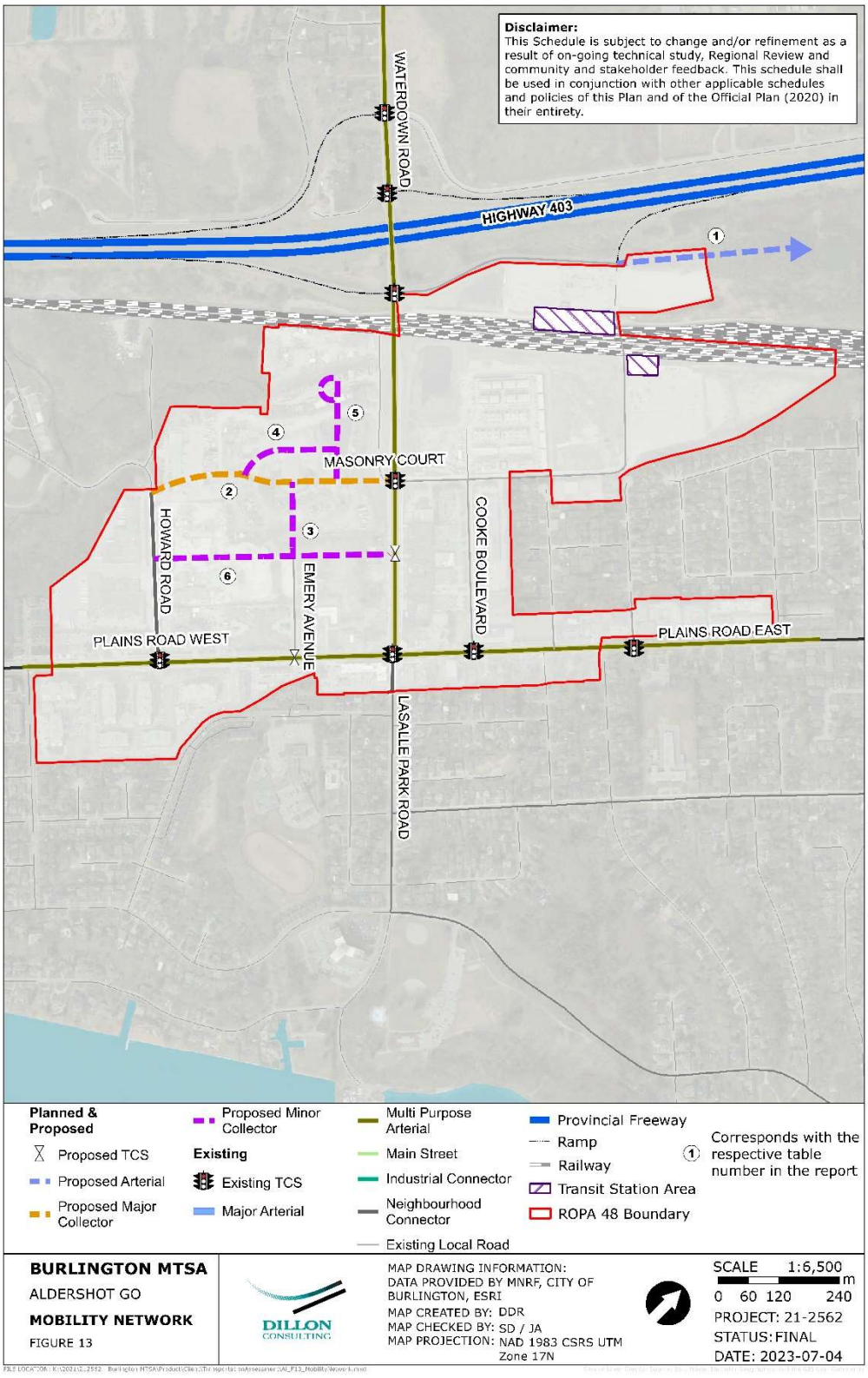


Table 13: Aldershot GO MTSA – Planned/ Proposed Street Network Rationale

Street	Classification	ROW Width	Rationale
South Service Road extension (Street 1)	Arterial	35m	• Connects Waterdown Road to King Road • Improves access to potential development parcels west of King Road and connections from development parcels to GO Station • Creates a multimodal corridor to connect sustainable modes to development • Requires an EA study to confirm need, location and design
Masonry Court extension (Street 2)	Major Collector	30m	• Distributes travelers east-west between the QEW and Plains Road • Creates a multimodal corridor to connect sustainable modes to development
Masonry Court	Major Collector	30m	• Distributes travelers east-west between the QEW and Plains Road • Creates a multimodal corridor to connect sustainable modes to development
Howard Road	Major Collector	30m	• Distributes travelers north-south west of Waterdown Road • Creates a multimodal corridor to connect sustainable modes to development
Emery Avenue	Minor Collector	26m	• Provides access to development parcels • Creates multimodal corridors to connect sustainable modes to development
Cooke Boulevard	Major Collector	30m	• Distributes travelers north-south east of Waterdown Road • Creates a multimodal corridor to connect sustainable modes to development
Streets 3 - 6	Minor Collector	26m	• Provides access to development parcels • Creates multimodal corridors to connect sustainable modes to development

The IMP Preferred Solutions paper provides the following rationale for the South Service Road Extension:

South Service Road Extension (Aldershot GO Station to King Road)

The proposed South Service Road extension from Aldershot GO Station and King Road, just south of Highway 403, is required to facilitate the development of a 49-hectare parcel of land (1200 King Road) that proposes various employment and commercial uses. This multimodal corridor connection will also benefit the overall transportation system by providing an additional multimodal access to Aldershot GO Station, reducing auto demands on Waterdown Road (between North Service Road and Plains Road) and on Plains Road (between Waterdown Road and King Road) as commuters accessing the GO station from the east will be able to use the new and more direct South Service Road extension. It will also provide an additional Active Transportation and Transit link to the Aldershot GO Station thus providing additional

route flexibility for transit and providing cyclists with a safe option to get to/from the Aldershot GO station without having to travel through the Waterdown Road/ Highway 403 interchange. The City has identified a number of significant natural environment constraints in the vicinity of the route for the South Service Road Extension, and as such the proposed South Service Road extension would be subject to a future Environmental Assessment study.

4.3.2 Active Transportation (AT) Network

MTSA AT networks must strongly support and promote sustainable transportation to accommodate the planned development levels. Right of way on the boundary streets is not available to increase auto capacity further. Planning for AT infrastructure is the only way to move people in the quantities that are forecasted for peak commuter hours. Maximum capacity and service for AT trips will be created in the MTSA by implementing a network or complete streets with robust AT infrastructure complemented by major capital projects and pathways where necessary. A robust AT network is also critical to maximize the use of local and GO transit for people traveling longer distances to connect to the MTSA. A network that maximizes capacity and access to transport is critical to create sustainable transit options for the people of Burlington now, and in future growth.

Figure 14 shows the planned AT network for the Aldershot GO MTSA. It features a network of complete streets that connects to Waterdown Road and Plains Road and a number of off-road links in dedicated rights-of-way.

The rationale for the recommended off-street AT connections is presented in **Table 14**.

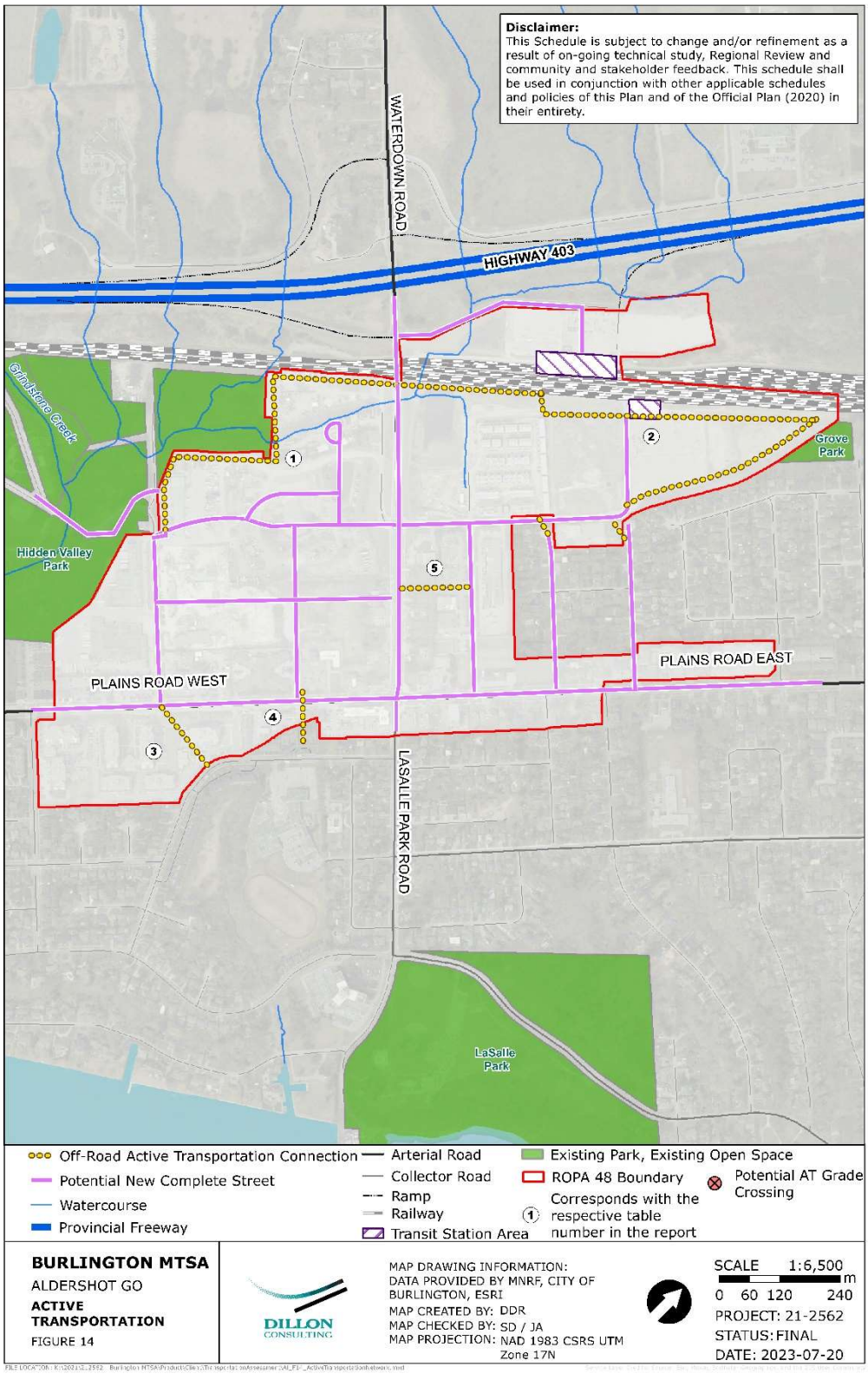
Table 14: Aldershot GO MTSA – Active Transportation Network Rationale

Active Transportation Connection	Rationale
AT Connections 1 & 2	• Creates a linear park for the purpose of recreational AT • Provides AT connections to/from Hidden Valley Park and Grove Park • Provides AT connections to/from Aldershot GO Station
AT Connection 3 -5	• Creates an off-road AT corridor that provides a shorter / more direct route to development parcels • Creates AT connectivity to existing public service facilities outside the MTSA

The off-road Active Transportation connections shown are conceptual in nature; the Transportation Study recommends these connections to improve sustainable transportation within the MTSA area, to support the City's efforts to increase sustainable mode shares and to provide direct high-quality connections to the GO Station areas. Location and design of each facility will be established through future conversations with Metrolinx and local landowners.

The MTSA Active Transportation network relies on the City's commitment to Complete Streets. A complete street is a street designed, built and operated to enable safe access for all users, in that pedestrians, cyclists, transit-users, and motorists of all ages and abilities are able to safely move along and across the right of way. Complete streets foster livability while enhancing the public realm and encouraging sustainable growth patterns.

Figure 14: Aldershot GO MTSA – Active Transportation Network



5.0 Burlington GO MTSA

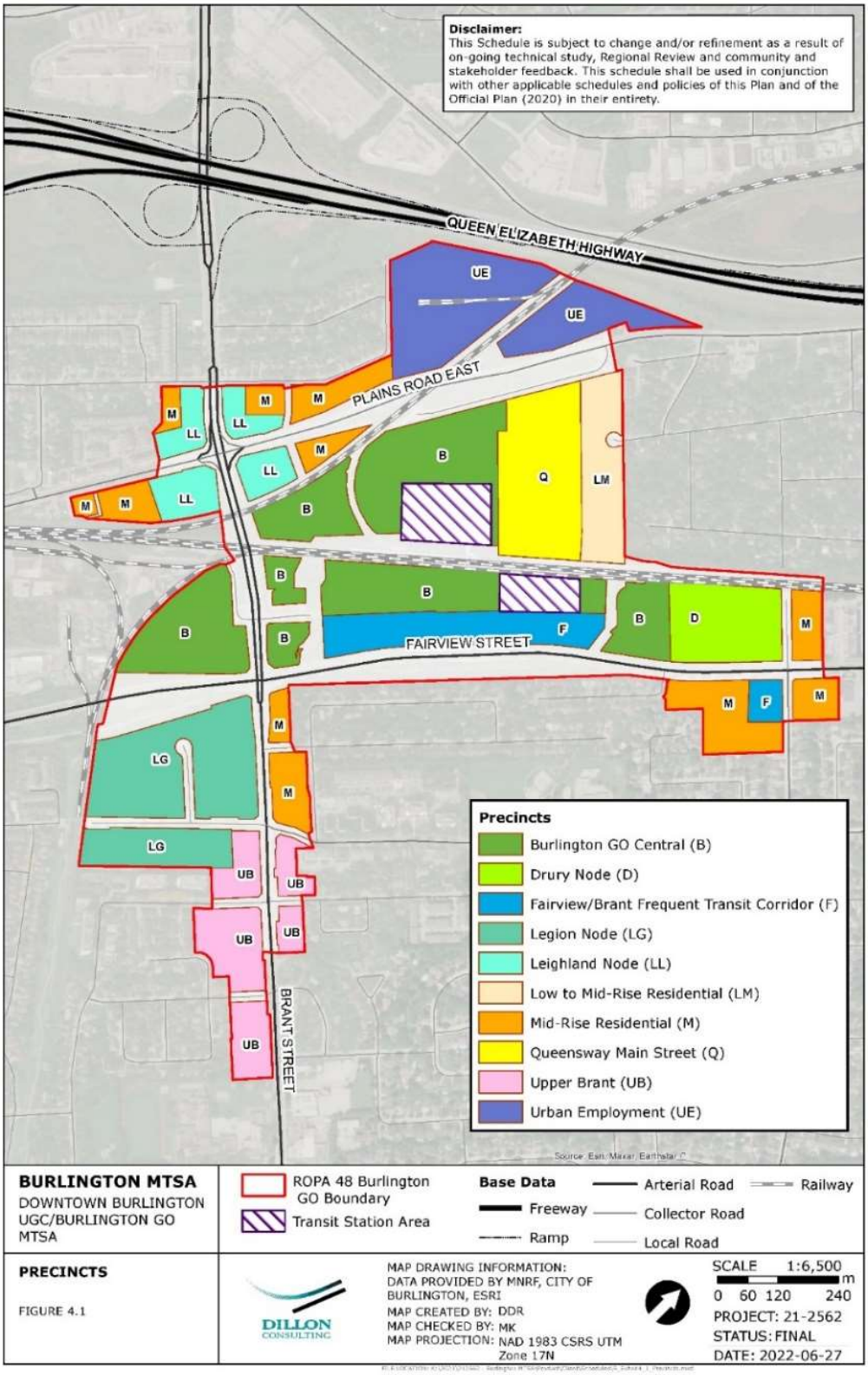
5.1 Precinct Plan

This Transportation Report was prepared based on the land use plan and development concepts for the MTSA that was outlined in the MTSA ASP Planning Study Final Report (June 2022), based off a set of growth assumptions that utilized the best information available at the time for the purposes of analysis. As Dillon and the City continued to refine the land use plan and development concept into 2023, a sensitivity review showed that the refinements did not alter this report's recommendations.

5.1.1 Structure and Land Use

The land use plan for the Burlington GO MTSA contains a number of different precincts. **Figure 15** presents an overview of the study area and the Precinct Plans as shown in the MTSA ASP Planning Study Final Report.

Figure 15: Burlington GO MTSA – Precinct Plan



The precincts are broken down by the development data (Gross Floor Area (GFA), residents, and jobs per site) in **Table 15**.

Table 15: Burlington GO MTSA – Precinct Plan Development Data

Precinct	GFA (000's ft²)					Res. Units	# of Residents	# of Jobs			
	Res.	Office	Retail	Ind.	Total			Office	Retail	Ind.	Total
Burlington GO Central	4,185	1,196	598	0	5,979	4,093	4,912	4,003	500	0	4,504
Mid-Rise Residential*	1,626	90	89	0	1,806	1,590	1,908	363	91	0	454
Leighland Node	1,029	61	121	0	1,211	1,007	1,208	304	152	0	456
Legion Node	697	38	38	0	773	681	818	156	39	0	194
Queensway Main Street	1,242	73	146	0	1,461	1,214	1,457	367	183	0	550
Upper Brant	1,023	146	292	0	1,461	1,000	1,200	734	367	0	1,100
Drury Node	331	41	41	0	413	323	388	166	42	0	208
Urban Employment**	0	0	0	0	0	0	0	0	0	0	0
Fairview/ Brant Frequent Transit Corridor	845	121	241	0	1,207	827	992	606	303	0	910
Total	**10,978**	**1,766**	**1,567**	**0**	**14,311**	**10,735**	**12,882**	**6,699**	**1,677**	**0**	**8,376**

Source: MTSA ASP Planning Study Final Report (June 2022). The data used is based on the best information available at the time for the purposes of the transportation analysis and may not align with the overall growth assumptions that were refined in 2023.

Notes: Res. = Residential
Ind. = Industrial
*The 'Mid-Rise Residential' precinct is a consolidation of 'Low to Mid-Rise Residential' precinct and 'Mid-Rise Residential' precinct.
**The Urban Employment precinct has no values within the table as it does not have any lands available for development or redevelopment

5.1.2 Mode Share Targets

The future mode shares targets for Burlington GO MTSA are based on existing conditions, policy directions, and case studies of similar developments. **Table 16** summarizes the existing and future neighbourhood mode shares and future recommended MTSA mode shares.

Table 16: Burlington GO MTSA – Existing and Future Daily Mode Shares

Travel Mode	Existing (2016) Mode Shares (TTS)	Future (2051) Mode Share Targets	
	Neighbourhood – Plains	Neighbourhood – Plains	MTSA – Burlington GO
Walking	3%	5%	13%
Cycling	1%	5%	9%
Transit	2%	17%	23%
Auto	95%	73%	55%

5.1.3 Trip Generation

For ease of analysis, the Burlington GO MTSA study area was subdivided into ten traffic zones based on the existing transportation network, access points, physical barriers and the proposed development concept. The traffic zones and assumed access points are displayed in **Figure 16.**

Figure 16: Burlington GO MTSA – Traffic Zones

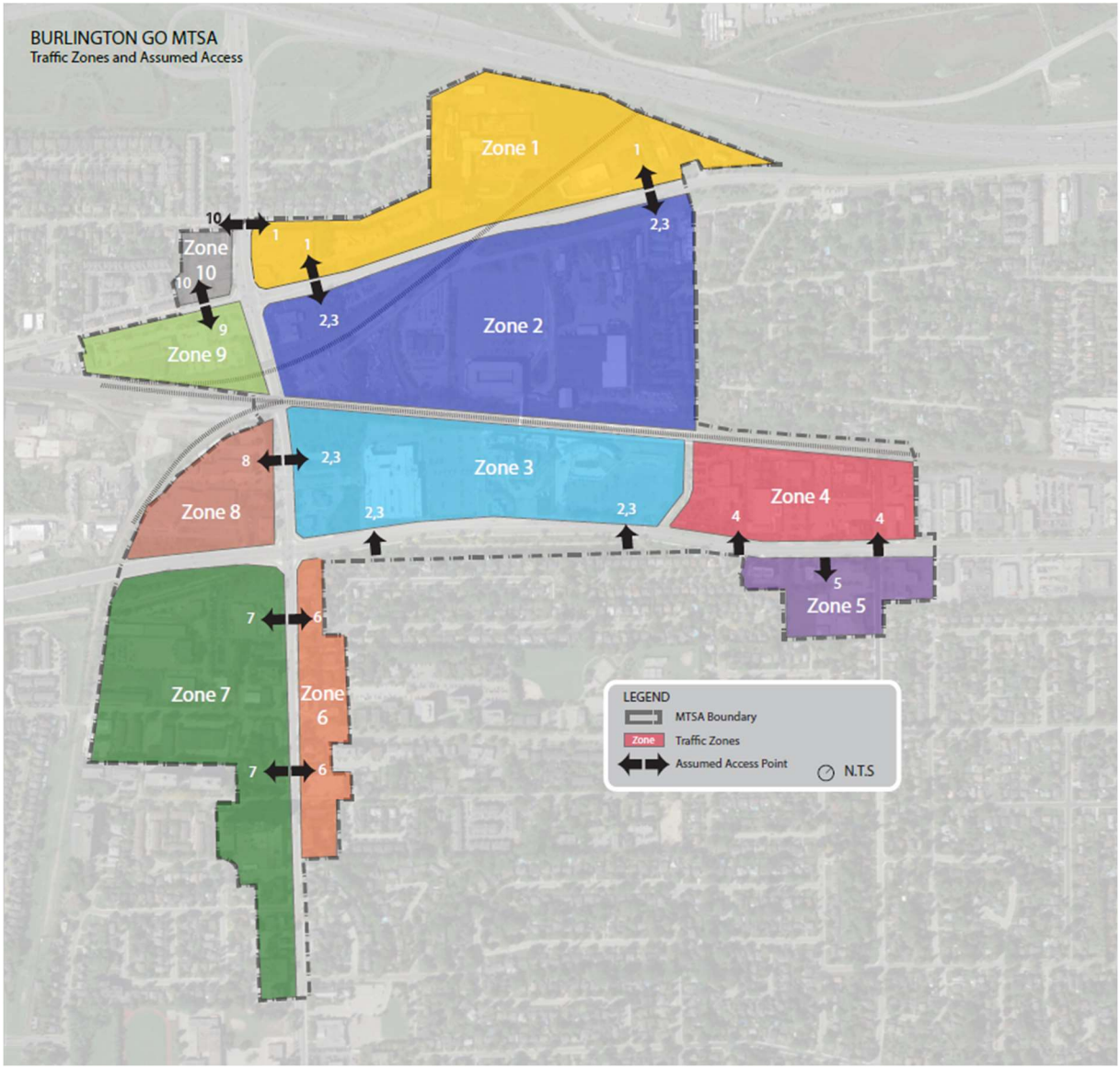


Table 17 summarizes the proposed precincts development data by traffic zone. The final AM and PM peak hour generated person trips by land use for each of the traffic zones are shown in **Table 18** and **Table 19**, respectively.

Table 17: Burlington GO MTSA – Proposed Precincts – Development Data by Traffic Zone

Traffic Zone	Precinct	Office (GFA - ft2)	Retail (GFA - ft2)	Residential (units)
1	Urban Employment	0	0	0
	Mid-Rise Residential	25,809	25,809	454
	Leighland Node	15,137	30,273	252
2	Burlington GO Central	538,122	269,061	1,842
	Mid-Rise Residential	25,809	25,809	454
	Leighland Node	15,137	30,273	252
	Queensway Main Street	73,036	146,071	1,214
3	Burlington GO Central	418,539	209,270	1,433
	Fairview Frequent Transit Corridor	108,671	217,341	744
4	Mid-Rise Residential	3,226	3,226	57
	Drury Node	41,329	41,329	323
5	Mid-Rise Residential	16,131	16,131	284
	Fairview Frequent Transit Corridor	12,075	24,149	83
6	Mid-Rise Residential	12,905	12,905	227
	Upper Brant	58,435	116,870	400
7	Legion Node	38,714	38,714	681
	Upper Brant	87,653	175,305	600
8	Burlington GO Central	239,165	119,583	819
9	Mid-Rise Residential	3,226	3,226	57
	Leighland Node	15,137	30,273	252
10	Mid-Rise Residential	3,226	3,226	57
	Leighland Node	15,137	30,273	252
Total		**1,766,617**	**1,569,118**	**10,735**

Table 18: Burlington GO MTSA – Person Trips by Traffic Zone and Land Use – AM Peak Hour

Traffic Zone	Office		Retail		Residential		Total	
	In	Out	In	Out	In	Out	In	Out
1	71	9	38	23	78	261	187	293
2	1,131	154	319	195	415	1,390	1,865	1,739
3	914	124	288	176	240	804	1,442	1,105
4	77	12	30	18	41	141	148	171
5	49	6	27	17	40	136	117	159
6	123	17	88	53	69	232	280	302
7	219	30	145	88	141	473	506	591
8	415	57	80	49	91	302	586	408
9	31	5	22	14	34	114	87	134
10	31	5	22	14	34	114	87	134
Total	3,062	420	1,059	648	1,183	3,968	**5,304**	**5,036**

Table 19: Burlington GO MTSA – Person Trips by Traffic Zone and Land Use – PM Peak Hour

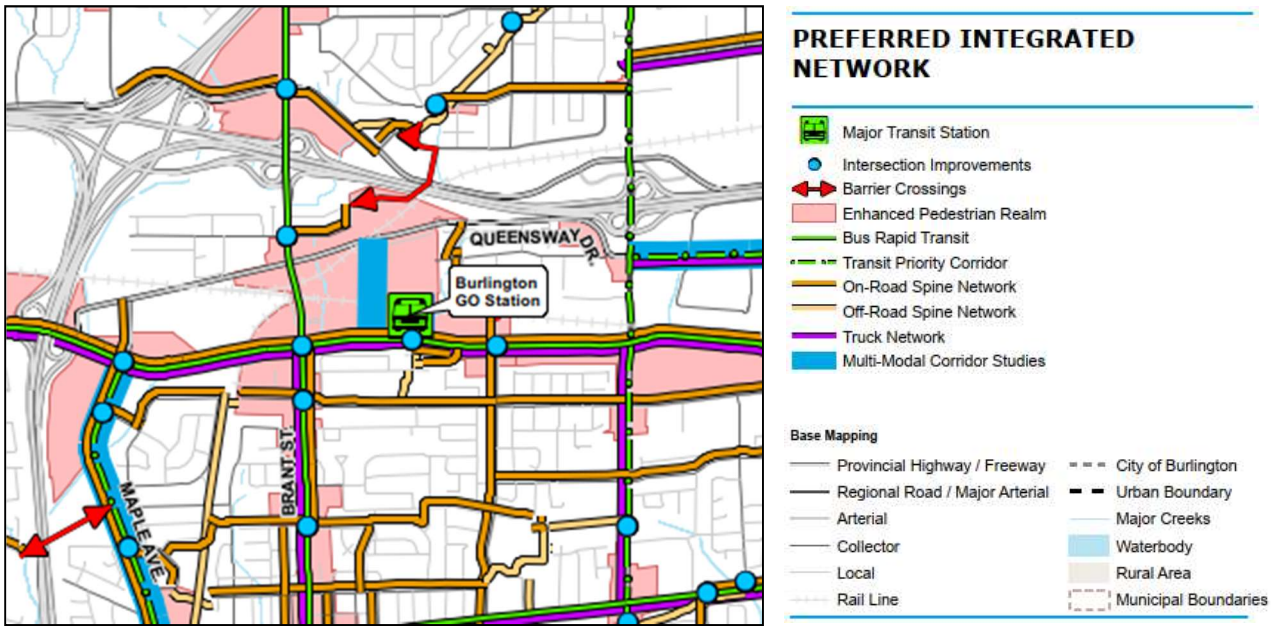
Traffic Zone	Office		Retail		Residential		Total	
	In	Out	In	Out	In	Out	In	Out
1	13	64	119	128	218	139	350	331
2	207	1,010	997	1,080	1161	742	2,365	2,832
3	167	817	903	978	672	429	1,741	2,224
4	16	71	93	102	117	75	226	249
5	9	44	86	92	113	73	207	209
6	23	110	275	297	193	124	491	532
7	40	196	453	491	395	253	888	940
8	75	371	253	275	253	161	581	807
9	8	30	71	77	96	61	175	167
10	8	30	71	77	96	61	175	167
Total	567	2,743	3,321	3,597	3,313	2,118	**7,201**	**8,457**

5.2 IMP Network – Burlington

5.2.1 Street Network

The IMP preferred integrated network (**Figure 17)** does not identify any new roadways within the Burlington GO MTSA study area. The IMP network does include a number of planned sustainable transportation network elements, including: the bus rapid transit and on-road cycling spine network on Fairview Street, the Bus Rapid Transit and the on-road cycling spine network on Brant Street; and the off-road cycling spine network (Barrier Crossing) that crosses the QEW/ Highway 403 just north of the Burlington GO MTSA.

Figure 17: Burlington GO MTSA – IMP Preferred Integrated Network



Brant Street from North Service Road to Dundas Street (just north of the Burlington GO MTSA) is expected to be widened by Halton Region from 4 to 6 lanes to accommodate the proposed BRT with dedicated lanes. Fairview Street and Brant Street are proposed as future Bus Rapid Transit (BRT) corridors, as illustrated in **Figure 17**. Fairview Street east of Burlington GO Station and Brant Street north of Fairview Street are proposed as future BRT with dedicated lanes, while Fairview Street West of Burlington GO Station and Brant Street south of Fairview Street are proposed as BRT with optimized performance.

Ultimately, the future BRT corridors with dedicated lanes will only happen if and when bus volumes dictate their need. BRT typically operate a more reliable and higher-frequency service when compared to a conventional bus route.

5.2.1.1 Boundary Street Network Operations

The City of Burlington, like all GTA municipalities, is going to continue to grow and develop through intensification. The Province of Ontario has made a number of legislative changes to the planning framework with the goal of delivering more homes faster. The City of Burlington, guided by the planning framework and vision of the City's Official Plan is planning to accommodate that growth in compact, sustainable and transit supportive complete communities in close proximity to existing and future infrastructure, including provincial investment in transportation infrastructure at the GO Stations.

Several of the turning movements at major intersections in the study area (i.e. Brant Street at North Service Road, Brant Street at Plains Road and Brant Street at Fairview Street) that show poor performance under future total conditions are either at, or nearing, capacity today. This means that any

growth in vehicular demands in the study area (background or development-related) will cause heavily congested conditions in the near future. It is anticipated that the automobile road network within the Burlington GO MTSA will continue to perform poorly under total future conditions. With background traffic growth and the addition of thousands of site trips, the study area road network is expected to be very congested during the peak periods.

Mitigation will be required to address the significant congestion in the study area network. However, the selection of mitigation strategies must also take into account that there are no plans, or desire, to widen City owned roadways for the sole purpose of increasing auto capacity.

Given this limitation, the following is a discussion of recommended future actions and mitigation strategies to improve mobility under future total conditions.

Reduce Vehicular Travel Demands

Since there are already a number of turning movements nearing capacity today, reducing auto demands must be a key part of the strategy to minimize future congestion. When roughly comparing the existing condition volumes to the 2051 total future volumes at two key intersections – Brant Street at Plains Road and Brant Street at Fairview Street – the total reduction in critical movement volumes required to bring all critical movements back to "just below capacity conditions" (i.e. v/c ratios less than 1.2) is a 15-25% critical movement volume reduction in the AM peak and a 25-30% critical movement volume reduction in the PM peak.

The 2051 Plains neighbourhood mode share profile targets an auto reduction of 20% over existing conditions. If achieved or slightly exceeded, this reduction in existing demands could provide a substantial portion of the auto capacity required to support additional development.

However, achieving such significant reductions in vehicle demands will require an aggressive, robust, and effective transportation demand management (TDM) program. Therefore, the City should work to develop TDM programs to reduce vehicle demands on roads within the study area. Additionally, the City should require site-specific TDM strategies for the proposed concept.

Manage Peak Hour Congestion

Despite efforts, key arterial corridors are and will remain congested. A traffic management plan (formed in partnership with Region) will need to be enacted on Brant Street, Plains Road and Fairview Street. Establishing automated and responsive traffic signal control, digital data collection, Digital banners for real-time communication will ensure flow of passengers and goods is maintained.

5.2.2 Active Transportation (AT)

Fairview Street, Brant Street, Grahams Lane/ Prospect Street, Drury Lane (south of Fairview Street), and Leighland Road (east of Brant Street) are proposed to be part of the on-road cycling spine network

(as illustrated in **Figure 17**). Fairview Street, Brant Street and Prospect Street are proposed to have protected bikeways, while Drury Lane is proposed to have painted bike lanes and Grahams Lane and Leighland Road are proposed to be local street bikeways.

The intersections of Brant Street and Leighland Road, Brant Street and Fairview Street, Brant Street and Grahams Lane/ Prospect Street and Fairview Street and Drury Lane are proposed to become protected intersections for cyclists (as illustrated in **Figure 17**), while intersection improvements for pedestrians and cyclists are proposed for a mid-block crossing of Fairview Street (at the Burlington GO driveway).

An active transportation barrier crossing is also proposed between Leighland Road and Industrial Street, crossing over the QEW/ Highway 403.

5.3 Burlington MTSA Transportation Networks

The transportation networks in MTSA will change significantly with redevelopment and intensification of lands. The City requires a street and pathway network that provides access, and accommodates mobility safely for all modes of transportation.

5.3.1 Street Network

A street network was developed for the Burlington MTSA considering:

- Physical and operational constraints/ barriers;
- The general structure and land use concept for the MTSA;
- Efficient network layout principles, such as providing even spacing between collector roads to maximize future flexibility and connectivity; and
- The opportunity to maximize new access opportunities to boundary system because of significant increase in number of trips generated within the MTSA.

Physical barriers included such things as rail lines, existing bridges/ underpasses, watercourses – things that cannot be connected to and can only be crossed under specific conditions. Operational constraints include such things as existing traffic signals and freeway ramp locations and design. For example, current thinking on roadway operations indicates that minimum preferred spacing between traffic signals in intensification areas is 200m; whereas MTO prefers a minimum 400m from ramp terminals.

Constraints/ barriers influencing the development of the Burlington MTSA network include:

- GO Rail line and CN Rail line;
- Grade-separation on Brant Street at GO Rail crossing, Plains Road at CN Rail crossing and Fairview Street at CN Rail crossing; and
- The existing traffic signals.

5.3.1.1 Recommended Street Network

Figure 18 shows the recommended street network for the Burlington MTSA. The rationale for the recommended network is presented in **Table 20.**

Figure 18: Burlington GO MTSA – Street Network

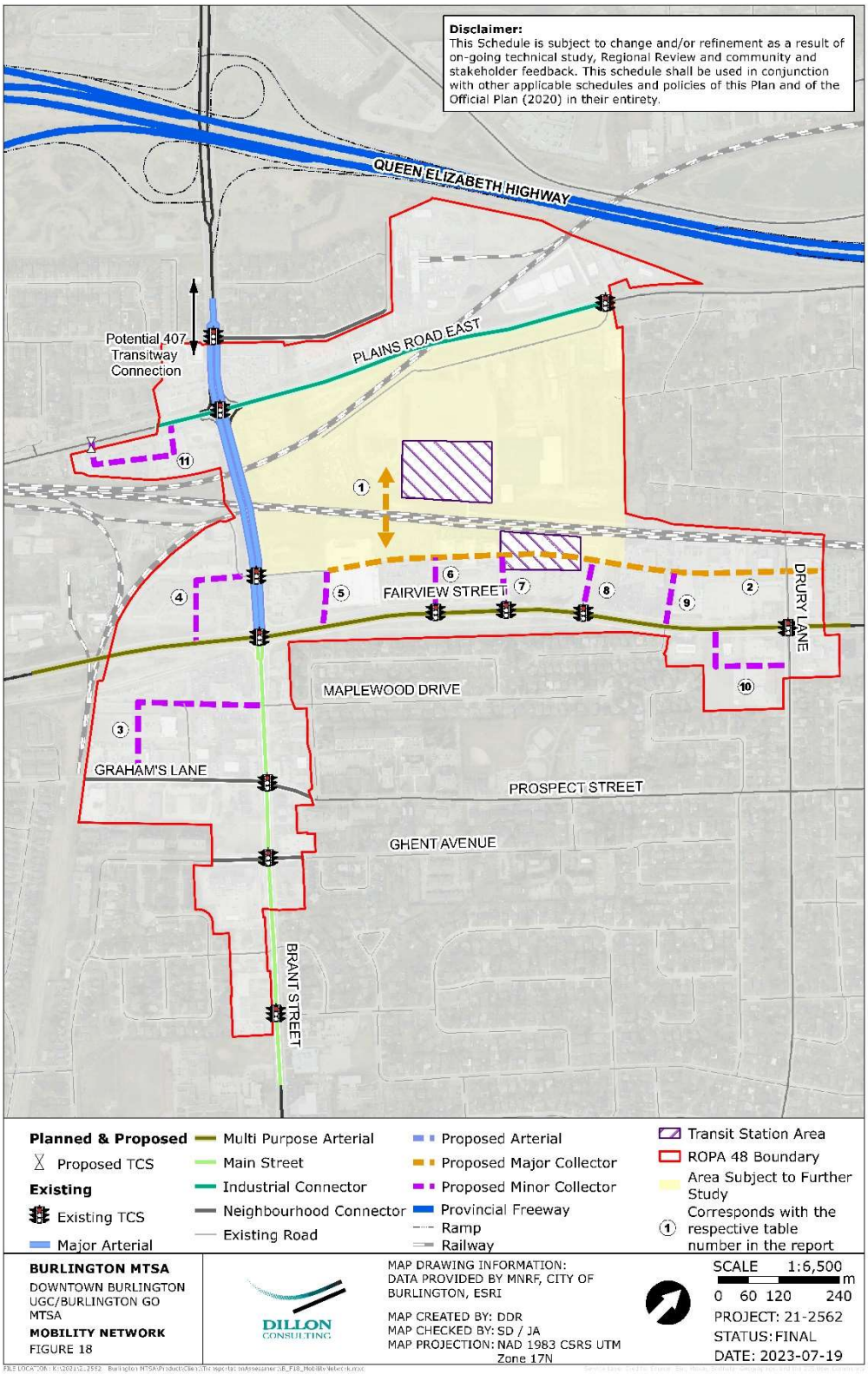


Table 20: Burlington GO MTSA – Planned/ Proposed Street Network Rationale

Street	Classification	ROW Width	Rationale
Street 1	Major Collector	30m	• Connects Fairview Street to Plains Road • Ties into Queensway Drive south of Plains Road • Includes a new crossing of GO Rail line • Distributes travelers north-south east of Brant Street • Creates a multimodal corridor to connect sustainable modes to development • Requires an EA study to confirm need, location and design
Street 2	Major Collector	30m	• Connects Brant Street to Drury Lane • Distributes travelers east-west between GO Rail line and Fairview Street • Creates a multimodal corridor to connect sustainable modes to development
De Pauls Lane	Major Collector	30m	• Connects Brant Street to Drury Lane • Distributes travelers east-west between GO Rail line and Fairview Street • Creates a multimodal corridor to connect sustainable modes to development
Grahams Lane	Minor Collector	26m	• Provides access to development parcels • Creates multimodal corridors to connect sustainable modes to development
Drury lane (north of Fairview)	Minor Collector	26m	• Provides access to development parcels • Creates multimodal corridors to connect sustainable modes to development
Streets 3 - 11	Minor Collector	26m	• Provides access to development parcels • Creates multimodal corridors to connect sustainable modes to development

Street 1 (Fairview Street to Plains Road)

The proposed street 1 from Fairview Street to Plains Road is needed to accommodate the planned travel demands from the Precinct. It creates another connection from the Burlington GO Central Precinct north of the GO Rail tracks to the boundary street system. This multimodal corridor connection will also benefit the overall transportation system by providing an additional Active Transportation and Transit link to the Burlington GO Station thus providing additional route flexibility for transit and providing cyclists with a safe option to cross the GO Rail line without having to travel on Brant Street. A number of physical constraints within the Burlington MTSA, including the of Brant Street underpass, the CNR rail line overpass and the Plains Road overpass, make connecting a new crossing of the GO Rail line to the

boundary street system very challenging. As such, this connection would be subject to a future Environmental Assessment study to confirm the need, ultimate location, and cross-section requirements.

Area Subject to Further Study

The area north of the future east-west connection (street 2), south of Plains Road and west of Brant Street will be subject to a future study to determine the transportation network elements. This future study and comprehensive block planning exercise will determine transportation connections within this area and will evaluate the opportunities (including street 1) for a crossing of the rail corridor to enable access and connectivity within and out of the Burlington GO Central precinct.

5.3.2 Active Transportation (AT) Network

MTSA AT networks must strongly support and promote sustainable transportation to accommodate the planned development levels. Right of way on the boundary streets is not available to increase auto capacity further. Planning for AT infrastructure is the only way to move people in the quantities that are forecasted for peak commuter hours. Maximum capacity and service for AT trips will be created in the MTSA by implementing a network or complete streets with robust AT infrastructure complemented by major capital projects and pathways where necessary. A robust AT network is also critical to maximize the use of local and GO transit for people traveling longer distances to connect to the MTSA. A network that maximizes capacity and access to transport is critical to create sustainable transit options for the people of Burlington now, and in future growth. The design of the network is outlined below.

Figure 19 shows the planned AT network for the Burlington GO MTSA. It features a network of complete streets that connects to Brant Street, Plains Road and Fairview Street and a number of off-road links in dedicated rights-of-way.

The rationale for the recommended off-street AT connections is presented in **Table 21**.

Table 21: Burlington GO MTSA – Active Transportation Network Rationale

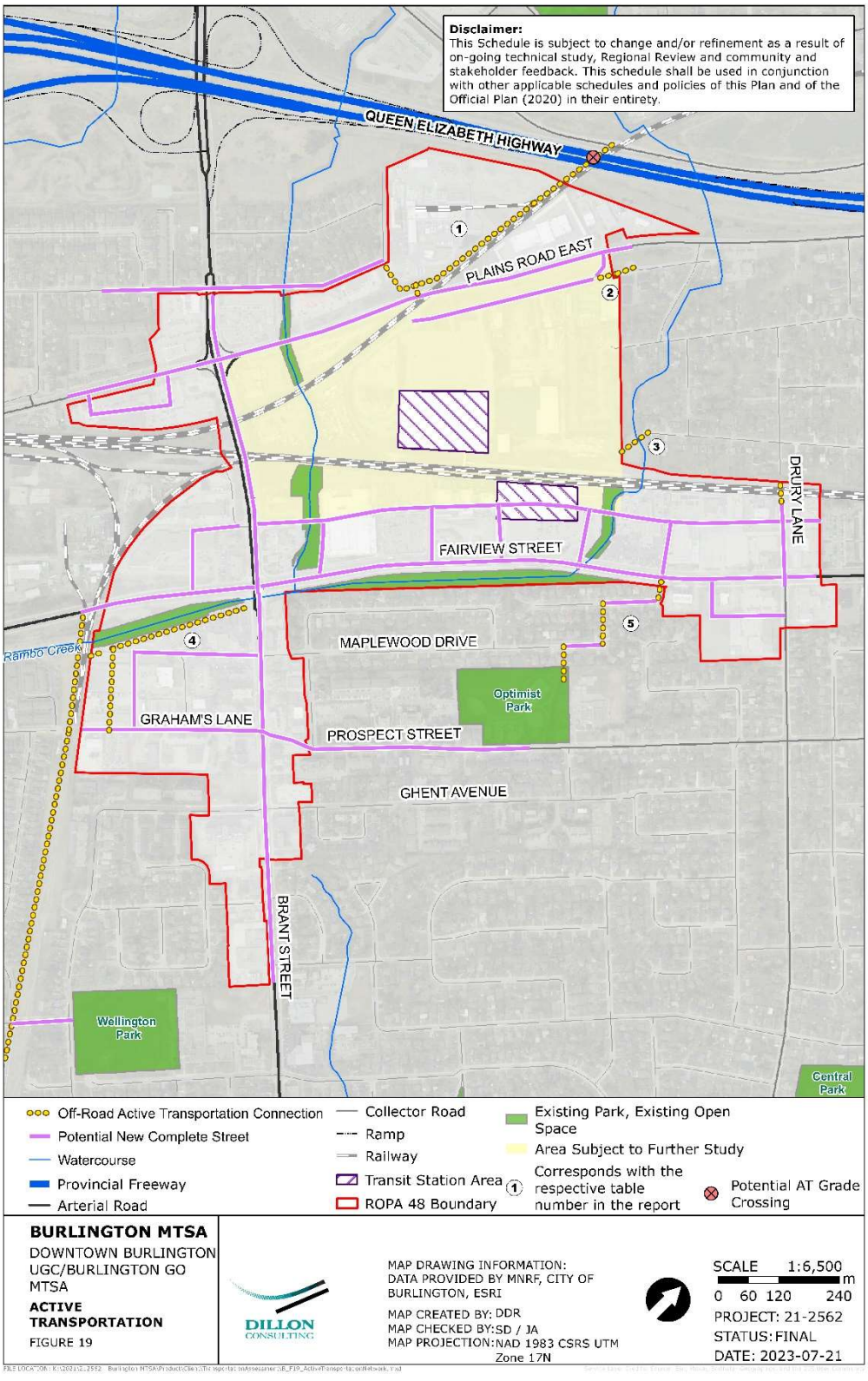
Active Transportation Connection	Rationale
AT Connection 1	• Provides AT connections to/from the proposed AT crossing of Hwy 403 / QEW
AT Connection 2, 3 & 5	• Creates an off-road AT corridor that provides a shorter / more direct route to development parcels
AT Connection 4	• Creates an off-road AT corridor that provides a shorter / more direct route to development parcels • Provides AT connections to/from the Maple Trail

The off-road Active Transportation connections shown are conceptual in nature; the Transportation Study recommends these connections to improve sustainable transportation within the MTSA area, to

support the City's efforts to increase sustainable mode shares and to provide direct high-quality connections to the GO Station areas. Location and design of each facility will be established through future conversations with Metrolinx and local landowners.

The MTSA Active Transportation network relies on the City's commitment to Complete Streets. A complete street is a street designed, built and operated to enable safe access for all users, in that pedestrians, cyclists, transit-users, and motorists of all ages and abilities are able to safely move along and across the right of way. Complete streets foster livability while enhancing the public realm and encouraging sustainable growth patterns.

Figure 19: Burlington GO MTSA – Active Transportation Network



6.0 Supporting Services

Since the planned daily mode shares for each of the MTSA is 23% transit and 22% active (13% walk and 9% cycle), supporting services must be a key part of the strategy to make non-auto modes attractive. The following services would make non-auto modes attractive by providing first mile last mile options and access to an automobile if necessary.

6.1 Transit

GO Transit – The GO Transit Regional Express Rail (RER), also known as GO Expansion, (already underway) will provide 15-minute, two-way and all-day service along the Lakeshore West line (Downtown Toronto via Union Station to Aldershot GO Station).

Burlington Transit – Local transit system planning within each MTSA should be conducted to ensure the local transit routes servicing each MTSA have appropriate route configurations, stop locations, headways, etc. to sufficiently serve the future transit demand within each MTSA. Local transit service within each of the MTSA will enable local connections and multimodal trips, allowing people to use local transit for only part of a trip, such as accessing rapid and/or regional transit. The proportion of GO passengers using Burlington Transit can be increased by improved connections between the GO station and Burlington. Route structures should be improved with attention to trip origin-destination information. This allows for optimization of routes based on user travel within the region. Study of on demand services should be a future priority to improve transit opportunities

6.2 Shared Micromobility

Shared micromobility is an umbrella term for fleets of shared bicycles and e-scooters, although there are examples of other shared micromobility devices. Shared micromobility has become a common mobility option in many cities around the world. They allow the public to have access to micromobility devices that are available for short-term rentals via memberships or as a casual, one-time user. Shared micromobility enables multimodal and first mile/ last mile trips, allowing people to use devices for only part of a trip, such as accessing transit, and incorporate other modes. It also provides access to maintained devices, removing the need to own, maintain and store a device.

Intensification within the MTSA will continue as development progresses. This will cause an increase in short trip within MTSAs and surrounding areas. GO stations are a great opportunity for shared/ micromobility hubs as it is a natural transfer point between transportation modes. Development of micromobility through a city-wide review will be recommended through Burlington's IMP.

6.3 Car Share

Car share is another growing mobility option which is oriented to providing people with access to cars, with an emphasis on short trips. Car share systems are most often owned by a private company or non-profit operator who own and are responsible for managing a fleet of cars that are available to members of the system. Car share members most often just pay for the distance and temporal length of their trip, with gas, insurance, and other vehicle costs covered by the operator through that fee. Car share enables people to choose to not own a car but still have access to a car, or provides flexibility for families to reduce the number of cars they own, by having access to additional vehicles when needed. Car share offers more flexibility than car rentals as they can be rented for an hour, and do not require additional paperwork or going to a central location to access the car.

GO stations provide opportunity for shared/ micromobility hub as it is a natural transfer point between modes. Adopting a car share strategy would prove the city with another tool to further reduce driving and parking within MTSAs. It is recommended that a Car Share strategy for MTSA be reviewed through City-wide review micromobility.

7.0 Supporting Programs

7.1 Transportation Demand Management (TDM)

A TDM Plan – consistent with Burlington's city-wide TDM Strategy and Action Plan – must be developed for each of the MTSAs. The TDM plans should feature a Transportation Management Association (TMA) to provide effective, active, local leadership of the MTSA TDM plan. It should consider the mode share targets for the MTSA and the required mode shift. The TDM plans must identify strategies for increasing short trips (or reducing average trip length), reducing car ownership, increasing auto occupancy, and increasing attractiveness of sustainable transportation.

7.2 Strategic Parking Management

Travel characteristics in Burlington currently demonstrate a high dependence on auto use, even for trips that could reasonably be accomplished by more sustainable modes. Over the long term, the mode share profiles for the MTSA areas in Burlington are going to evolve to be significantly less reliant on cars to accommodate the travel demands of the planned growth. However, the pace at which these changes in travel characteristics occur is uncertain and thoughtful control of parking supply is one of the key levers that can be used for accomplishing the required shift.

Cities undergo physical change (in their built form: their infrastructure and land uses, etc.), and they undergo cultural change (in the demographics, values and priorities of their residents, employers and employees). If physical change advances too quickly before there is time for aspects of the established culture to evolve, there can be negative public feedback around the physical changes which are occurring. Similarly, if cultural change outpaces physical change, governments are perceived as not doing their job. In the context of parking, the key is to advance both by regularly monitoring parking supply and demand within the MTSAs over time and updating the standards accordingly.

It is recommended that the City develop a monitoring program to ensure that the standards for parking effectively satisfy market demands and achieve the mobility and land use objectives for the MTSAs. The monitoring program should consider parking management standards and best practices from other growth centres and urbanizing communities and should also assess how well the current standards address local needs. The monitoring program should also assess the effectiveness of bicycle, micro mobility and EV parking standards as well as on-street parking and short-term loading standards for the MTSAs. The monitoring program may also identify opportunities for City-owned parking.

8.0 Recommended ASP Policy Framework

8.1 Policy Approach

The following section translates the technical commentary, analysis and recommendations outlined in the previous sections into policies that can be easily incorporated in the ASP policy framework. For organization purposes, this section envisions a set of general transportation policies that would apply to all three MTSAs, along with a complementing set of area specific policies and plans that apply uniquely to each MTSA.

8.2 General Transportation Policies

8.2.1 Street Hierarchy

The Transportation Report proposes a number of new streets in the MTSA study areas. The existing City of Burlington street hierarchy/ classifications, as shown in 2020 Official Plan Schedule O-1 Classification of Transportation Facilities – Urban Area, were reviewed to determine the appropriate street classifications for the new streets.

Schedule O-1 includes several street classes that are potentially relevant to the MTSA transportation planning studies:

- Major Arterial;
- Multi-purpose Arterial;
- Urban Avenue;
- Main Street;
- Industrial Connector;
- Neighborhood Connector; and
- Industrial/ Commercial Local Street.

The existing hierarchy does not include any Collector street classifications that are appropriate for the MTSA land use context (intensifying areas, priority on high level of service to Active and Sustainable Transportation, design features supportive of adjacent commercial uses). Two new Street Classifications are identified to provide clear guidance on the intended planning, design and operational assumptions for the new MTSA streets and are described in **Table 22**. The City should update Schedule O-1 / Table 2 and related policies of the Official Plan to incorporate the two additional street classifications, along with the associated ROW widths identified in **Table 6**, **Table 13** and **Table 20** for the MTSA networks shown on **Figure 20**, **Figure 22** and **Figure 24**. In addition to this, further study of City's existing arterials (Plains Road East, Fairview Street, Brant Street and Appleby Line) will be required to confirm the preferred design for each link based on their revised function as MTSA connectors / complete streets.

Table 22: Street Classification Function

Street Classification	ROW Width	Function	AT Assumptions		Design Speed (kph)
			Cycling Provisions	Pedestrian Provisions	
MTSA Mixed Use/ Commercial Connector	30m	• A community "Main Street" or "High-street"; street balances mobility and access; • Moves moderate to high volumes of cycling, transit and vehicle movements; • Balances priority of all modes; • Traditionally "auto-oriented" land use, but often subject to intensification or redevelopment; and • Likely to have mixed, but predominantly commercial land-use.	Min. 1.5m protected cycle track	Min. 1.8 m pedestrian clearway + 1.5m planting and furnishing zone	50
MTSA Mixed Use/ Commercial Distributor	26m	• A community street that provides 'rear' service and access functions to adjacent commercial and residential properties • Moves low to moderate volumes of vehicular traffic • High level of service for walking and cycling • Provides an attractive environment that complements adjacent main or civic streets	Wide Lanes – sharrows	Min. 2.0 m pedestrian clearway + 1.5m planting and furnishing zone	40

Flexible Streets

The City of Burlington Official Plan supports the use of a "Flexible Street" or "Flex Street" design approach to street design under the appropriate context and urban design conditions. As per the Official Plan:

Flex Street - Those portions of a City public-right-of-way used primarily for vehicular activities which are designed so as to function either wholly or partially, as desired, for vehicular-centric activities and/or pedestrian, public gathering and/or public event functions through the use of design elements including, but not limited to, bollards, flexible on-street parking configurations, pavement materials, enhanced streetscapes and/or modified curbs.

MTSA street networks will potentially provide strong opportunities to employ a Flex Street design approach in areas where there a desire to support ground-floor retail and/or integrate the design of private space with public right-of-way.

Guidelines for identifying appropriate locations for Flex Streets and executing design studies will be provided in the future Complete Street Design Guide.

New Streets

The existing and planned road network for each MTSA identifies the new major street improvements (all of which are required to be dedicated as public streets) that are anticipated from a circulation and network connectivity perspective. As development occurs, the expectation is that additional local streets (all of which are required to be dedicated as public streets) will be needed, allowing for a finer grain street grid pattern that will help to implement the mobility objectives within each MTSA. These new local streets are not presently identified in the ASP and will be added at the plan of subdivision/site plan stage of the development process. The City should consider the following criteria when making decisions related to new additional local public roads:

- Local roads should be spaced between 150 metres up to a maximum of approximately 200 metres apart, allowing for relatively convenient access to local transit stops and the broader network.
- Local road right of way width should be sufficient enough to accommodate sidewalks on both sides of the street, cycling infrastructure and/or any multi-use path connections (as required). For planning purposes, the minimum width for a local road should be approximately 20 metres, depending on function/design.
- Local roads should be designed to avoid the creation of dead-end streets or cul-de-sacs to maximize street connectivity.
- Local roads should avoid the creation of lay-by lanes which result in increased street widths and decreased pedestrian space within the sidewalk and boulevard area of the street[1].

[1] While generally not desired, there may be circumstances such as schools or daycares where high numbers of drop-offs and legitimate passenger safety concerns may require the use of lay-by lanes to facilitate passenger drop-off and pick up.

8.2.2 Active Transportation

The active transportation networks within the three MTSAs are planned to provide direct and safe connections to the City's three GO Transit Station as well as transit stops, multi-use trails, public spaces and parks, schools, mixed use areas, employment areas and other community uses. Each MTSA ASP incorporates a series of local area improvements intended to enhance overall connectivity within and through the area. Improvements to the active transportation network, combined with a complete streets approach for new/ existing roads and the incorporation of TDM measures at the site level are intended to complement the overall ridership growth objectives, as well as improve the safety and overall efficiency for pedestrian and cyclists.

8.2.3 Transportation Demand Management

8.2.3.1 TDM Plan

The City will develop a TDM Plan, consistent with Burlington's city-wide TDM Strategy and Action Plan for each of the MTSAs. The TDM plans should feature a Transportation Management Association (TMA) to provide effective, active, local leadership of the MTSA TDM plan. It should consider the mode share targets for the MTSA and the required mode shift. The TDM plans must identify strategies for increasing short trips (or reducing average trip length), reducing car ownership, increasing auto occupancy, and increasing attractiveness of sustainable transportation.

8.2.3.2 Interim Approach

Until such time as the TDM Plan is completed, the City will use the TDM policies outlined in the current Official Plan to guide decision-making. Given the importance of connectivity to transit, the City will prioritize TDM measures which enhance first mile/ last mile connectivity, such as micromobility infrastructure, car share/ bike share programs and site level connections to the planned active transportation.

8.2.4 GO Station Design and Integration

Burlington's three GO stations will continue to evolve over time, as Metrolinx makes improvements to its services. The City will work proactively with Metrolinx to ensure that future physical improvements to the station areas support the broader objectives for each MTSA, including, but not limited to:

- Improving station access for pedestrians, cyclists, transit users, local transit vehicles, kiss and ride and carpool users;
- Incorporating wayfinding improvements;
- Implementation of micromobility infrastructure;
- Enhancement of landscaping, including incorporation of shade trees and native plant species; and
- Incorporation of sustainable design elements.

8.2.5 Strategic Parking Management

8.2.5.1 Initial Approach

The following parking standards should be considered for the City's Community Planning Permit System By-Law[2]:

Parking Standards

Type of Development	No of Parking Spaces Minimum	No of Parking Spaces Maximum
Mixed Use or Apartment Building, Bachelor Unit	0.70 parking spaces per dwelling unit plus 0.15 visitor spaces per dwelling unit	0.85 parking spaces per dwelling unit plus 0.15 visitor spaces per dwelling unit
Mixed Use or Apartment Building, 1 Bedroom Unit	0.80 parking spaces per dwelling unit plus 0.15 visitor spaces per dwelling unit	1.00 parking spaces per dwelling unit plus 0.15 visitor spaces per dwelling unit
Mixed Use or Apartment Building, 2 Bedroom	1.00 parking spaces per dwelling unit plus 0.15 visitor spaces per dwelling unit	1.20 parking spaces per dwelling unit plus 0.15 visitor spaces per dwelling unit
Mixed Use or Apartment Building, 3 Bedroom or more	1.2 parking spaces per dwelling unit plus 0.15 visitor spaces per dwelling unit	1.4 parking spaces per dwelling unit plus 0.15 visitor spaces per dwelling unit

Reduced Rates for Affordable Housing / Rental Housing

Where a dwelling unit qualifies as an affordable housing dwelling unit (and/or rental unit), the minimum parking space rate and the maximum parking space rate for the dwelling unit may be reduced by 30% of the standard minimum and maximum parking space rates for the applicable dwelling unit type (this reduction does not apply to the visitor Parking Space per dwelling unit rates).

[2] Prior to implementing the initial standards, the City may wish to refine the above-noted standards based on further study and feedback. The above-noted standards are based on a high level review of Richmond Hill Centre Hill Centre zoning, City of Hamilton Transit Oriented Corridor zoning, Town of Oakville zoning by-law, City of Kitchener Urban Growth Centre and Mixed Use zones (by law 2019-51) and the draft Bowmanville West Major Transit Station Area Secondary Plan and Zoning by-law Amendment (Clarington).

Car Share Spaces

The minimum parking space requirement may be reduced by up to 3 parking spaces for each dedicated car-share parking space. The limit on the parking space reduction is calculated as the greater of:

- 4 x (total number of units / 60), rounded down to the nearest whole number; or
- 1.0 parking space.

8.2.5.2 Monitoring

The CPPS framework is a flexible tool that will allow for some variation in standards, accordingly as part of the program for monitoring the implementation of the City's CPPS, the City should study, monitor and revise the parking standards to ensure that are able to effectively satisfy market demands and achieve the mobility and land use objectives of the ASP/CPPS.

8.2.6 Transportation Impact Study

The implementing ASP OPA and related CPPS should include guidance for Traffic Impact Study(ies) (TIS) to accommodate development applications. The TIS should examine the impact of the proposed development on operations of the surrounding existing and planned multi-modal transportation network. Depending on the findings of the TIS, specific improvements to the network may be required before development applications are approved.

8.3 Area Specific Plan Policies

8.3.1 Appleby GO MTSA ASP

8.3.1.1 Street Network

The planned street network for the Appleby GO MTSA is illustrated on **Figure 20**. This figure illustrates the proposed street network and the existing streets that require upgrade / additional right-of-way width as identified in **Table 6**. The planned street network will be implemented through an OPA.

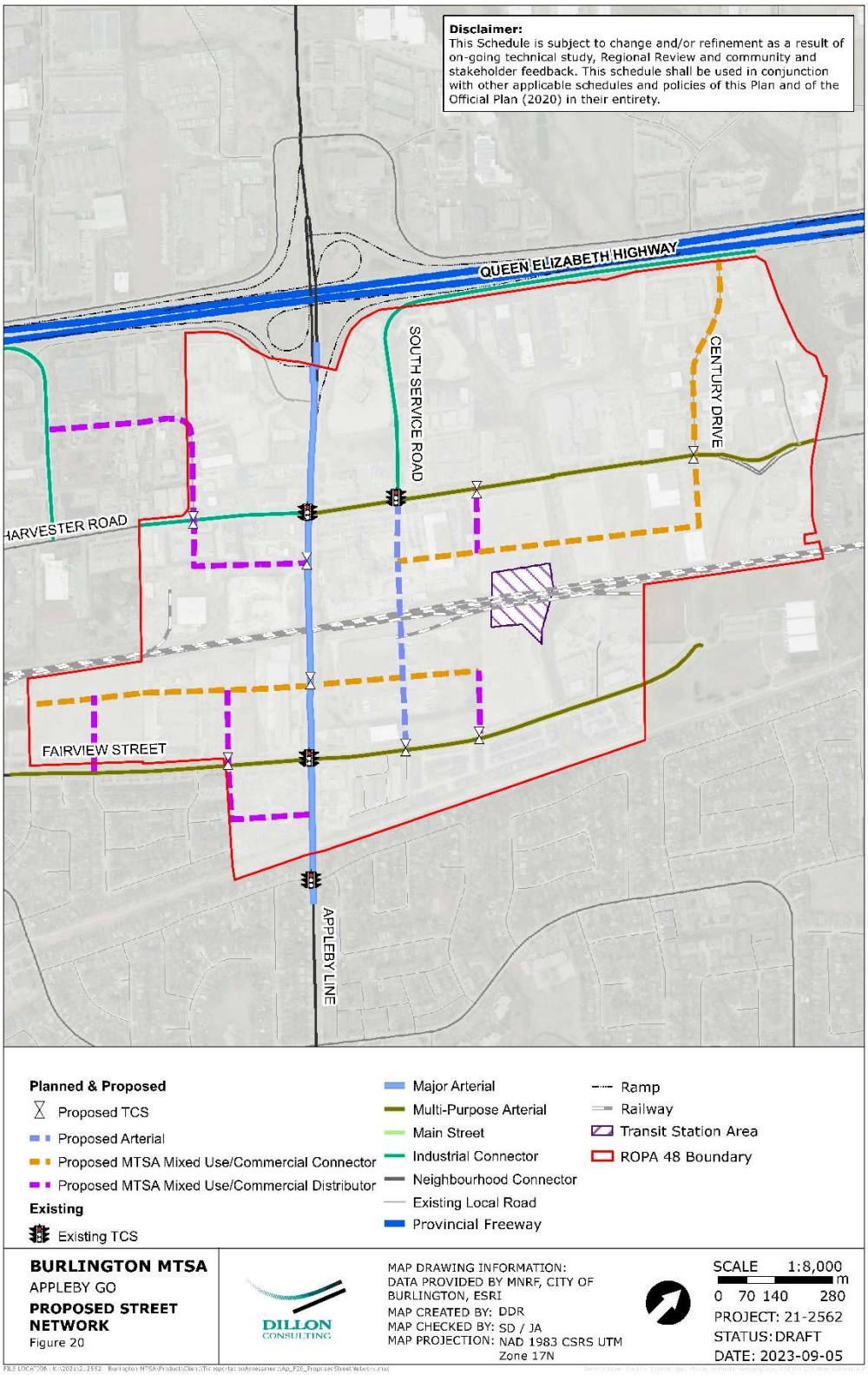
The location of new planned streets are conceptual and the ultimate location of any new streets, along with their design will be subject to further review through Planning Act application or Environmental Assessment Act processes, as the case may be. The design or improvement to any street within the ASP area shall incorporate the design parameters identified in **Section 8.2**.

The following improvements are planned for the area:

1. A new north/south street connection across the rail corridor between Fairview Street and Harvester Road, east of Appleby Line to replace the extension of Fairview Street through Sherwood Forest Park. This connection is subject to future study to confirm the need, ultimate location, and cross-section requirements, this new north-south connection will provide many benefits to the transportation system and will improve access for all modes.

2. Appleby Line and Fairview Street are proposed as future Bus Rapid Transit (BRT) corridors with dedicated lanes, and Harvester Road is proposed as a future Transit Priority Corridor. The proposed BRT with dedicated lanes on Fairview Street will convert existing vehicle lanes (one lane per direction) to transit lanes, while the proposed BRT with dedicated lanes on Appleby Line will widen Appleby Line from 4 to 6 lanes to accommodate the additional transit lanes.
3. A series of Mixed Use/ Commercial Connectors and Distributors intended to facilitate access to various development lands.

Figure 20: Appleby GO MTSA Proposed Street Network

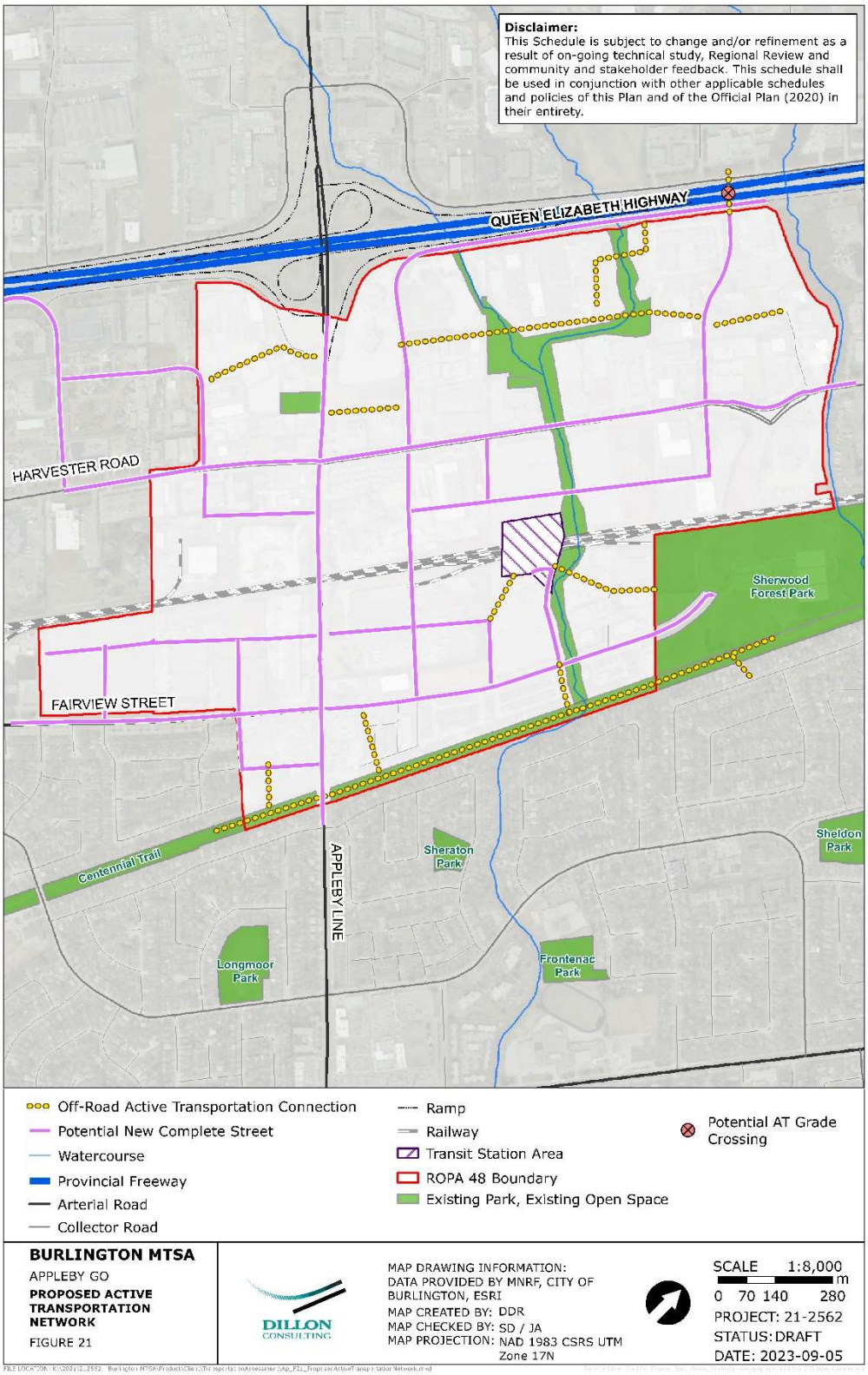


8.3.1.2 Active Transportation Network

Figure 21 shows the planned AT network for the Appleby GO MTSA. The planned network includes:

1. A network of complete streets that connects to Appleby Line, Harvester Road and Fairview Street;
2. A multimodal crossing of the Go Rail Line east of Appleby Line;
3. An AT crossing of the QEW;
4. Multiple AT connections to/from Appleby GO Station; and
5. Multiple AT connections to/from the Centennial Bikeway including one via the main vehicle driveway to the GO station and the existing pathway on the south side of Fairview Street.

Figure 21: Appleby GO MTSA Proposed Active Transportation Network



8.3.2 Aldershot GO MTSA ASP

8.3.2.1 Street Network

The planned street network for the Aldershot GO MTSA is illustrated on **Figure 22**. This figure illustrates the proposed street network and the existing streets that require upgrade / additional right-of-way width as identified in **Table 13**. The planned street network will be implemented through an OPA.

The location of new planned streets are conceptual and the ultimate location of any new streets, along with their design will be subject to further review through Planning Act application or Environmental Assessment Act processes, as the case may be. The design or improvement to any street within the ASP area shall incorporate the design parameters identified in **Section 8.2**.

The following improvements are planned for the area:

1. A new South Service Road extension (connecting the Aldershot GO Station and the Highway 403 eastbound on ramp to King Road). This new east-west connection will provide many benefits to the broader transportation system and will improve access for all modes. This connection is subject to future study to confirm the need, ultimate location, and cross-section requirements.
2. Plains Road is proposed as a future Bus Rapid Transit (BRT) corridor with dedicated transit lanes. Ultimately, one vehicle lane per direction will be converted to a transit lane if and when bus volumes dictate the need for the conversion.
3. A series of Mixed Use/ Commercial Connectors and Distributors intended to facilitate access to various development lands.

8.3.2.2 Active Transportation Network

Figure 23 shows the planned AT network for the Aldershot GO MTSA. The planned network includes:

1. A network of complete streets that connects to Waterdown Road and Plains Road;
2. Multimodal corridor connecting the MTSA to development parcels west of King Road;
3. Multiple AT connections to/from Aldershot GO Station; and
4. Multiple AT connections to/from existing public service facilities and local parks outside the MTSA.

Figure 22: Aldershot GO MTSA Proposed Street Network

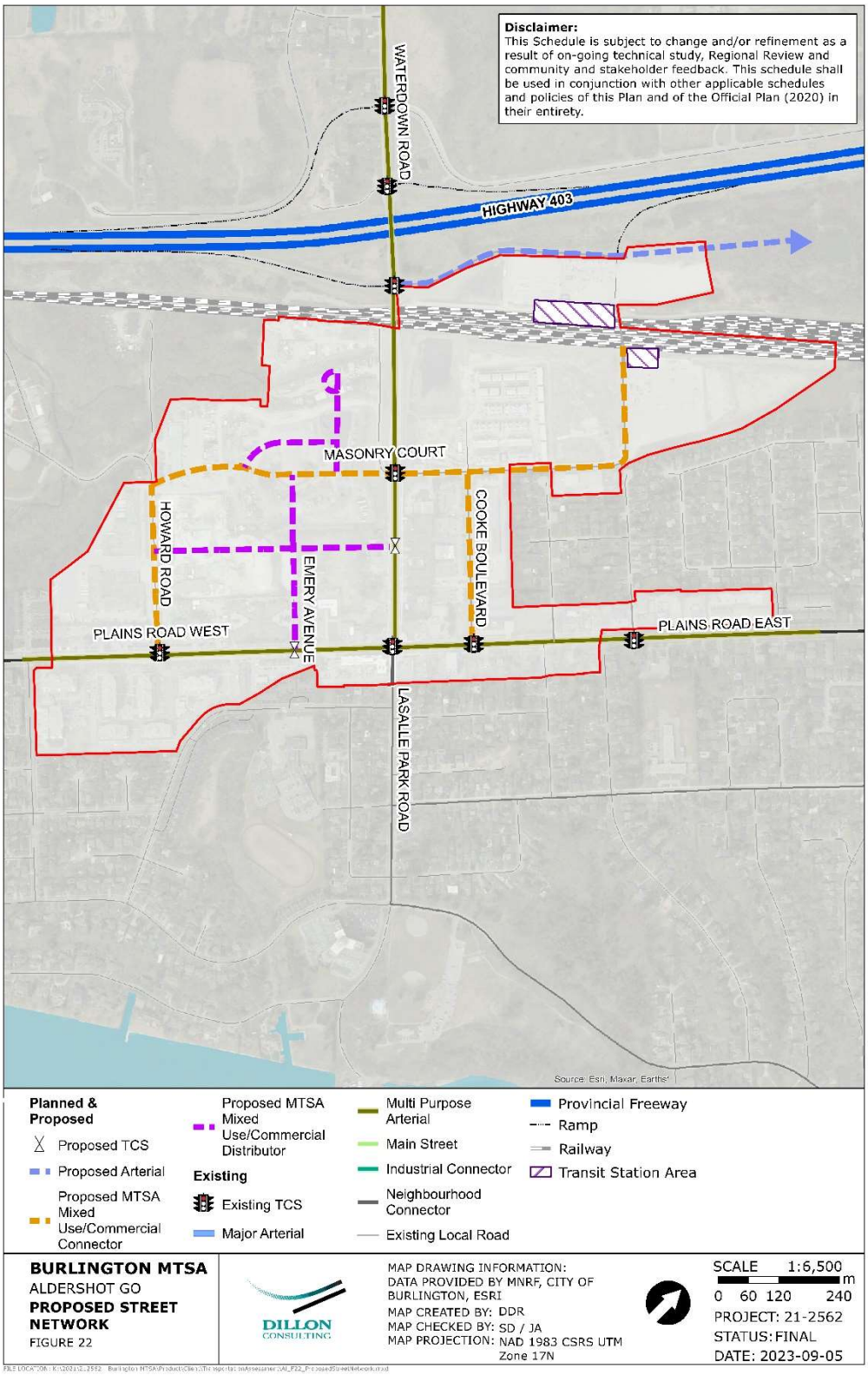
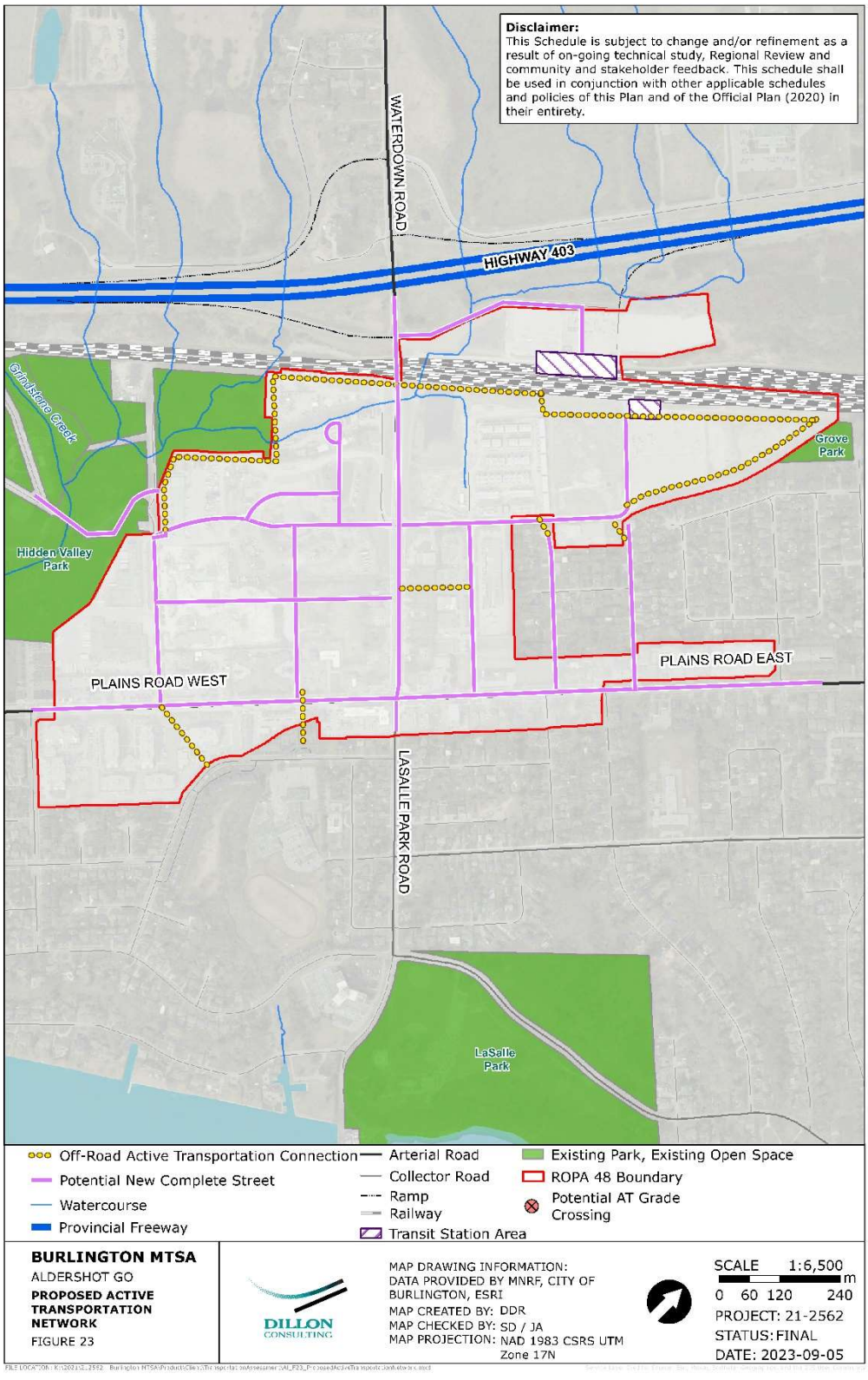


Figure 23: Aldershot GO MTSA Proposed Active Transportation Network



8.3.3 Burlington GO MTSA ASP

8.3.3.1 Street Network

The planned street network for the Burlington GO MTSA is illustrated on **Figure 24**. This figure illustrates the proposed street network and the existing streets that require upgrade / additional right-of-way width as identified in **Table 20**. The planned street network will be implemented through an OPA.

The location of new planned streets are conceptual and the ultimate location of any new streets, along with their design will be subject to further review through Planning Act application or Environmental Assessment Act processes, as the case may be. The design or improvement to any street within the ASP area shall incorporate the design parameters identified in **Section 8.2**.

The following improvements are planned for the area:

1. A new north/south street connection across the rail corridor between Fairview Street and Plains Road, east of Brant Street. This connection is subject to future study to confirm the need, ultimate location, and cross-section requirements, this new north-south connection will provide many benefits to the transportation system and will improve access for all modes.
2. Fairview Street and Brant Street are proposed as future Bus Rapid Transit (BRT) corridors. Fairview Street east of Burlington GO Station and Brant Street north of Fairview Street are proposed as future BRT with dedicated lanes, while Fairview Street West of Burlington GO Station and Brant Street south of Fairview Street are proposed as BRT with optimized performance.
3. A widening of Brant Street from North Service Road to Dundas Street (just north of the Burlington GO MTSA) by Halton Region from 4 to 6 lanes to accommodate the proposed BRT with dedicated lanes.
4. A series of Mixed Use/ Commercial Connectors and Distributors intended to facilitate access to various development lands.

8.3.3.2 Active Transportation Network

Figure 25 shows the planned AT network for the Burlington GO MTSA. The planned network includes:

1. A network of complete streets that connects to Brant Street, Plains Road and Fairview Street;
2. A multimodal crossing of the Go Rail Line east of Brant Street;
3. An AT crossing of the QEW; and
4. An AT connections to/from Maple Trail.

Figure 24: Burlington GO MTSA Proposed Street Network

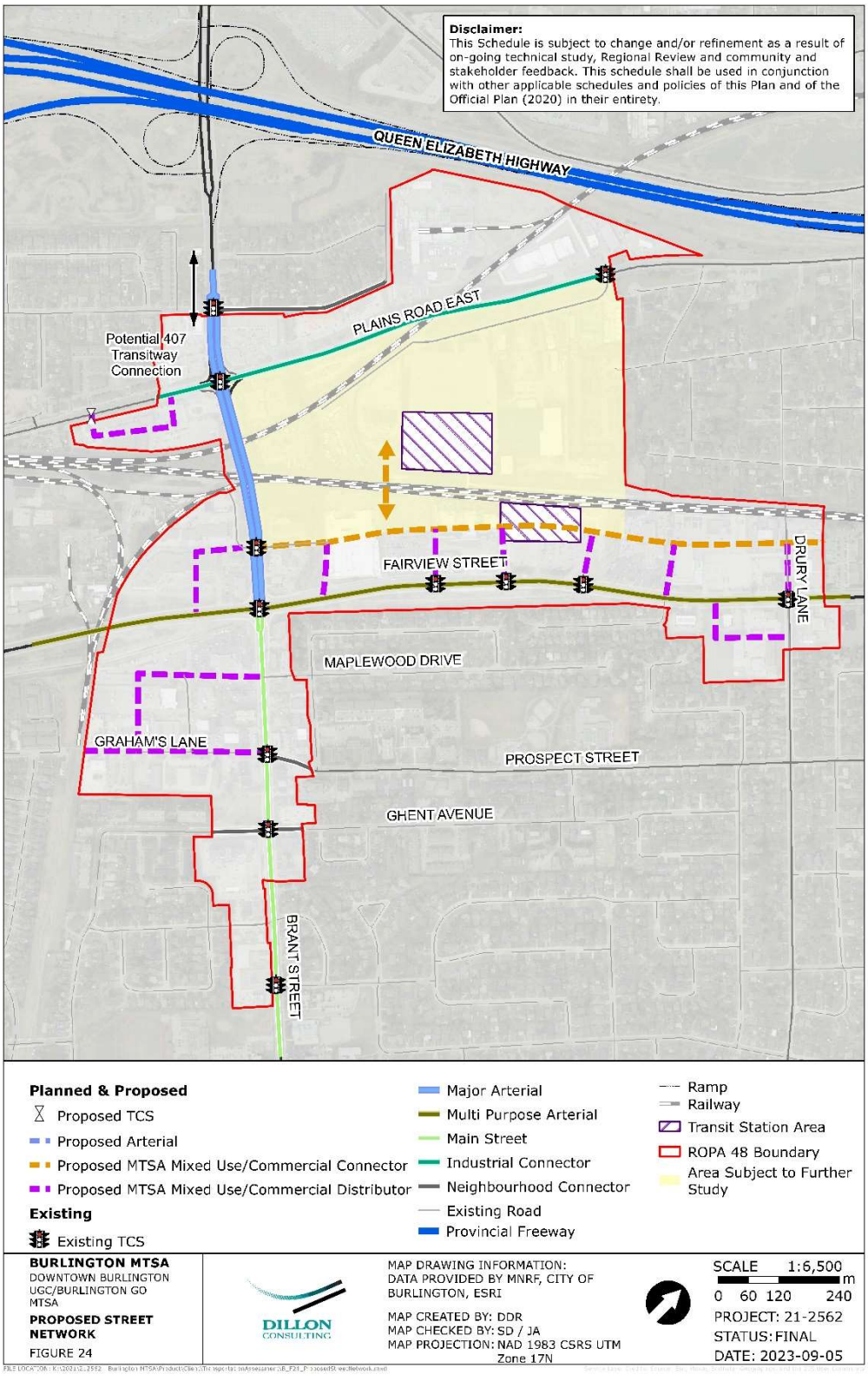
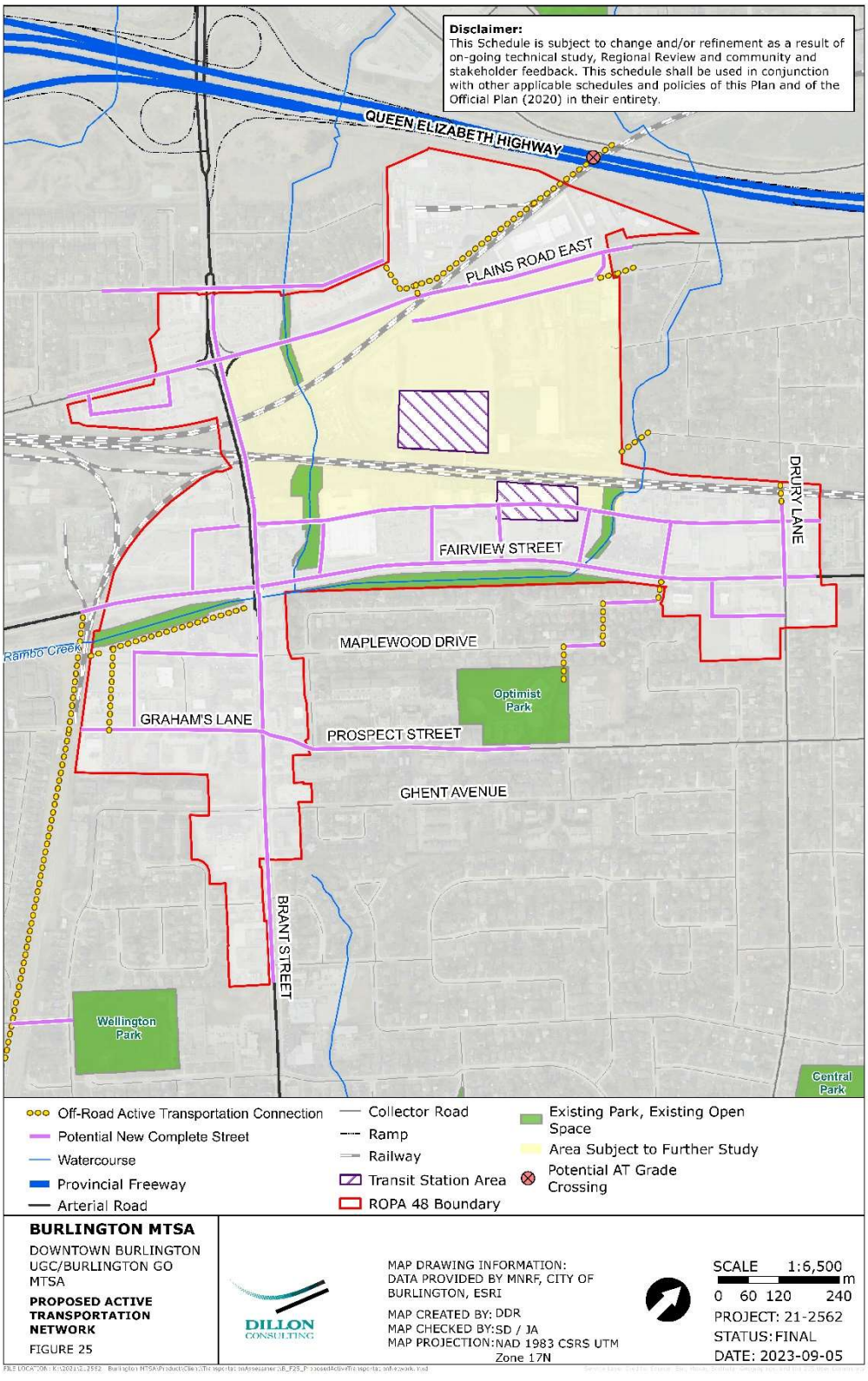


Figure 25: Burlington GO MTSA Proposed Active Transportation Network



Appendix A

MTSA Proposed Street Type Design Concepts

Memo

To: Jenna Puletto

From: Jeff Axisa

Date: April 17, 2023

Subject: Burlington MTSA Proposed Street Type Design Concepts

Our File: 21-2562

This memo recommends street design parameters for use in the Burlington MTSA transportation study to support the Area Specific Plan project.

Methodology:

1. Identify the relevant street classes from the Burlington Official Plan, 2020 (subject to appeal)
2. Review the draft street class descriptions outlined in the City of Burlington Revision of Classification of Transportation Facilities, 2016 memo
3. Identify any new street classes recommended to be added
4. Select potential Complete Street cross-sections from available Complete Street Design Guides
5. Recommend MTSA street design parameters to be used in the MTSA transportation study to inform the Area Specific Plans

1.0 Street Classes from Burlington Official Plan

We reviewed Schedule O-1 Classification of Transportation Facilities – Urban Area of the Burlington Official Plan, 2020 and identified the following street classes as potentially relevant to the MTSA transportation planning studies:

- Major Arterial
- Multi-purpose Arterial
- Urban Avenue
- Main Street
- Industrial Connector
- Neighborhood Connector
- Industrial/ Commercial Local Street

These Street Classes are supported by the City of Burlington Revision of Classification of Transportation Facilities, 2016 memo from IBI, which provides additional guidance on design and ROW for the street types. However, this collection of street classes does not meet all of the needs of the MTSA areas; additional street classes will be required.

2.0 New Street Classes

We have identified the following additional new street types needed to build out the MTSA transportation networks:

- Mixed Use/ Commercial Connector; and
- Mixed Use/ Commercial Distributor.

A qualitative description of role and function for these three street classes is provided for clarity.

Mixed Use/ Commercial Connector

- A community "Main Street" or "High-street"; street balances mobility and access
- Moves moderate to high volumes of cycling, transit and vehicle movements
- Balances priority of all modes
- Traditionally "auto-oriented" land use, but often subject to intensification or redevelopment
- Likely to have mixed, but predominantly commercial land-use

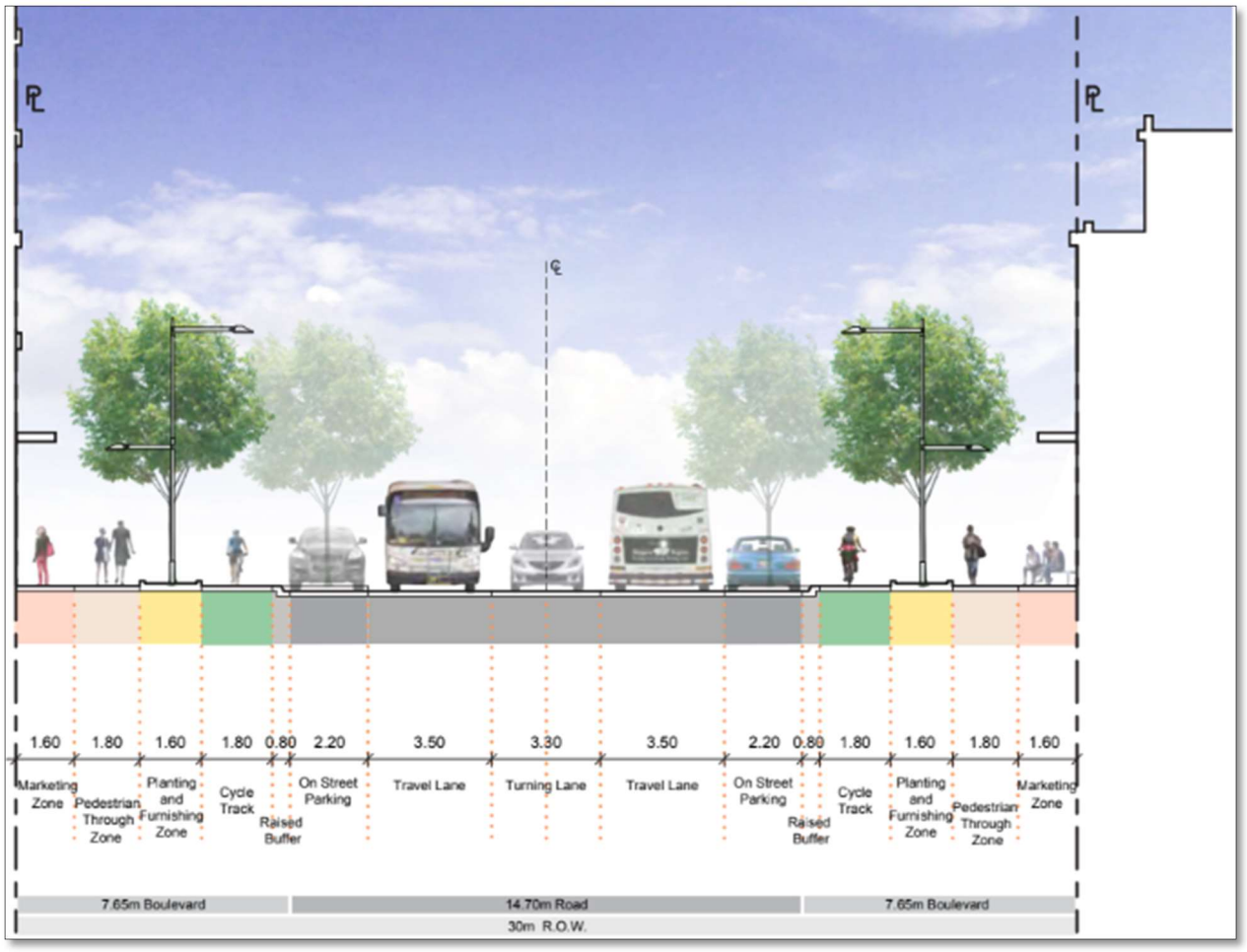
Mixed Use/ Commercial Distributor

- A community street that provides 'rear' service and access functions to adjacent commercial and residential properties
- Moves low to moderate volumes of vehicular traffic (e.g. cars, service vehicles)
- Priority on enhanced vehicle movement; balances service to other modes
- Provides an attractive environment that complements adjacent main or civic streets
- Likely to have mixed, but predominantly commercial land-use

3.0 Potential Design Concepts

The following presents design approaches used by other municipalities that may help to inform the recommended design and operating parameters for each of the recommended new street types.

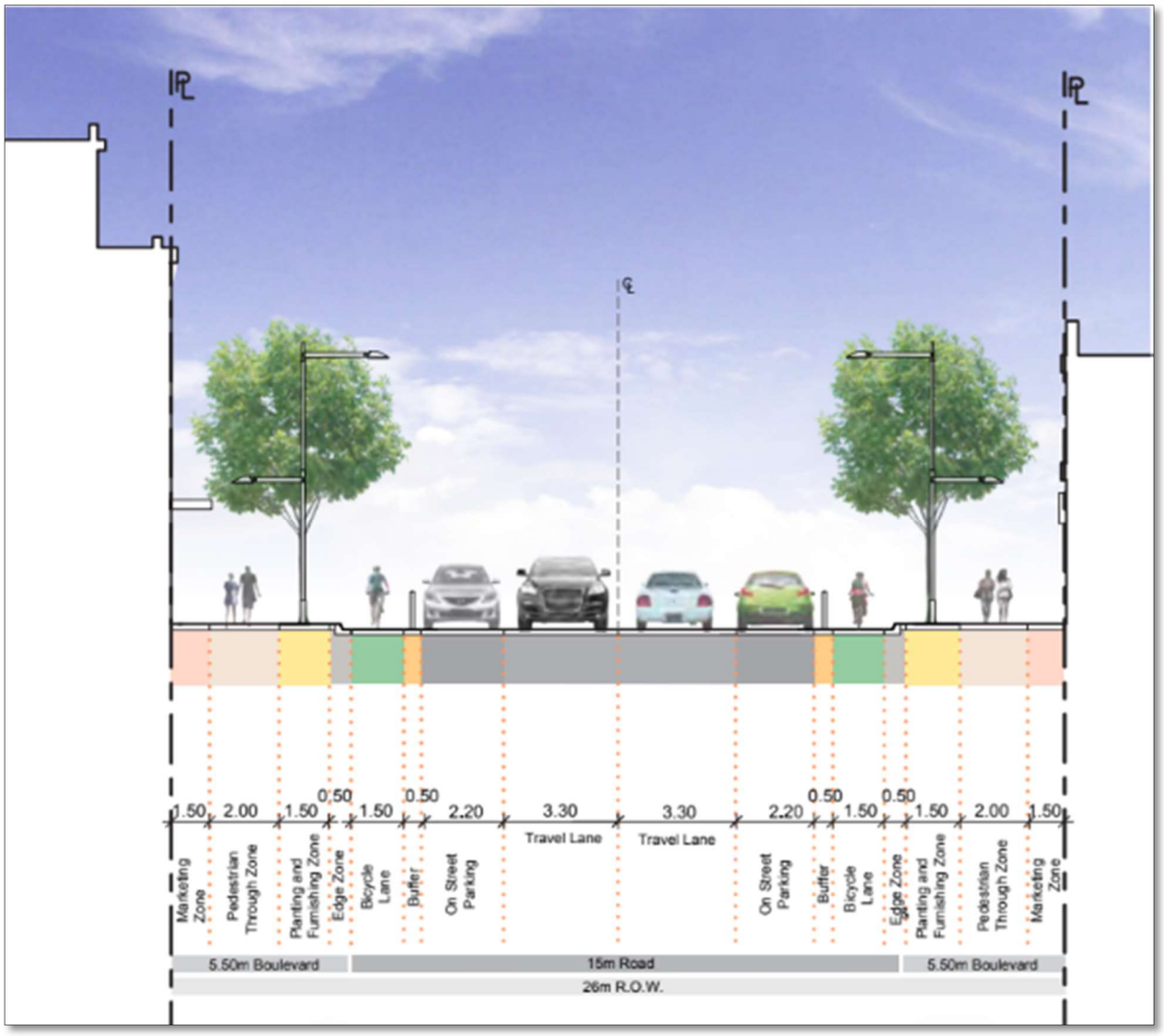
3.1 Mixed Use/ Commercial Connector



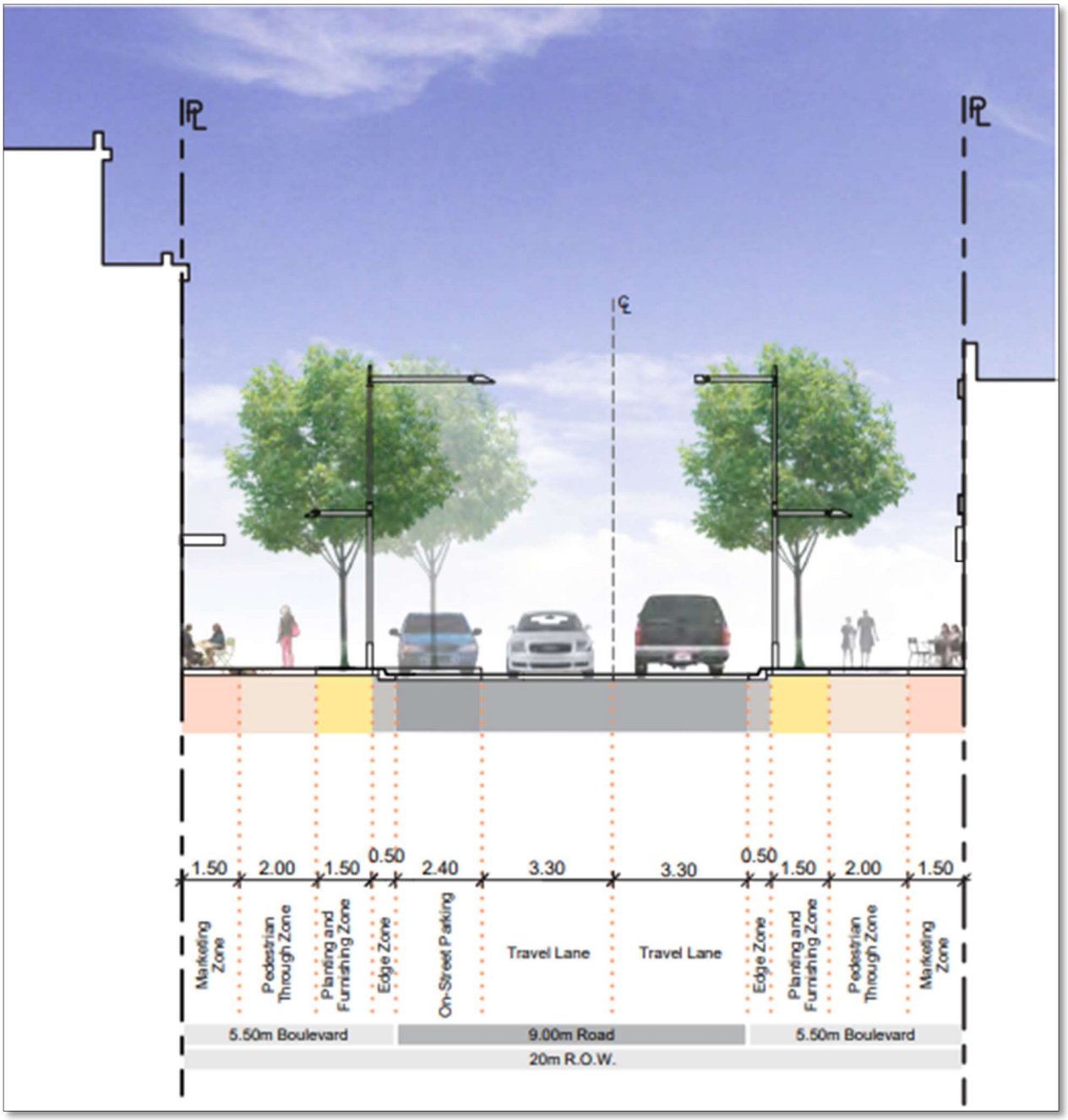
(Urban General Wide – Niagara Region Complete Streets Design Guideline)

(Mixed-use Connector – Toronto Complete Street Guidelines)

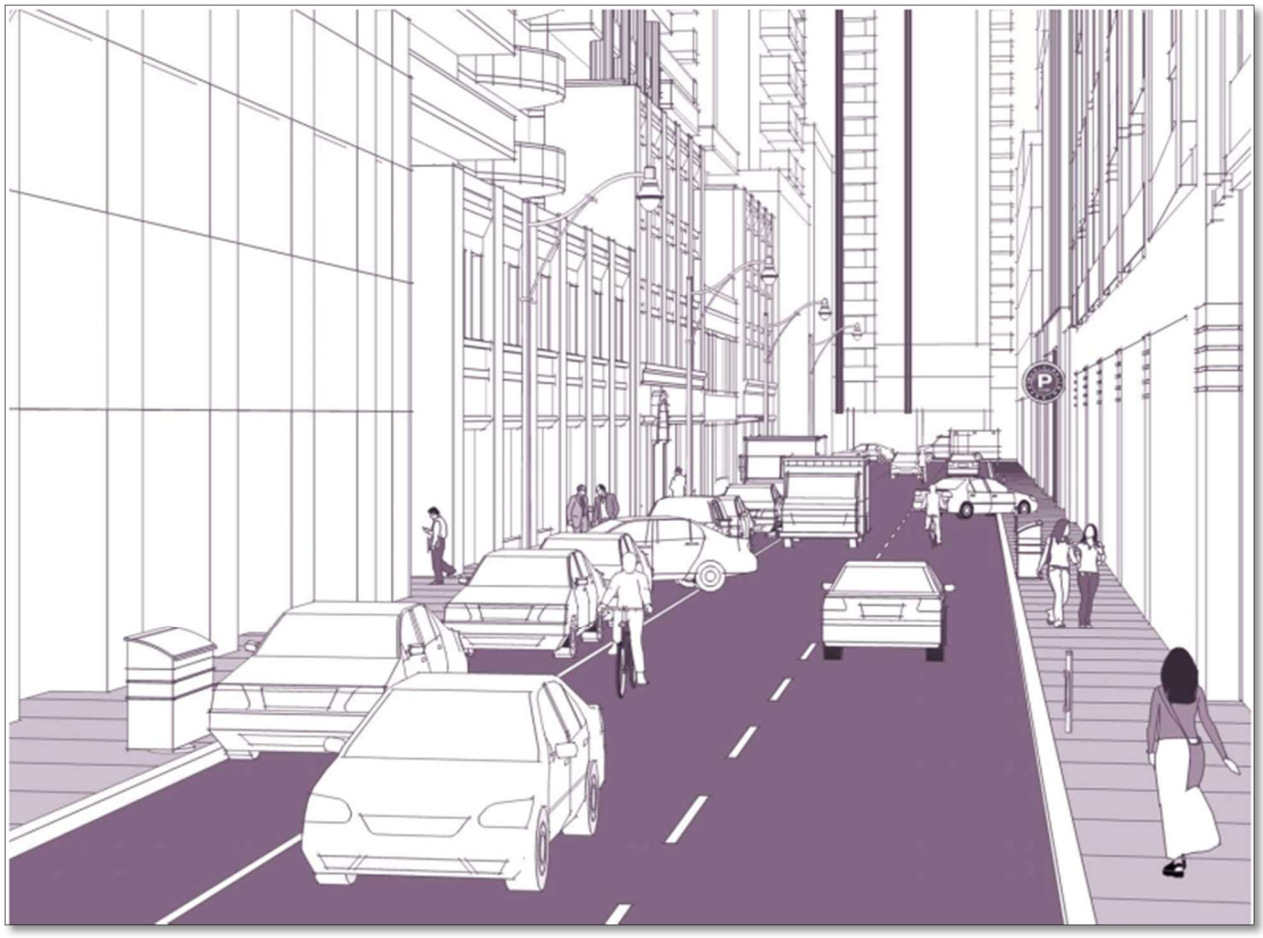
3.2 Mixed Use/ Commercial Distributor



(Main Street – Option 1 - Niagara Region Complete Streets Design Guideline)



(Main Street – Option 2 – Niagara Region Complete Streets Design Guideline)



(Mixed-use Access Street – Toronto Complete Streets Guidelines)

4.0 Design and Operating Parameters

Table 1 shows the design and operating parameters for the proposed new street types:

- Mixed Use/ Commercial Connector; and
- Mixed Use/ Commercial Distributor.

Table 1: New Street Types – Design and Operating Data

Street Type	ROW Width	Active Transportation Assumptions			Design Speed (km/h)
		Cycling Provisions	Pedestrian Provisions	Transit/HOV Provisions	
Mixed Use/ Commercial Connector	30m	Wide Lanes – sharrows	Min. 1.8m pedestrian clearway + 1.5m planting and furnishing zone	Generally avoided	50-60
Mixed Use/ Commercial Distributor	24m-26m	Min. 1.5m protected cycle track	Min 2.0m pedestrian clearway + 1.5m planting and furnishing zone	Buses may move in mixed traffic	40-50

5.0 Appendix

5.1 Official Plan Street Types – Design and Operating Data

Table 2 summarizes the design and operating data for each of the relevant street types in the Burlington Official Plan, 2020.

Table 2: Burlington OP Street Types – Design and Operating Data

Street Type	ROW Width	Active Transportation Assumptions			Design Speed (km/h)
		Cycling Provisions	Pedestrian Provisions	Transit/HOV Provisions	
Urban Arterial					
Major Arterial	35m-50m	On-street bike lane on key bike routes	Min 3.0m multi-use path	May contain bus-only or HOV lane	60-80
Urban Centre (Multi-purpose Arterial)	30m-35m	Min. 1.8m on-street bike lanes or 1.5m protected cycle track	Min. 3.45m pedestrian clearway + 1.5m planting and furnishing zone	May contain bus-only or HOV lane	40-50
Urban Avenue (Parkway)	30m-40m	Min 1.5m protected cycle track	Min. 2.0m pedestrian clearway + 2.5m planting and furnishing zone	May contain bus-only or HOV lane	40-60
Main Street (Downtown Streets)	24m-30m	Min. 1.8m on-street bike lanes	Min. 3.45 pedestrian clearway + 3.0m planting and furnishing zone	Buses may move in mixed traffic	40-50
Urban Collectors					
Industrial Connector	24m-35m	Min. 1.5m protected cycle tracks/multi-use path/wide lanes (sharrows)	Min. 1.5m pedestrian clearway/3.0m multi-use path +1.5m planting and furnishing zone	Buses may move in mixed traffic	60-70

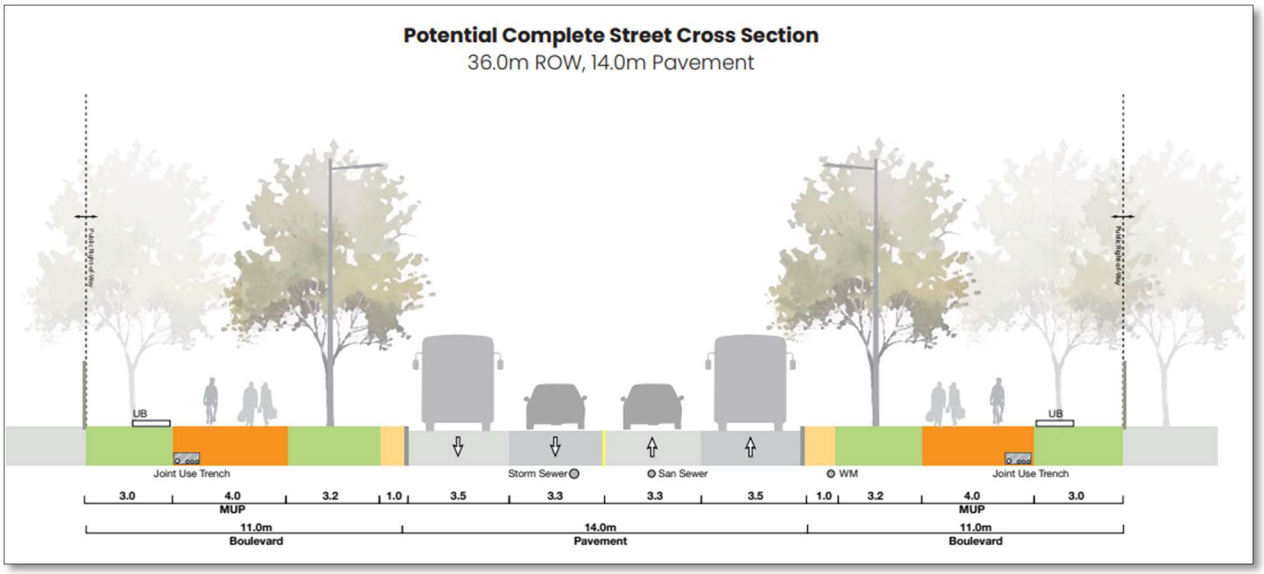
Neighbourhood Connector	24m-35m	Min 1.5m protected cycle tracks/multi-use path	Min. 1.5m pedestrian clearway/3.0m multi-use path +1.5m planting and furnishing zone	Buses may move in mixed traffic	40-50
Urban Local Street					
Industrial/ Commercial Street	20m-26m	Wide lanes - sharrows	Min. 1.5m pedestrian clearway on both sides + 1.5m planting and furnishing zone	Generally avoided	50-60
Shared Street	Varies	Wide lanes - sharrows	Min. 2.0m pedestrian clearway	Generally avoided	

5.2 Official Plan Street Types – Potential Design Concepts

The following are design concepts for each of the street classes in the Burlington Official Plan, 2020. The street design concepts that are referenced were from a review of existing complete street design guidelines in the Greater Toronto and Hamilton Area (GTHA). The guidelines from the review include: The City of Brampton Street Design Guide, The City of Hamilton Complete Streets Design Guidelines and the Niagara Region TMP Complete Street Design Guideline. The design concepts are intended to be used as a reference as the potential design concepts will be based on the available right-of-way space in proximity to the MTSAs.

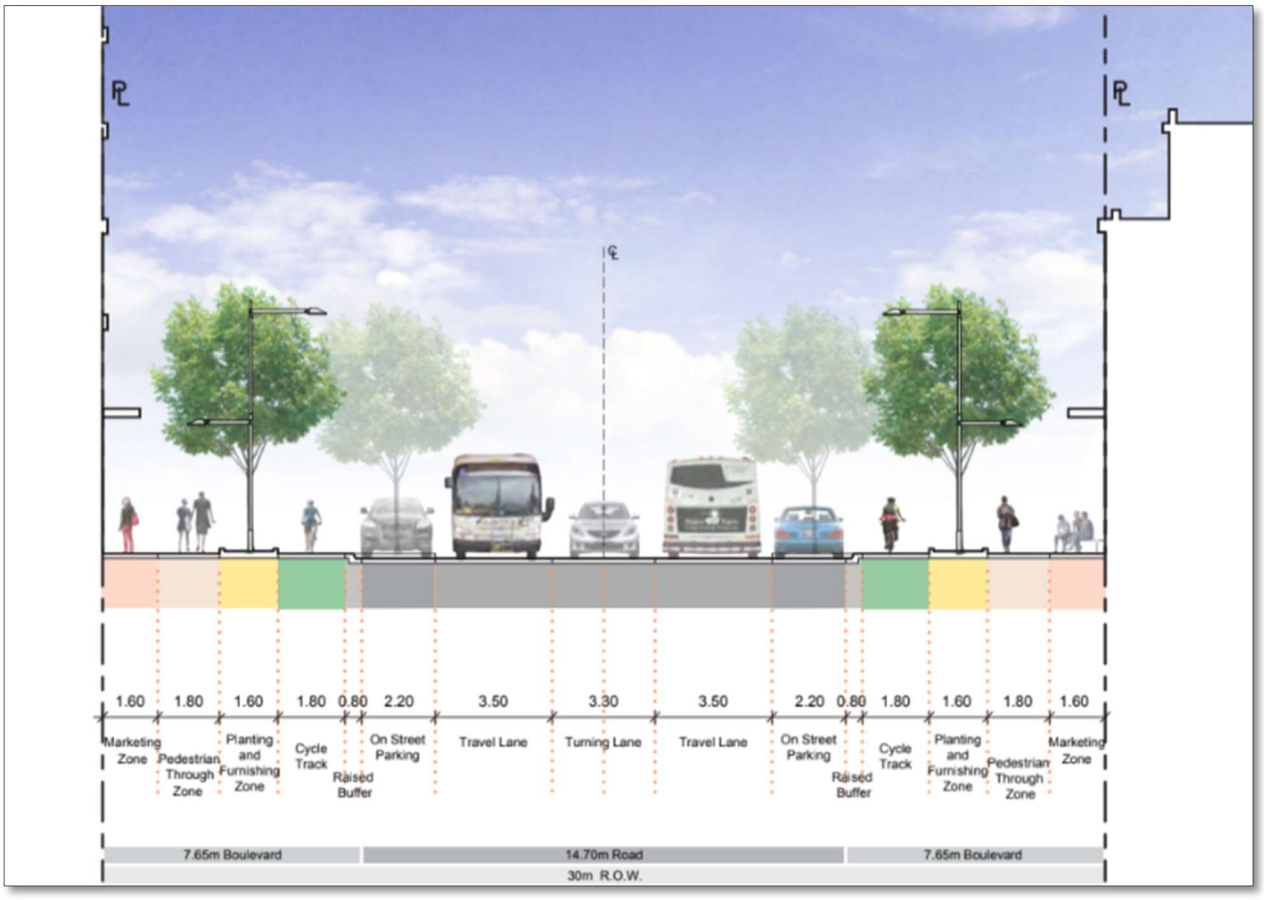
5.2.1 Urban Arterial

5.2.1.1 Major Arterial



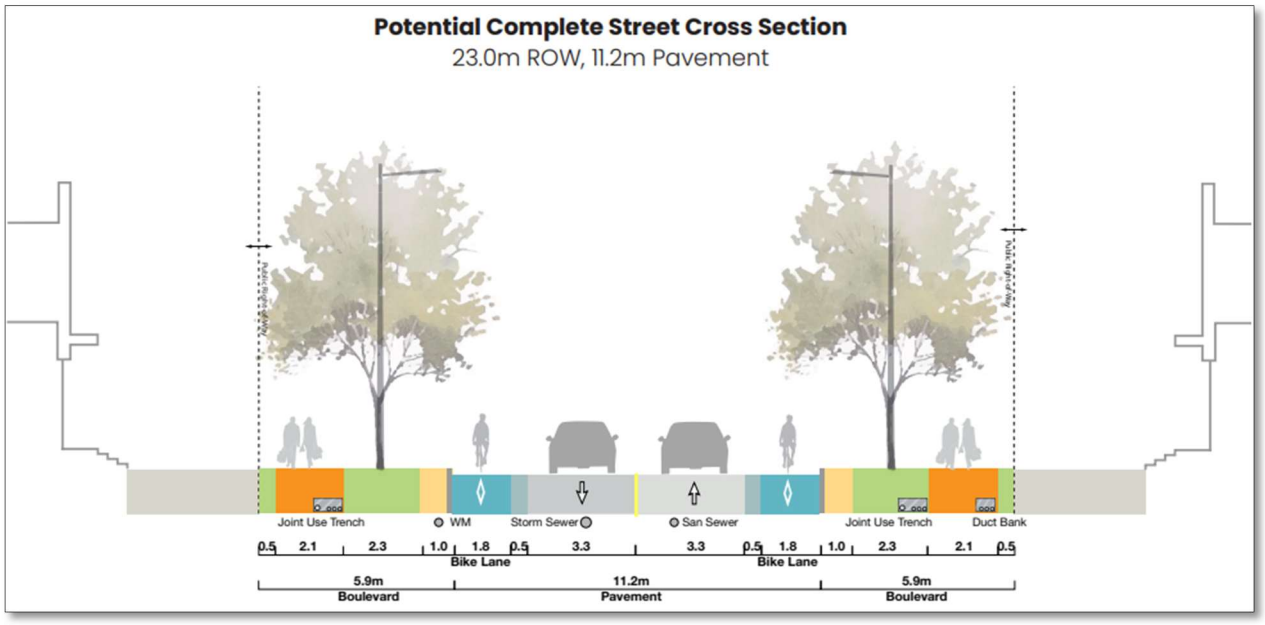
(Neighbourhood Connector - Brampton Complete Streets Guide)

5.2.1.2 Urban Centre (Multi-purpose Arterial)

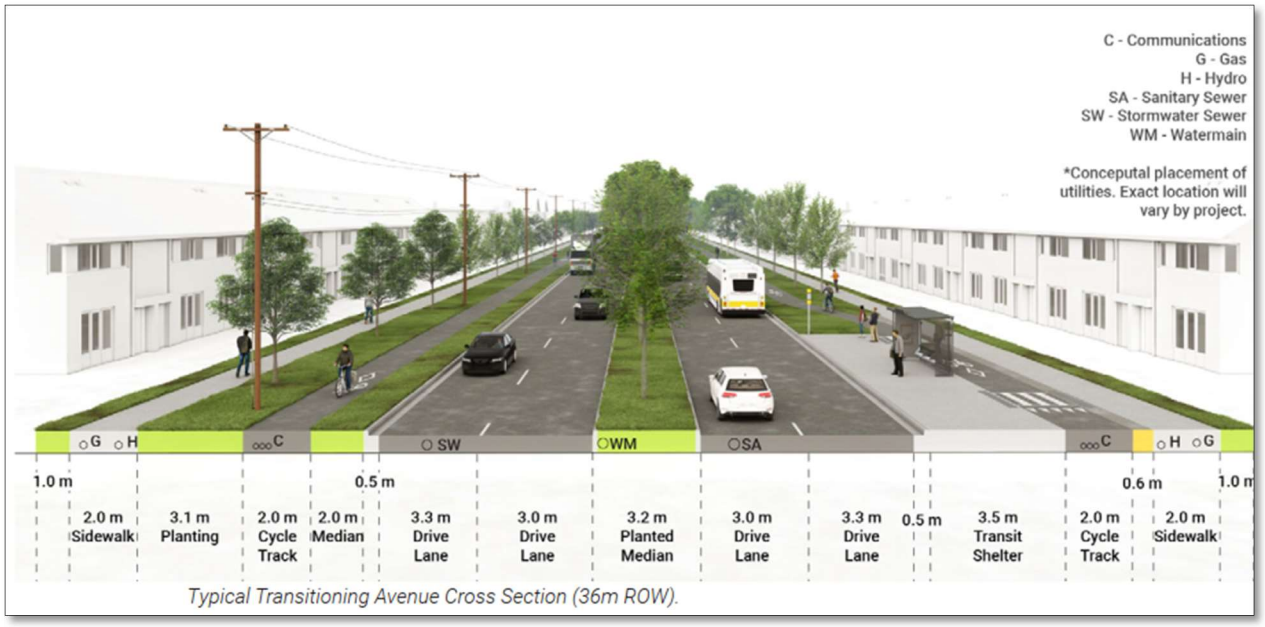


(Urban General – Wide - Niagara Region TMP Complete Streets Design Guideline)

5.2.1.3 Urban Avenue (Parkway)



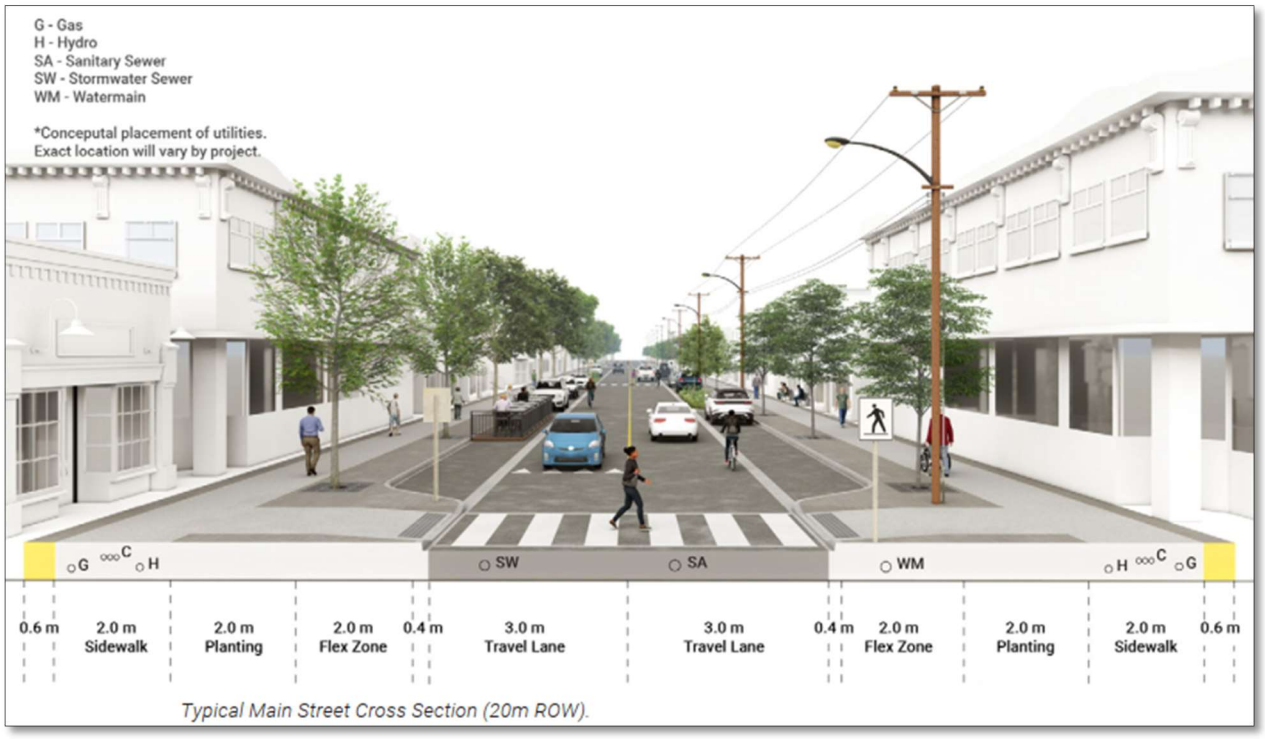
(Neighbourhood Residential - Brampton Complete Streets Guide)



Typical Transitioning Avenue Cross Section (36m ROW).

(Transitioning Avenue - Hamilton Complete Streets Design Guideline)

5.2.1.4 Main Street (Downtown Streets)



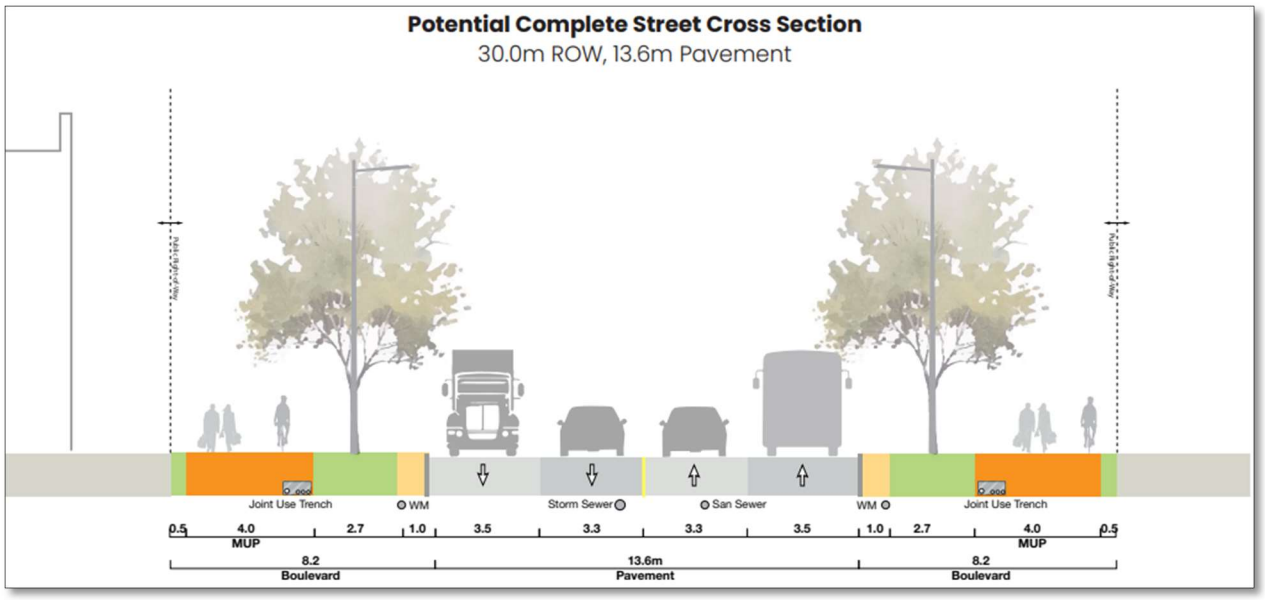
Typical Main Street Cross Section (20m ROW).

(Main Street – Hamilton Complete Streets Design Guideline)

We note that this potential design concept is for a 20m ROW. The design can be modified to include cycling lanes in the flex zone and wider pedestrian and planting zone if ROW space is available along the corridor.

5.2.2 Urban Collector

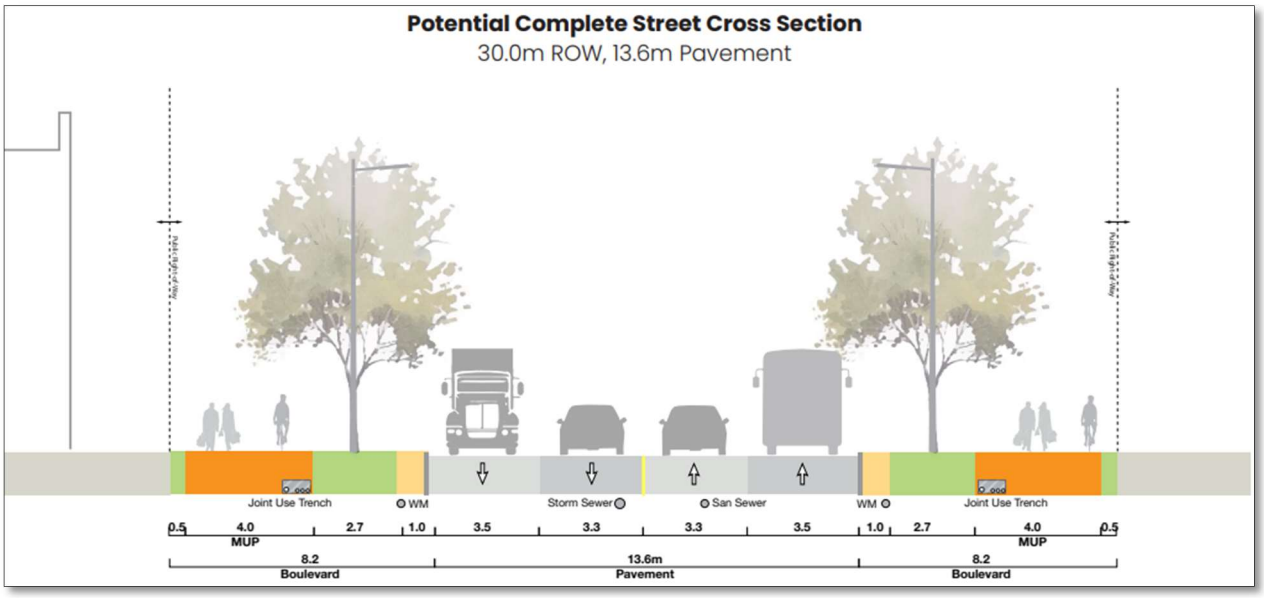
5.2.2.1 Industrial Connector



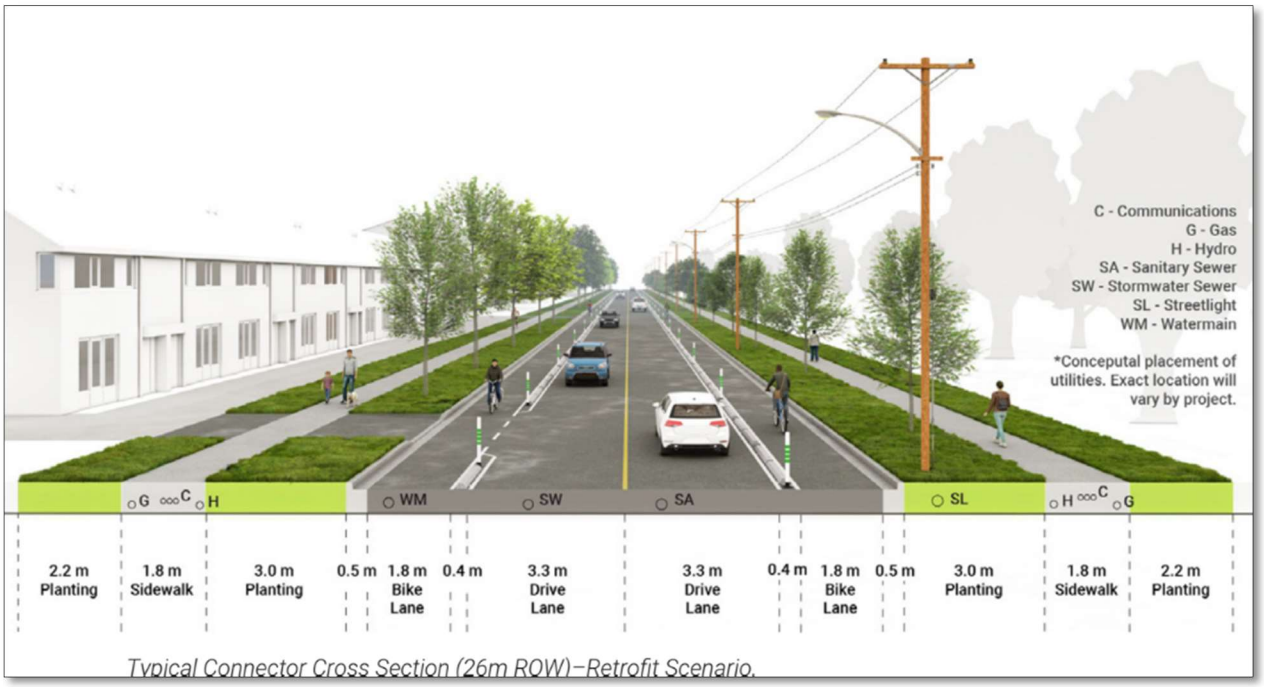
(Employment Collectors - Brampton Complete Streets Guide)

(Industrial Connector – Hamilton Complete Streets Design Guideline)

We note that this potential design concept is for a 26m ROW. The design can be modified to have additional/wider lanes and planting zones if ROW space is available along the corridor.



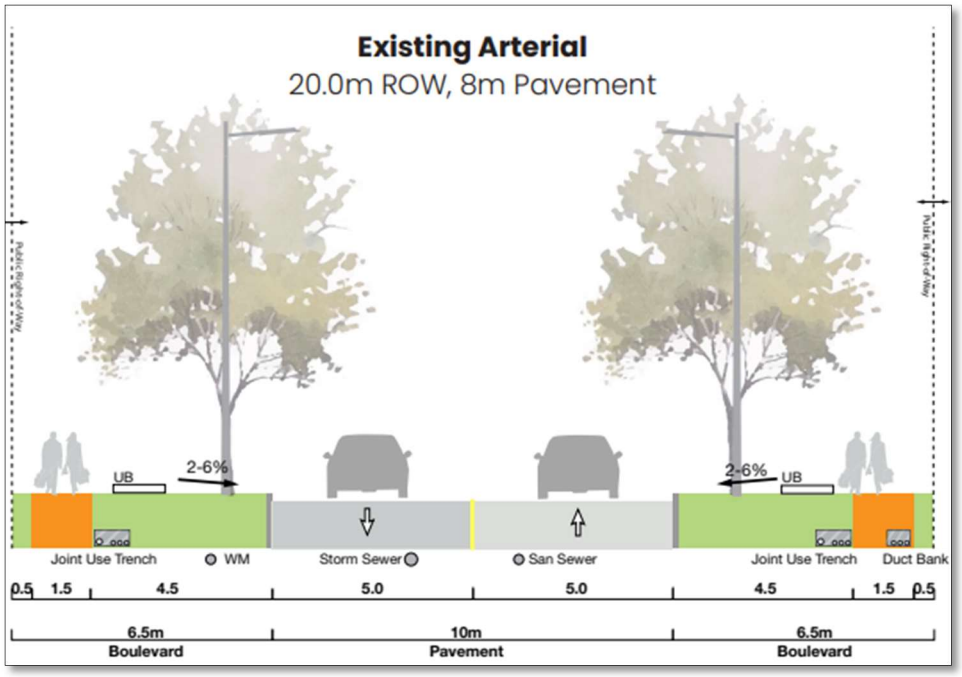
(Employment Collectors - Brampton Complete Streets Guide)



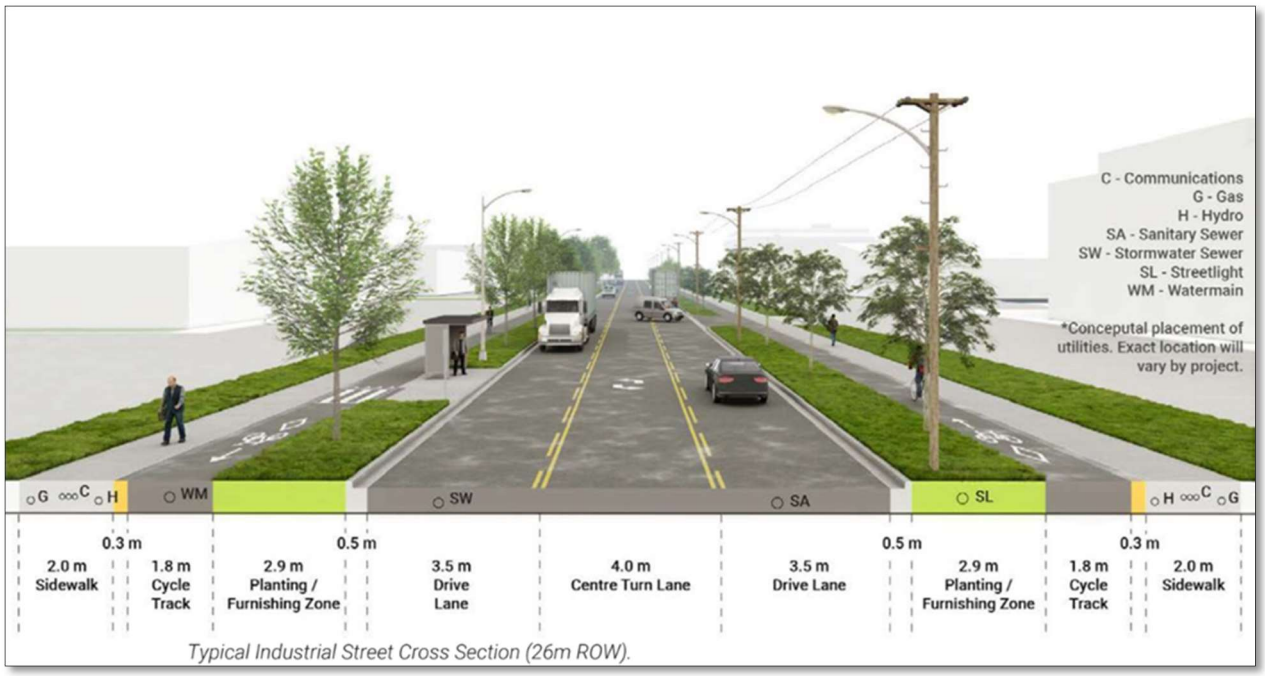
(Connector Street – Hamilton Complete Streets Design Guideline)

5.2.3 Urban Local Street

5.2.3.1 Industrial/ Commercial Street



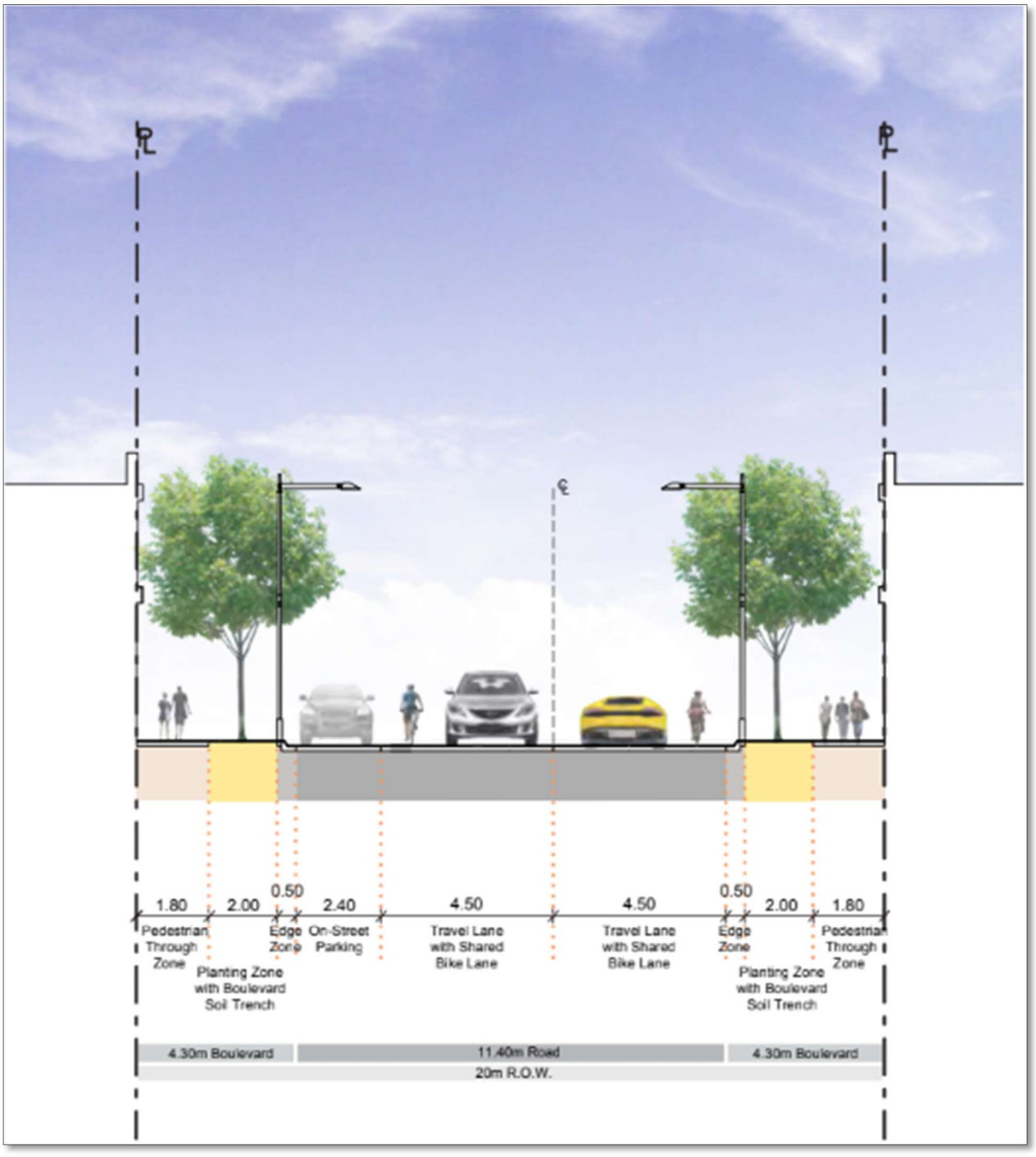
(Local Employment Streets - Brampton Complete Streets Guide)



Typical Industrial Street Cross Section (26m ROW).

(Industrial Connector – Hamilton Complete Streets Design Guideline)

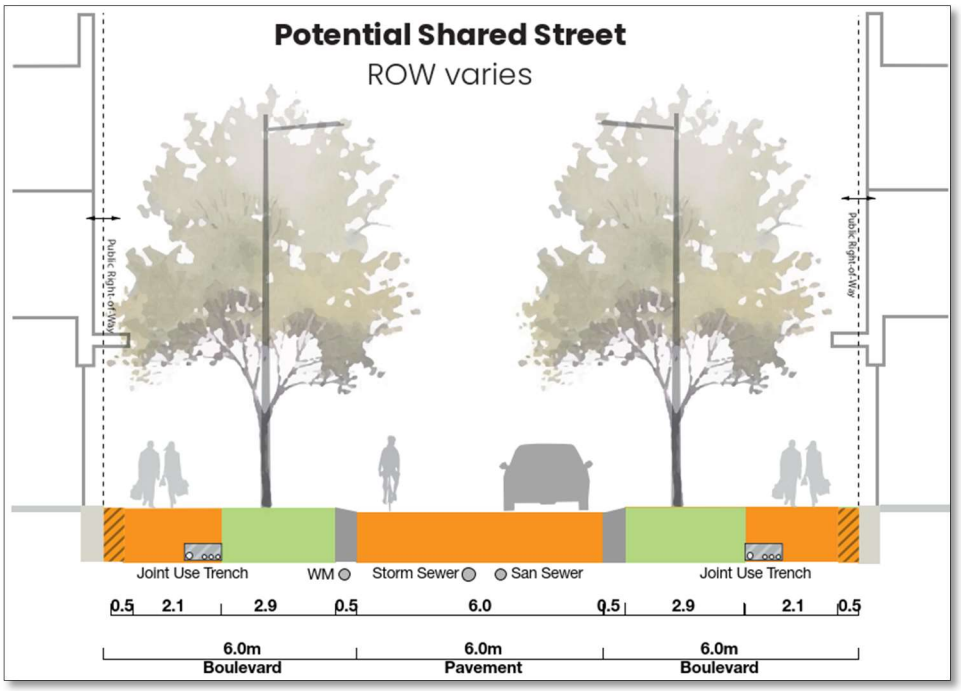
5.2.3.2 Neighbourhood Street/ Local Street



(Hamlet - Niagara Region TMP Complete Streets Design Guideline)

(Neighbourhood Street – City of Hamilton Complete Streets Design Guidelines)

5.2.3.3 Shared Street



(Shared Street – Brampton Complete Streets Guide)

CITY OF BURLINGTON

BURLINGTON
MAJOR TRANSIT STATION AREAS (MTSA)
AREA SPECIFIC PLANS
FUNCTIONAL SERVICING REPORT

-APPLEBY GO MTSA
-BURLINGTON GO MTSA
-ALDERSHOT GO MTSA

JULY 18, 2023

CONFIDENTIAL

wsp

BURLINGTON
MAJOR TRANSIT STATION AREAS (MTSA)
AREA SPECIFIC PLANS
FUNCTIONAL SERVICING REPORT

-APPLEBY GO MTSA
-BURLINGTON GO MTSA
-ALDERSHOT GO MTSA

CITY OF BURLINGTON

REPORT (FINAL)
CONFIDENTIAL

PROJECT NO.: TPB178008S
DATE: JULY 18, 2023

WSP
3050 HARVESTER ROAD
BURLINGTON, ON L7N 3J1

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WSP.COM

July 18, 2023

Confidential

City of Burlington
426 Brant Street
Burlington, ON L7R 3Z6

Attention: Karyn Poad, Senior Planner

Dear Madam:

Subject: Burlington MTSA
Area Specific Plans
Functional Servicing Report
-Appleby GO MTSA
-Burlington GO MTSA
-Aldershot GO MTSA

This revision of the Burlington MTSA Area Specific Plans Functional Servicing Report has been revised and is being resubmitted in response to comments received October 4, 2022.

Yours sincerely,

Roger LeBlanc, P.Eng.
Senior Municipal Engineer,
WSP E&I

RL/GC
Encl.
cc: Glenn Clements – Senior Associate Engineer - Civil
WSP ref.: TPB178008S

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EXECUTIVE SUMMARY

This study discusses the approach to wastewater and water servicing by evaluating existing system capacity, evaluating water demand, and a discussion regarding the development of proposed wastewater collection and water distribution systems for three MTSAs (i.e. Appleby, Burlington, and Aldershot).

This report includes additional considerations including cost sharing opportunities for intensification areas, integration with Halton Region's Master Plan, and a discussion regarding the impacts of the overall Regional water and wastewater systems for the three subject MTSAs.

Both water and wastewater projected service expansions are evaluated for each MTSA based on existing conditions and projected densities.

The following table summarizes the estimated construction costs for each MTSA.

Appleby	Internal Sanitary Servicing	$8,083,530	$18,854,175
	Internal Water Servicing	$10,770,645	
Burlington	Internal Sanitary Servicing	$10,807,277	$16,427,277
	Internal Water Servicing	$5,620,000	
Aldershot	Internal Sanitary Servicing	$6,206,490	$21,554,918
	Internal Water Servicing	$15,348,428	

The main recommendations from this study are summarized below:

1	Advance modeling to determine required related Regional water and wastewater vertical infrastructure and confirm the necessity of upsizing current infrastructure to accommodate projected growth
2	Conduct Region-wide study focusing on a system-wide analysis to evaluate the impact of overall development to Regional infrastructure as this study limits its focus on local infrastructure
3	Conduct sensitivity testing of recent implementation of OPA to confirm any deviation from projected populations

1 INTRODUCTION

WSP (Formerly Wood Environment & Infrastructure Solutions) was retained by Brook McIlroy to prepare a water and wastewater servicing study for the Burlington Major Transit Station Areas (MTSAs). The MTSAs are four strategic intensification areas in the City of Burlington known as:

- Appleby Go Major Transit Station Area (Appleby Go MTSA),
- Burlington Go Major Transit Station Area (Burlington Go MTSA),
- Downtown Major Transit Station Area (Downtown MTSA), and
- Aldershot Go Major Transit Station Area (Aldershot Go MTSA).

The scope of this report and study involves the following:

- The Downtown MTSA servicing report was previously completed under separate cover on September 24, 2020. This report reviews the existing water and wastewater services accessible each of the remaining Burlington MTSAs (Appleby, Burlington, and Aldershot);
- Confirmation of the Capacity of the water and wastewater services accessible to each of the Burlington MTSAs, and
- Preparation of Water & Wastewater Servicing Concepts for each of the BMTSAs based on Halton's 2031 model with the most recent planned land uses and an updated planning horizon of 2051.

The servicing plans are prepared in accordance with the land use plans and proposed population distribution provided by Brook McIlroy. This study is part of the City's Area Specific Plans (ASPs) for each of the MTSAs and informs these ASPs regarding water and wastewater infrastructure capital needs.

The impact of simultaneous build-out of MTSAs has not been evaluated as part of this study. Each MTSA area was studied in isolation.

Figure 1-1 provides the location of the BMTSAs and the subject study areas. The MTSAs are located in South Burlington.

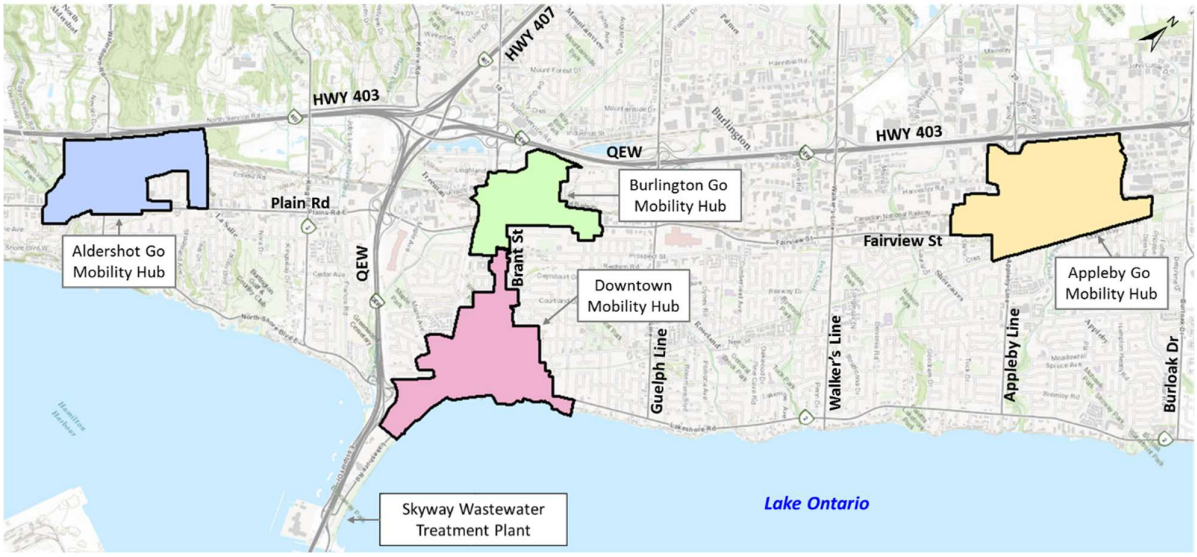


Figure 1-1. Study Areas

Water and Wastewater infrastructure in Burlington is owned, planned and managed by Halton Region. Halton Region's planning framework to service the growth is through its Master Plan which was last updated in 2011. Infrastructure planning in Halton has focused on a sustainable regionalized approach in which, growth in the Region is serviced by the Lake Based System. In this planning framework, trunk infrastructure for water wastewater infrastructure is designed and planned in the South (near Lake Ontario) and moves up Northward into branches into the primary growth areas in North Oakville, North Burlington, Milton and Halton Hills/Georgetown.

This study is part of the City's Area Specific Plans for each of the MTSAs and informs the Area Specific Plans in regard to water and wastewater infrastructure capital needs.

This report has been prepared in support of the City of Burlington MTSA Area Specific Plan, but ahead of next Region's Water and Wastewater Master Plan. As such, the cumulative impact of the Major Transit Station Areas on the wider water and wastewater system cannot be fulsomely reviewed or incorporated into this work. The recommendations and strategies outlined in this report will need to be reviewed and updated when the Master Plans are complete and more is understood about the future Regional strategies for Burlington (through Master Planning), the phasing of each Major Transit Station Areas and the implementation timing of the Region's capital program. Policies will be included in the Area Specific Plan to outline the future requirements to ensure consistency between City and Region planning work.

This study is part of the City's Area Specific Plans for each of the Major Transit Station Areas and informs the Area Specific Plans in regard to water and wastewater infrastructure capital needs. This report was originally prepared as part of the MTSAs Study in 2018 and since that time, changes have occurred with respect to the long-range planning time horizon, terminology and study area boundaries. The supporting technical studies for the MTSA Area Specific Plans have been completed using 2051 as a practical and long-term time frame as set out in the Terms of Reference for the project. Halton Region adopted ROPA 48 that established a Regional Urban Structure hierarchy of strategic growth areas through delineating and assigning density targets of the Urban Growth Centre and Major Transit Station Areas. The Region, through the Municipal Comprehensive Review to achieve conformity to Provincial Plans and policies will accommodate growth to 2051. Through the Minister of Municipal Affairs and Housing decision on ROPA 49, the Region is planning to accommodate growth to 2051 and will undergo an exercise to determine the growth distributions to the local municipalities. Following the completion of this Functional Servicing Report, additional sensitivity testing will be required, and the future phasing of infrastructure will be determined through other broader processes.

Provincial Bill 23, the More Homes Built Faster Act, 2022 makes substantial changes to existing provincial legislation and supporting regulations to land use planning in Ontario. One of which is the removal of land use planning responsibilities to a list of upper-tier municipalities including the Region of Halton. While at the time of drafting this report, this proposed change is not in effect and will be proclaimed by the Lieutenant Governor at a later date, the Region of Halton will continue to have a role in the planning, delivery and financing of water and wastewater infrastructure.

1.1 BACKGROUND INFORMATION

The analysis is based on Halton's latest water and wastewater hydraulic models provided by Halton Region in April 2022. This information along with existing contour mapping and existing wastewater collection and water distribution systems were used.

The planning and design of water and wastewater infrastructure followed recognized standards and planning documents including:

- Design Guidelines for Sewage Works, MOE, 2008;
- Design Guidelines for Drinking Water Systems, MOE, 2008;
- Region of Halton Water and Wastewater Facilities Design Manual, May 2021 (version 2);
- Region of Halton Water and Wastewater Linear Design Manual, April 2019 (version 4);

- Sustainable Halton Water and Wastewater Master Plan, 2011;
- Water and Wastewater Hydraulic Models provided by Halton Region in April 2022:
    - InfoWater Updated May 11, 2022, and
    - InfoSewer Updated May 11, 2022.

Land use planning input to the study was provided by Brook McIlroy:

- Appleby Go Mobility Hub Technical Memo to the City of Burlington, November 9, 2017;
- Burlington Go Mobility Hub Technical Memo to the City of Burlington, November 9, 2017;
- Aldershot Go Mobility Hub Technical Memo to the City of Burlington, November 9, 2017;
- Block by block density breakdown for Appleby GO and Aldershot GO MTSAs, and
- Downtown Burlington MTSA GFA Updated Technical Memo, February 2018.

In addition, the following sources were reviewed and/or used in this study:

- Downtown Mobility Hub Block Diagram – Council Workshop Document PB-68-17;
- GO Station Mobility Hubs Preferred Concepts: Aldershot GO, Burlington GO and Appleby GO Report PB-76-17 to the Planning and Development Committee;
- Watson's 2016-2031 Non-Residential Growth Forecast by Fiscal Impact Study Development Type from their April 20, 2017 City of Burlington Fiscal Impact Study.

Note that the development of planning concepts has been an iterative process and several iterations have been provided. Specifically, the following reports PB-67-18, PB-11-18, and PB-14-18 have recently been completed for the Downtown MTSA. While this report was prepared based on a previous plan provided in September 2017, the water and wastewater servicing concepts can accommodate a certain level of flux with respect to populations.

It is important to note that the Region's Planning model as provided for this report is the basis utilized for understanding the Region's existing and planned infrastructure. No calibration of the system, such as verification of sewer inverts, detailed design information, was conducted by WSP (Formerly Wood) for this study as Halton's planning model is understood to be calibrated.

1.2 APPROACH TO WASTEWATER SERVICING

1.2.1 EXISTING SYSTEM CAPACITY EVALUATION

The Region's hydraulic models currently only extend to the 2031 timeframe. The population and employment projections for the MTSAs (which extend beyond 2031) are overlaid within the MTSA geography such that local servicing can be evaluated at full build-out. However, the impact on the broader Regional system cannot be interpreted at this time.

An updated wastewater system model was initially provided by Halton Region in September 2017. The model provides the following information that is used to confirm the system's available capacity:

- Physical characteristics of the sewer systems from the Burlington MTSAs to the Skyway wastewater treatment plant, i.e. size, diameter, elevations and slopes of the sewer system;
- Baseline and projected demands on the wastewater collection system. Baseline and projected demands (for a 2051 scenario) are included, the flows include a wet weather flow contribution;
- Modelled performance of baseline and projected demands through the wastewater collection system;
- The projected demands are based on best planning estimates (BPEs), the link between BPEs and demands is not provided in the Halton Model and the BPEs were not available for this study.

The following steps were undertaken to evaluate the existing system wastewater capacity:

- Identify suitable connection points to the system, and evaluate suitable capacity at connection points;
- Confirm sewersheds characteristics at the sub-trunks levels – desktop study independent of existing model, and confirmation of existing model;
- Utilize Halton's water & wastewater model to verify downstream trunk conveyance capacities;
- Add the demands associated with each of the Burlington MTSAs to the Halton model to confirm the loads within the 2031 wet weather flow models.
- Wastewater infrastructure which services multiple MTSAs (e.g., wastewater treatment plants, wastewater pump stations, etc.) have not been evaluated as part of this study.

A more recent version of the wastewater system model was provided by Halton Region in April 2022 and the above outlined steps were undertaken again to confirm the system's available capacity.

1.2.2 WASTEWATER DEMAND EVALUATION

A meeting was held with Halton Region on December 18th, 2017 to confirm the intended use of the model for planning purposes. The following key points were highlighted by Halton Region at the meeting:

1. The wastewater model – 2031 wet weather flow scenario– has an allowance for inflow and infiltration for the subject lands in all 4 of the Burlington MTSAs, as such, there is no need to add wet weather flows to the model;

2. The model has an inherent peak factor algorithm that calculates the peak factor in pipes based on the cumulative average day demand and coverage population, as such, flow inputs from proposed developments need only be input as average day flows.

3. Halton's model has a population coverage-based demand generation which is applied to the modeling. The populations in the model are input into the coverage field in the model to generate demands.

The planning scenarios utilized in Halton's wastewater model have a steady-state flow generation approach. Actual flow dynamics in the system may vary due to the flow attenuation that occurs with the storage within the systems, and due to the variability associated with inflow & infiltration (I & I). The I & I component may vary with time – it may be reduced through the implementation of I & I reduction measures are implemented or increased as the system ages and new sources of inflow and infiltration develop. The steady-state approach to demand evaluation is a conservative approach that provides for a certain amount of variability within the system and allows for high-level planning of infrastructure development. This approach is suitable for the review of downstream capacities for this project. It should be noted that inflow infiltration, basement flooding, and overflow issues are not evaluated and understood through the steady state flow approach. This can be better understood with a flow generation model that is calibrated with actual up to date flow and rainfall data.

1.2.3 DEVELOPMENT OF PROPOSED WASTEWATER COLLECTION SYSTEM

A gravity collection system was identified with the following steps:

1. Development of sewersheds based on topography, and Block by Block densities supplied by Brook McIlroy[1];

2. Review existing sewers and provide gravity system that outlets to existing sewer system – all proposed roads are provided a gravity sewer outlet, and all existing and proposed sewers must meet Halton Region's design standards.

[1] For MTSAs where final Block by Block density was not supplied, it was assigned by WSP (Formerly Wood) based on the total population growth projected for the specific Mobility Hub

1.3 APPROACH TO WATER SERVICING

1.3.1 EXISTING SYSTEM CAPACITY EVALUATION

The Region's hydraulic models currently only extend to the 2031 timeframe. The population and employment projections for the MTSAs (which extend beyond 2031) are overlaid within the MTSA geography such that local servicing can be evaluated at full build-out. However, the impact on the broader Regional system cannot be interpreted at this time.

An updated water system model was provided by Halton Region in September 2017 and further in April 2022. The model provides the following information that is used to confirm the system's available capacity:

- Physical characteristics of the water distribution system pipe network, pipe sizes, pumps and pumping systems, pressure zones, and planned system improvements by development year;
- Baseline and projected demands on the water distribution system. The baseline demands are from last Master Plan Update and projected 2051 future growth;
- Modelled performance of baseline and projected demands through the water distribution system.
- The projected demands are based on best planning estimates (BPEs), the link between best population estimates and demands is not provided in the Halton Model and the BPEs were not available for this study.

The following steps were undertaken to evaluate the existing water system capacity:

- Identify the pressure zones that are most suitable to service the lands within each of the Burlington MTSAs;
- Verify the existing system performance in the Halton 2031 scenario i.e. pressures under average day, peak hourly, and max day + fire conditions – note that the available fire flow under max day conditions is the governing hydraulic indicator of network capacity to deliver fire flows – note also that there is no evaluation of existing water quality performance deficiencies- however the design approach involves the creation of looped watermains so as not to introduce any new water quality issues;
- Identify key system components that are planned between now and 2031 that affect the hydraulics in the pressure zones servicing the Burlington MTSAs.

Water infrastructure which services multiple MTSAs (e.g., water purification plants, booster pump stations, etc.) have not been evaluated as part of this study.

Existing and planned water infrastructure impacting the MTSAs (both internal and external to the hubs) will be reviewed based on the Region's capital program to 2031 (i.e. water purification plants, pumping stations, reservoirs, watermains and pressure districts)

1.3.2 WATER DEMAND EVALUATION

A meeting was held with Halton Region on December 18th, 2017 to confirm the intended use of the model for planning purposes. The following key points were highlighted by Halton Region at the meeting:

1. The model applies fixed Max Day and Peak hourly factors to the Average Day demand.

2. Average Day Demand is population based with 255 L/person-day applied to residential. In regard to other land uses, Halton suggests a number of unit rates for commercial, institutional, industrial land uses. The inputs for this project are in residential and employment populations, as such a blended rate of 225 L/person-day is applied for the employment populations.

Design water demands were also developed in part using the Town of Halton Hills design criteria outlined in the Sustainable Halton Water and Wastewater Master Plan. Updated design flows, as later directed by the Region are summarized in Table 1.1 below.

Table 1.1- Water Demand Design Criteria

Land Use Type	Water Average Day Demands
Residential	255 L/person/day
Industrial/Commercial/Institutional	225 L/employee/day

The design of both water and wastewater facilities follows recognized standards and Planning documents, including:

- Design Guidelines for Sewage Works, Ministry of Environment, Conservation and Parks (MECP) (2008);
- Design Guidelines for Drinking Water Systems, MECP (2008);
- Sustainable Halton Water & Wastewater Master Plan, Halton Region (2011);
- Water & Wastewater Facilities Design Manual, Halton Region (updated 2017), and
- Linear Design Criteria, Contract Specifications and Standard Drawings, Halton Region.

The expected water demand (average day demand, max day demand and fire flow) will be established for each MTSA based on future residential and employment population forecasts for the specific time horizons required of 2051. Availability of adequate supply and pressure for servicing the proposed developments at 2031 will be confirmed through hydraulic modelling. Water demand and population/employment estimates are established and differentiated for the 2051 time-horizon.

Table 1.2– Notable Water Capital Projects

Unique ID	Description	Included in the Model
5850	1050mm WM on Upper Middle Road from Burloak Drive to Appleby Line (Zone B2) - Construction	Yes
6368	100mm WM on Burloak Dr from the QEW to Upper Middle Road (Zone B2) - Construction	Yes
6372	Construction of Burloak WPP Phase 2 Expansion from 55 to 165 ML/d	Yes
7505	1050mm WM on Burloak Dr from Burloak Booster Pumping Station to the QEW - Construction	Yes
8153	600mm WM on Wyecroft Rd from Burloak Dr to the 900mm Wm on the SE corner of Third Line and QEW	Yes

1.3.3 DEVELOPMENT OF PROPOSED WATER DISTRIBUTION SYSTEM

The proposed water distribution system is laid out with the following main principals:

1. Provide a distribution main on every proposed road with a minimum size of 300 mm;

2. Avoid the introduction of new dead ends and provide loops for existing dead ends wherever possible;

3. Confirm water distribution hydraulics via modeling by reviewing the available fire flow as an indicator;

4. Consideration for a preferred operating pressure range that is narrower than the extremes allowed by the mandated range.

The rationale for this system is to provide a simple and practical approach that will provide the Region and the City of Burlington with a pipe network that does not limit fire flow capacity due to the looped 300 mm network, and that does not introduce water quality issues associated with dead end watermains.

1.4 ADDITIONAL CONSIDERATIONS

1.4.1 PLANNING HORIZON USED IN THIS STUDY

The Region's planning forecasts and associated hydraulic modeling extends only to 2031 and is based on the 2011 Water and Wastewater Master Plan and the 2011 Best Planning Estimates (BPE) for population growth in the Region. While the timeframe for full build-out of the Burlington MTSAs is currently unknown, it will extend beyond 2031 to 2051. For the purposes of this study, each MTSA is evaluated independently at full population build-out, with internal and external water and wastewater infrastructure matching the 2031 Regional hydraulic models but actually going out to 2051 projected populations. While it is clear that this scenario is not consistent with current planning, this study makes use of the information and tools available at this time. It is important to note that infrastructure planning will change over time with the completion of the Municipal Comprehensive Review, including on-going Regional Official Plan review and subsequent updates to the Regional Water and Wastewater Master Plan.

The timing for full build-out of Burlington MTSAs is reliant on many factors and difficult to predict. However, it is expected to be in excess of 50 years.

1.4.2 COST SHARING OPPORTUNITY FOR INTENSIFICATION AREAS

This report provides the overall servicing requirements for the planned intensification in each of the MTSAs with the goal of providing the City and the Region with the opportunity to coordinate the sharing of servicing costs on a group level basis, rather than on a developer individual basis. The City and the Region can determine a suitable form for ensuring that upgrades are financed and the cost is fairly shared by stakeholders such as developers, existing and future Burlington residents and business owners.

1.4.3 INTEGRATION WITH HALTON REGION'S MASTER PLAN

The Municipal Comprehensive Review, including on-going Regional Official Plan review, subsequent updates to the Regional Water and Wastewater Master Plan and other longer-term planning, in conjunction with Provincial Policies, will inform the development of the Burlington MTSAs and provide context for build-out. The recommendations in this report are meant to support the Master Plan

directives while identifying constraints affecting the MTSAs, as well as opportunities for design improvements that can be implemented through the design and construction process.

1.4.4 IMPACTS TO THE OVERALL REGIONAL WATER AND WASTEWATER SYSTEM

It is understood that development and intensification within the MTSAs may impact the Regional water and wastewater system. In particular, the system-wide impacts are anticipated for the water conveyance, storage, pumping and treatment, as well as wastewater trunk mains, pumping and treatment. It is recognized that the impact of the MTSA intensification and development on the Regional scale needs to be evaluated, quantified and accounted for in a subsequent study.

It is also recognized that the trunks, pumping stations, storage reservoir and treatment plants have much broader service areas. As such, a Region-wide study such as a Master Servicing Plan, or another study focusing on the system-wide analysis is better suited to evaluate the impact of overall development to the Regional infrastructure than the current study, which focuses on local infrastructure.

The need for Regional based servicing requirements such as wastewater treatment plants, pumping stations or gravity sewers will require further analysis. This report considers linear infrastructure only. The recommendations and strategies determined through Master Planning will be used to update this study ahead of future development in accordance with Area Specific Plan policies to ensure consistency between Planning documents.

2 APPLEBY GO MTSA

2.1.1 STUDY AREA

The Appleby Go MTSA study area is centred on the Appleby GO Station. It is bounded by the Queen Elizabeth Way/Highway 403 to the north and the Centennial Bikeway corridor to the south. The area covers approximately 210 hectares (ha.) The site slopes from north-west to south-east and ranges in elevation from approximately 120 metres to 96 metres. The topography of the Hub lands is given in **Figure 2-1**.

Figure 2-1. Appleby GO MTSA - Topography Context

2.2 PLANNING CONTEXT

2.2.1 PROJECTED DENSITY

The Preferred Land Use Plan as per Brook McIlroy (Technical Memo of November 9, 2017, to the City of Burlington) is given in **Figure 2-2**. Density calculations for the hub are based on full build-out of the Preferred Land Use. The Appleby GO MTSA is projected to have capacity for 20,000 new people and 43,000 new jobs, or a total of 63,000 new people and jobs, and a gross density of 300 people and jobs per hectare at full build.

The MTSA land use Traffic Zone Allocations are considered more realistic numbers for this development and were carried through during this study and used for modeling purposes. The Appleby GO MTSA is projected to have an increase of 8471 new people, 18,176 new jobs, or a total of 26,647 new people and jobs, and a gross density of 127 new people and jobs per hectare.

The projected density calculations and block map for the Appleby GO MTSA are presented in **Appendix A**.

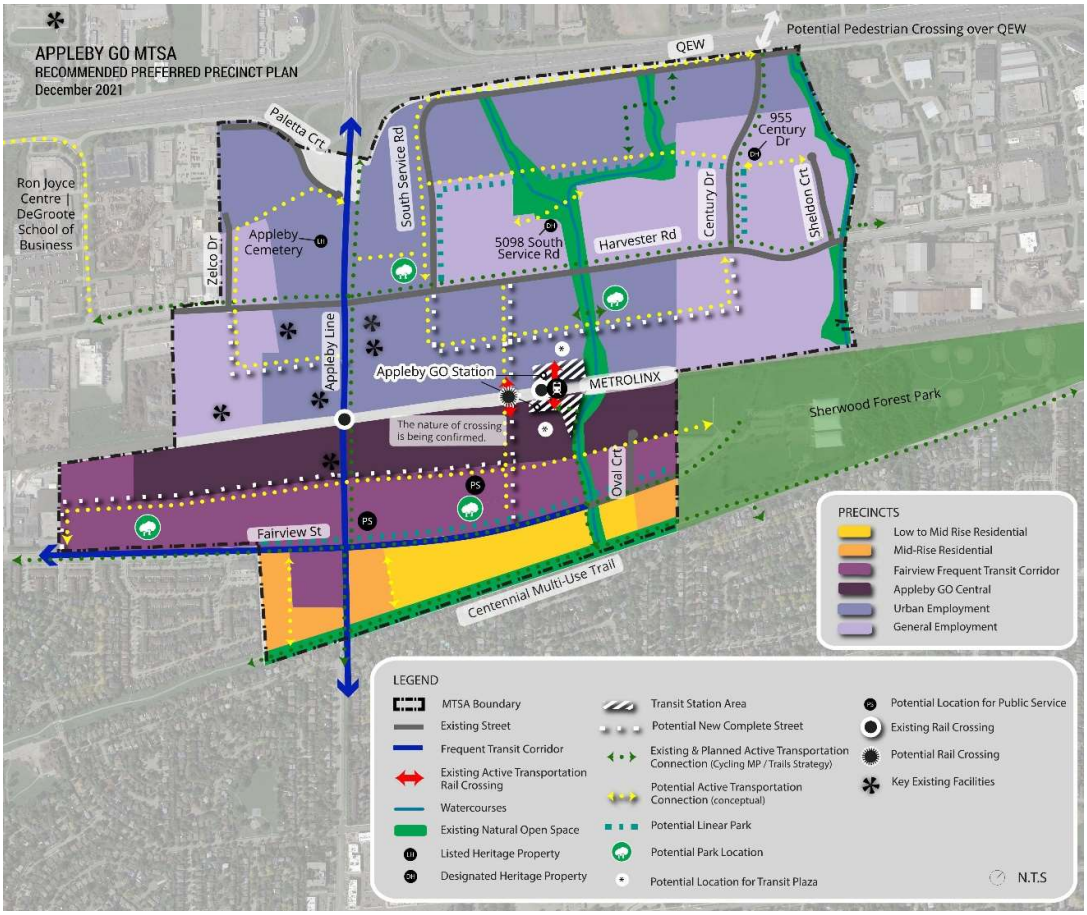


Figure 2-2. Appleby GO MTSA Preferred Concept

2.3 EXISTING CONDITIONS

The existing Appleby GO MTSA is largely comprised of existing employment uses north of the rail line including offices, manufacturing and industrial uses (see Figure 2-3). The area south of the rail line is characterized by low and mid-rise residential development south of Fairview Street as well as large employment lands along Fairview Street, some of which are vacant or undeveloped in the area around the Appleby and Fairview intersection. The area is well served by a major park (Sherwood Forest Park) and has direct access to the Centennial Multi-Use Pathway connecting the area directly to Downtown[2]. See

2.4 WASTEWATER SERVICING EVALUATION

2.4.1 EXISTING WASTEWATER SERVICES

The Appleby GO MTSA is situated near an existing 1200 mm trunk sanitary sewer that conveys flows for treatment in the Skyway Wastewater Treatment Plant as shown in **Figure 2-3.** This is a large capacity system that is designed to take on flows from most of the Skyway Wastewater Treatment Plant Service Area. This gravity trunk sewer starts at the south-west corner of the MTSA lands and will form the primary outlet to the collection system for proposed development in the Appleby GO MTSA.

Lands within the MTSA are to be serviced by gravity sewers connecting to 1200 mm trunk sanitary sewer. Future services required for intensification in the Appleby GO MTSA would include Local Sewer Conveyance Improvements, and capital contribution to the life-cycle component for the Halton wastewater collection and treatment system within the Skyway Wastewater Treatment Plant Sewershed.

Key Wastewater infrastructure components around the Appleby GO MTSA lands is described as follows:

1. **North East Burlington Trunk Sewer (NEBTS):** A 900 mm – 1050 mm sewer that runs from East to West through the subject lands. The sewer services an upstream external area of approximately 400 ha in Burlington and West Oakville. The upstream area is partially developed and includes a large greenfield area known as the Bronte Meadows development.
2. **Existing Local Sewers within subject lands:** There are two branch connections to the NEBTS that cover a portion of the subject lands
3. **The Skyway East Trunk Sewer (SETS):** This consists of the trunk sewer that runs East West through Burlington at to the Skyway Wastewater Treatment Plant.

Key external planned infrastructure upgrades include:

1. **New 2400 mm Sewer Inlet at Skyway WWTP**

[2] Source: GO Station Mobility Hubs Preferred Concepts: Aldershot GO, Burlington GO and Appleby GO Report PB-76-17 to the Planning and Development Committee

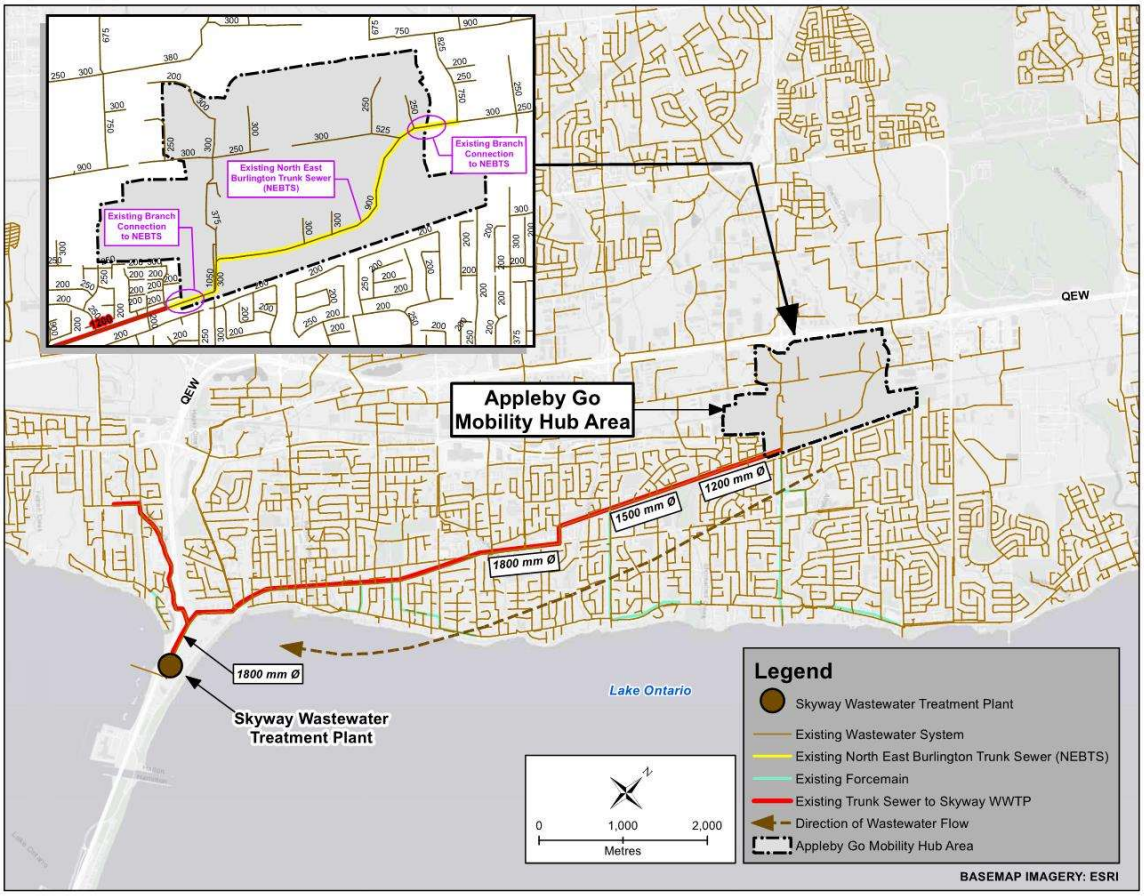


Figure 2-3. Existing Wastewater Services for Appleby GO MTSA

2.4.2 WASTEWATER SERVICES

Review of Existing and Planned Infrastructure

The following is a brief discussion and summary of existing and planned wastewater services for the Appleby GO MTSA.

Internal Services

A plan of services for the proposed MTSA is provided in **Figure 2-4**. This figure shows proposed main trunk sewer lines connecting to the available existing outlets to Halton's wastewater collection system. Profiles for the main lines are given in

Figure 2-5. Additional sewer lines were labelled as "secondary lines", profiles for these sewers are not given, they are included as part of the overall servicing plan. The proposed plan includes sewer service along all of the proposed roads in the MTSAs.

The proposed internal sewer layout also makes use of existing sewers within the existing roads, as such there are no proposed sewer upgrades within the existing road such as Appleby Line & Fairview Street. New Sewers are generally proposed in areas where there will be a change in land use or a new road. As such there is no restoration cost added to the sewer cost estimate as it is not expected that it will be built within an existing road. The new internal layout involves approximately 4,270 m of new sewers.

The development of the sanitary sewer trunks was conducted to maximize the use of available capacity within the existing sewers and follow the existing topography as much as possible. Due to limited capacity in the existing Appleby Road Sewers, Sewer Reach #3 was extended to the North portion of the subject lands (Sewershed areas A9 and A20).

External Services

Halton's wastewater model 2031 scenario with the proposed updated population in the Appleby GO MTSA, confirms there is sufficient capacity in the existing connections downstream for conveyance to the Skyway Treatment Plant. Note that external capacity is reviewed by Halton Region as part of the Master Planning process and for the cumulative effect on major trunk systems such as the NEBTS, the SETS, and the Skyway WWTP. New developments that benefit from the existing capacity are assigned an overall development charge to pay for the life-cycle cost of the infrastructure.

Key External Planned Infrastructure Projects

Key external planned infrastructure upgrades indicated by Halton Region include:

1. ***New 2400 mm sewer inlet to Skyway WWTP parallel to QEW***

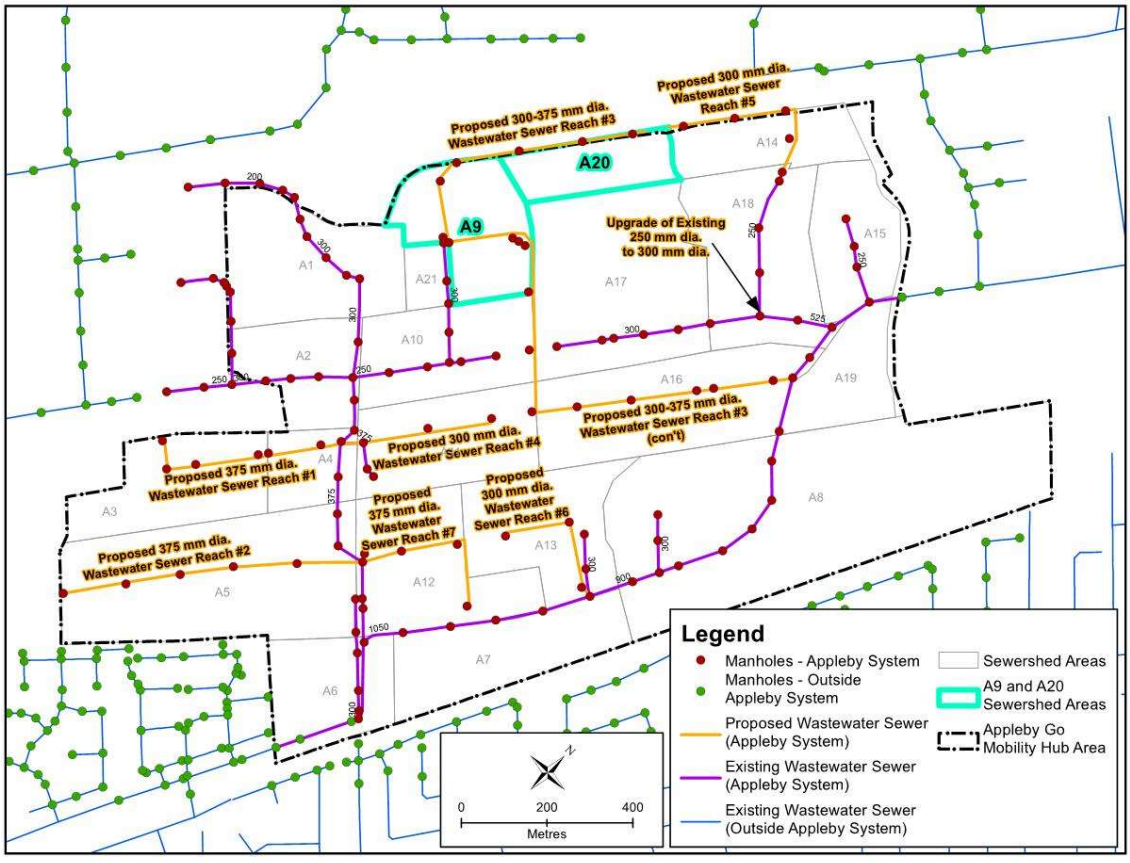


Figure 2-4. Appleby GO MTSAs Proposed Wastewater System

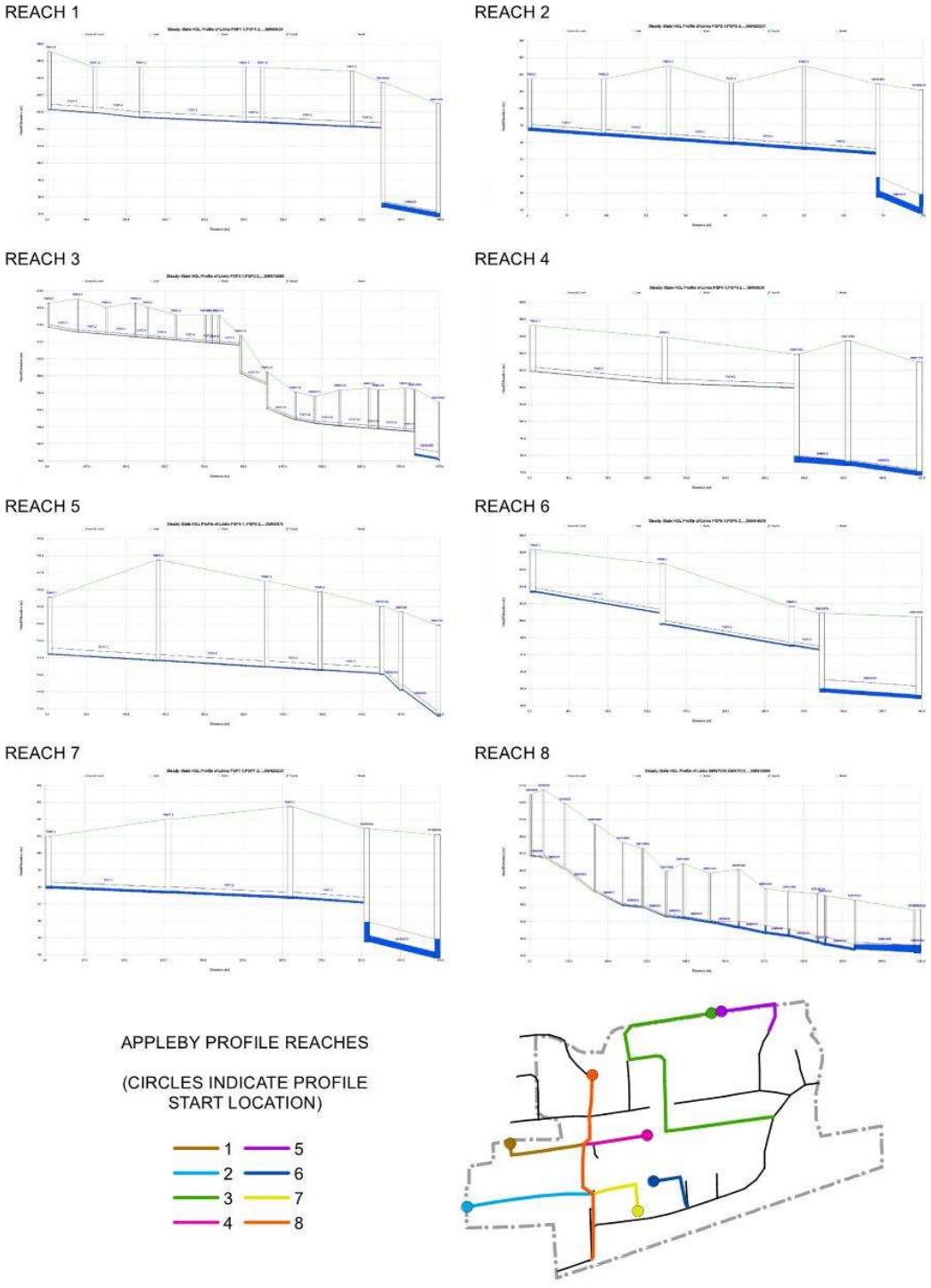


Figure 2-5. Appleby GO MTSA Sanitary Sewer Profiles

2.4.3 APPLEBY GO - WASTEWATER SERVICING DESIGN CRITERIA

The following table outlines the design requirements for the Appleby GO wastewater collection system.

Table 2-1. Design Criteria – Wastewater Collection System

Pipe Flow		
Coefficient of Roughness	n = 0.013	Halton Region
Minimum Flow Velocity	0.6 m/sec	Halton Region
Maximum Flow Velocity	3.0 m/sec	Halton Region
Infiltration		
Infiltration Allowance	0.286 l/sec/ha	Halton Region
Wastewater Generation Rate		
Residential	210 L/cap/day	
Employment	185 L/cap/day	

2.4.4 APPLEBY GO - WASTEWATER GENERATION

Wastewater generation rates have been calculated based on the preferred Land Use, utilizing Halton Region design criteria listed above.

Wastewater Loading and Infiltration/Inflow Generation

Infiltration and Inflow (I&I) = 0.286 Litres per hectare per second

Wastewater flow projection for the Appleby GO service area was estimated by applying these criteria to the total equivalent population and the area. The WW generation rates were calculated using 210 L/cap/day for residential and 185 L/cap/day for employment. These design inputs are outlined to Table 2-1. The Inflow and Infiltration amounts were factored in by applying the Modified Harmon Peaking Method which is built into and calculated through the hydraulic model. The following wastewater loading, and I&I generation rates were calculated for the Appleby GO MTSA.

Table 2-2. Appleby GO Loading and Generation

Parameter	Value
Average Daily Dry Weather Flow	59.5 L/s
Average Daily Wet Weather Flow	67.21 L/s
Total Peak Wastewater Flow Including I&I	212.78 L/s

Establish the expected sanitary flows (average dry weather flow, maximum wet weather flow (including I/I) for each MTSA based on future residential and employment population forecasts (specific time horizons required: 2031 and 2051). Confirm via hydraulic modeling that adequate capacity is available for servicing the proposed developments in 2031.

It is requested that wastewater generation rates and population/employment estimates are established and differentiated for both the 2031 time-horizon as well as for 2051.

2.4.5 APPLEBY GO - WASTEWATER MODELLING

The hydraulic wastewater model was updated using the Region's most up to date data for a 2031 time-horizon. No additional Regional based servicing constraints regarding wastewater treatment plants, pumping stations or gravity sewers are identified for the Appleby GO MTSA at this point. For the purpose of this report, only linear infrastructure has been considered to date. Further analysis is required to confirm vertical infrastructure needs. Expansion and upgrade requirements for the Appleby GO MTSA to accommodate projected residential and employment populations are identified in the following section.

Summary of Proposed Additional Wastewater Servicing

To accommodate the full build out scenario for the Appleby GO MTSA, the proposed additional wastewater infrastructure is summarized below:

Table 2-3. Appleby GO – Proposed Wastewater Infrastructure

Gravity Mains	Meters
250 mm	91
300 mm	2,106
375 mm	2,074

2.5 WATER SERVICING

2.5.1 EXISTING WATER SERVICES

The Appleby GO MTSA is mainly serviced by Burlington Pressure Zone B2 and partially in Pressure Zone B1 (south of Harvester) with existing services shown in **Figure 2-6**. The flows from the Burlington WPP and the Washburn Pump Station align wit the Region's Modelling data. The topography is such that some portions of the site can be serviced by either pressure zone with overlapping areas near Fairview Street. The preferred service ground elevation range for the pressure zones is given in **Table 2-4.**

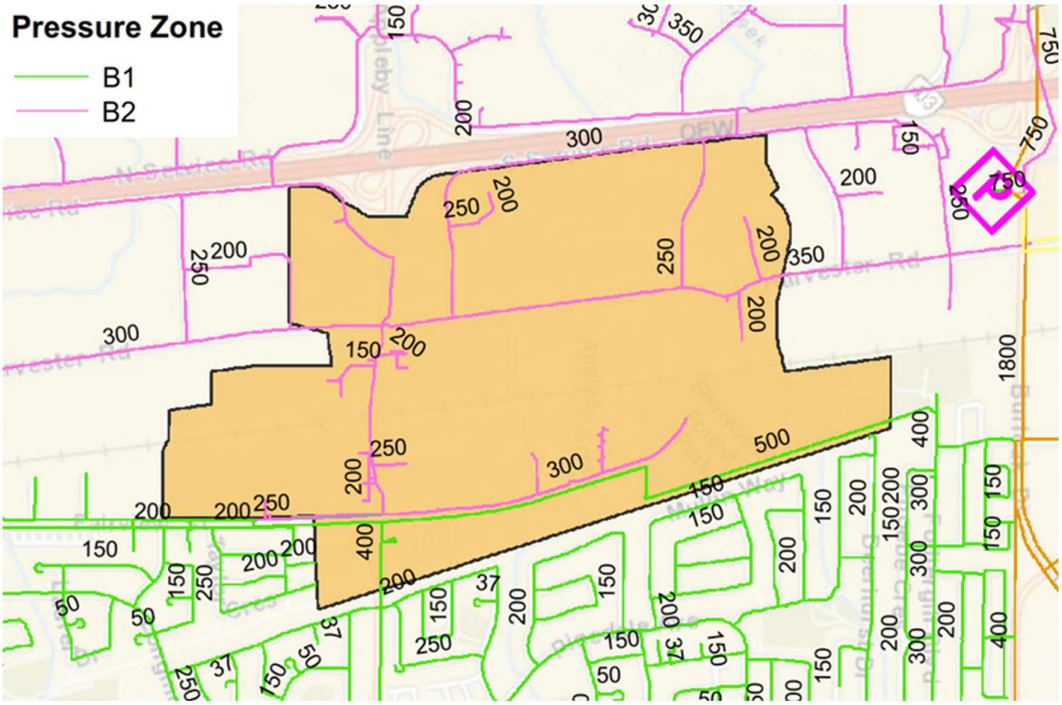


Figure 2-6. Existing Water Services at Appleby GO MTSA

Table 2-4. Appleby GO MTSA Pressure Zone Suitability

	Required (MOECC)	Preferred Range
Min Operating Pressure	28.0 m	35.0 m
Max Operating Pressure	50.0 m	56.0 m
Zone B2 Pressure Zone Characteristics		
Min Suitable Ground Service Elevation	**97.8 mASL**	**111.8 mASL**
Maximum Suitable Ground Service Elevation	**132.3 mASL**	**125.3 mASL**
Minimum HGL	160.3 mASL	
Max HGL	167.8 mASL	
Zone B1 Pressure Zone Characteristics		
Min Suitable Ground Service Elevation	**65.0 mASL**	**79.0 mASL**
Maximum Suitable Ground Service Elevation	**102.2 mASL**	**95.2 mASL**
Minimum HGL	130.2 mASL	
Max HGL	135.0 mASL	

Key External Planned Infrastructure Projects

Halton's Planning model indicates a number of planned infrastructure components that are to be in-service by 2031. Key Components were identified and Halton Region confirmed the status of the components as follows:

1. ***Zone 1 900 mm Feedermain from Guelph Line/Prospect Street to Washburn Reservoir.***
2. ***300 mm Watermain ON Fairview St.***

The 2031 modeling results for the Appleby MTSA includes these components in service.

2.5.2 PROPOSED WATER SERVICES

One possible servicing plan is given in **Figure 2-7**.

Given the existing topography and pipe configurations at the pressure zone boundary, consideration could be given to designating Fairview Street as the Pressure Zone boundary between Zone 1 and Zone 2. This would require the re-configuration of the existing mains and Pressure Reducing Valves (PRVs) along Fairview Street to the West of Appleby Line. A conceptual design is shown on the inset, subject to further review by the Region.

There are two pressure zones within the Appleby MTSA: Pressure Zone B1 and B2. Currently, Fairview Street generally marks the boundary between these two pressure zones within the Appleby MTSA, with Pressure Zone B2 being mostly north of this street and Pressure Zone B1 being south of it. However, there are some areas west of Appleby Line where Pressure Zone B1 extends north of Fairview Street and areas east of Appleby Line where Pressure Zone B2 extends south of Fairview Street.

Given the existing topography and pipe configurations within the Appleby MTSA, the boundaries between Pressure Zones B1 and B2 could be realigned to improve water pressures and flows. It is proposed to modify the current pressure zone boundaries within the Appleby MTSA so that the areas west of Appleby Line and north of Fairview Street be entirely converted to Pressure Zone B2, and the areas east of Appleby Line and South of Fairview Street be converted to Pressure Zone B1. Realigning the pressure zones' boundaries would require reconfiguring the pressure reducing valves (PRVs) along Fairview Street. The proposed alignment is shown in **Figure 2-7**. It must be noted that pressure zone realignment is outside the scope of this study. The decision to modify the current limits of these two zones is to be evaluated through the Region's Water and Wastewater Master Servicing Plan.

Review of Existing and Planned Infrastructure

The following is a brief discussion and summary of existing and planned water services for the Appleby GO MTSA.

Internal Services

A network of 300 mm watermains is proposed along all new road rights-of-way. It is proposed to extend the existing watermain on Fairview Street through an easement through Sherwood Forest Park and across the railway to complete a loop within Zone 2 and eliminate the existing dead end.

A total of 8,242 m of new watermain is proposed to service the Appleby GO MTSA.

External Services

Halton's model 2051 scenario with the proposed updated population in the Appleby GO MTSA, confirms there is sufficient capacity to meet the boundary conditions and support the demands as described below. Note that external capacity is reviewed by Halton Region as part of the Master Planning process and for the cumulative effect on major supply and transmission systems. New developments that benefit from the existing capacity are assigned an overall development charge to pay for the life-cycle cost of the infrastructure.

Confirmation of Capacity

The proposed system was modelled with the following elements:

- Halton's proposed, existing and upgraded infrastructure to 2031;
- The proposed updated population for the Appleby GO MTSA as well as the 2051 demands elsewhere in the Region;
- The proposed internal network as shown in **Figure 2-7**.

The model output for the available fire flow indicator is above 280 L/s for the subject lands as shown in **Figure 2-8**. This confirms the network is suitable to support the needs of a variety of building types.

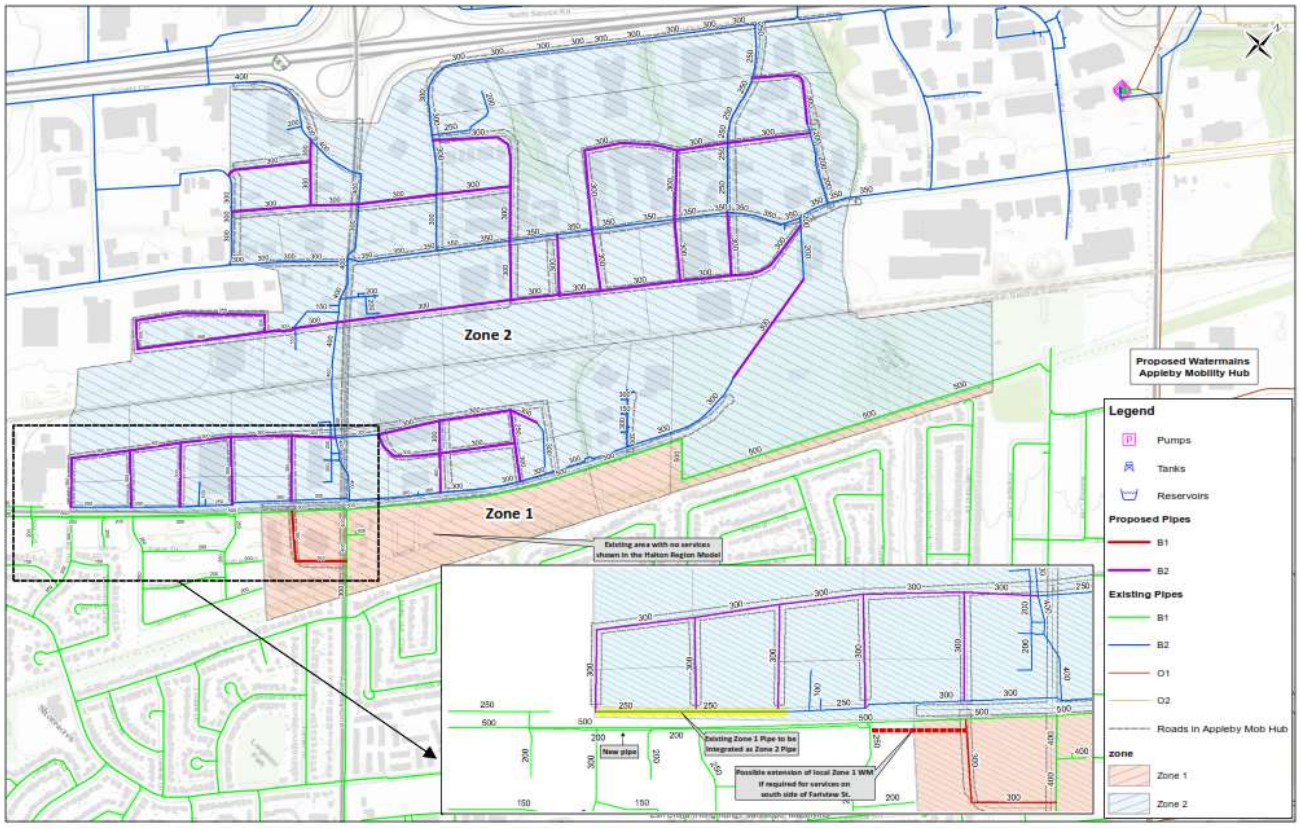


Figure 2-7. Proposed Water System - Appleby GO MTSA

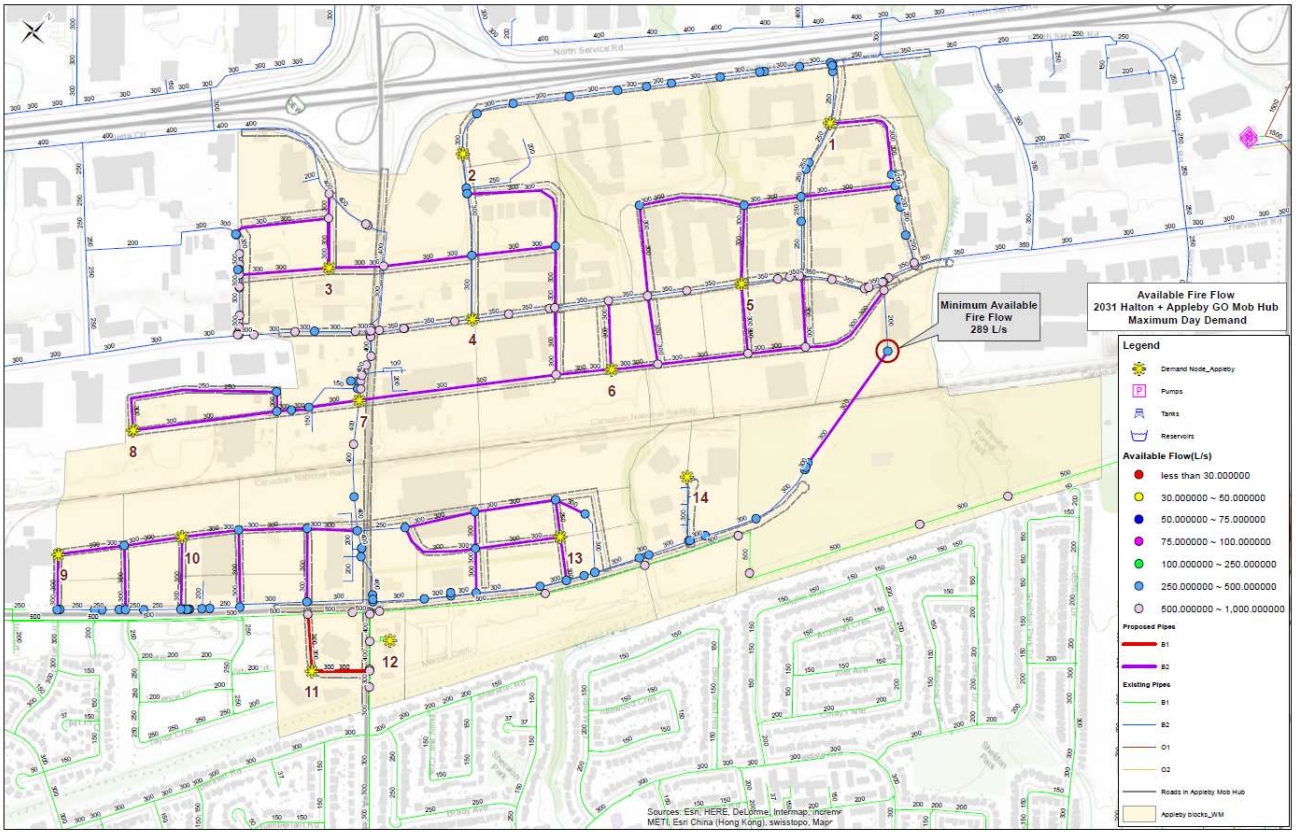


Figure 2-8. Appleby Go - Available Fire Flow – Proposed

2.5.3 APPLEBY GO – WATER DESIGN CRITERIA

Design water demands used to update the hydraulic modelling are outlined in the table below as per comments received which suggested using unit water usages rates for residential (255 L/p-d) and ICI (a single blended rate = 225 L/p-d). With these usage rates, the average demands (L/s) and Max Day Demand (MDD) were determined using a max day factor of 2.25 (Typically a maximum daily factor of 1.9 is used, however, based on the land use mix, a rate of 2.25 was used as the best-informed factor at the time that model was run. This slightly different factor should not influence any recommendation or outcome but can be corrected in the future if deemed necessary)

Table 2-5. Design Criteria – Water Demand

Land Use Type	Water Average Day Demands
Residential	255 L/person/day
Industrial/Commercial/Institutional (Blended)	225 L/employee/day

2.5.4 APPLEBY GO – WATER DEMAND

The following hydraulic modelling results confirm supply and pressure availability to service the proposed developments at 2031. The anticipated water demand (average day demand, max day demand and fire flow) for the projected growth in each MTSA was calculated based on 2051 residential and employment population forecasts from the MTSA land use Traffic Zone Allocation. The average day demand (ADD) projection was estimated by applying the above criteria to the total equivalent population and the area. The following factors were utilized to estimate the maximum day demand (MDD) and peak hour demand (PHD).

MDD	2.25
PHD	3.0

Applying these criteria to the residential and employment populations and adding the demands up, the ADD, MDD and PHD are:

Table 2-6. Appleby GO – New Development Water Demand Growth

Parameter	Value
Residential Population	8,471
Employment Population	18,176
Average Daily Demand (ADD)	72.3 L/s
Maximum Daily Demand (MDD)	162.8 L/s
Peak Hour Demand (PHD)	216.9 L/s

For water analysis, the future demands were distributed to Demand 7 for anticipated residential growth and Demand 9 for anticipated employment growth.

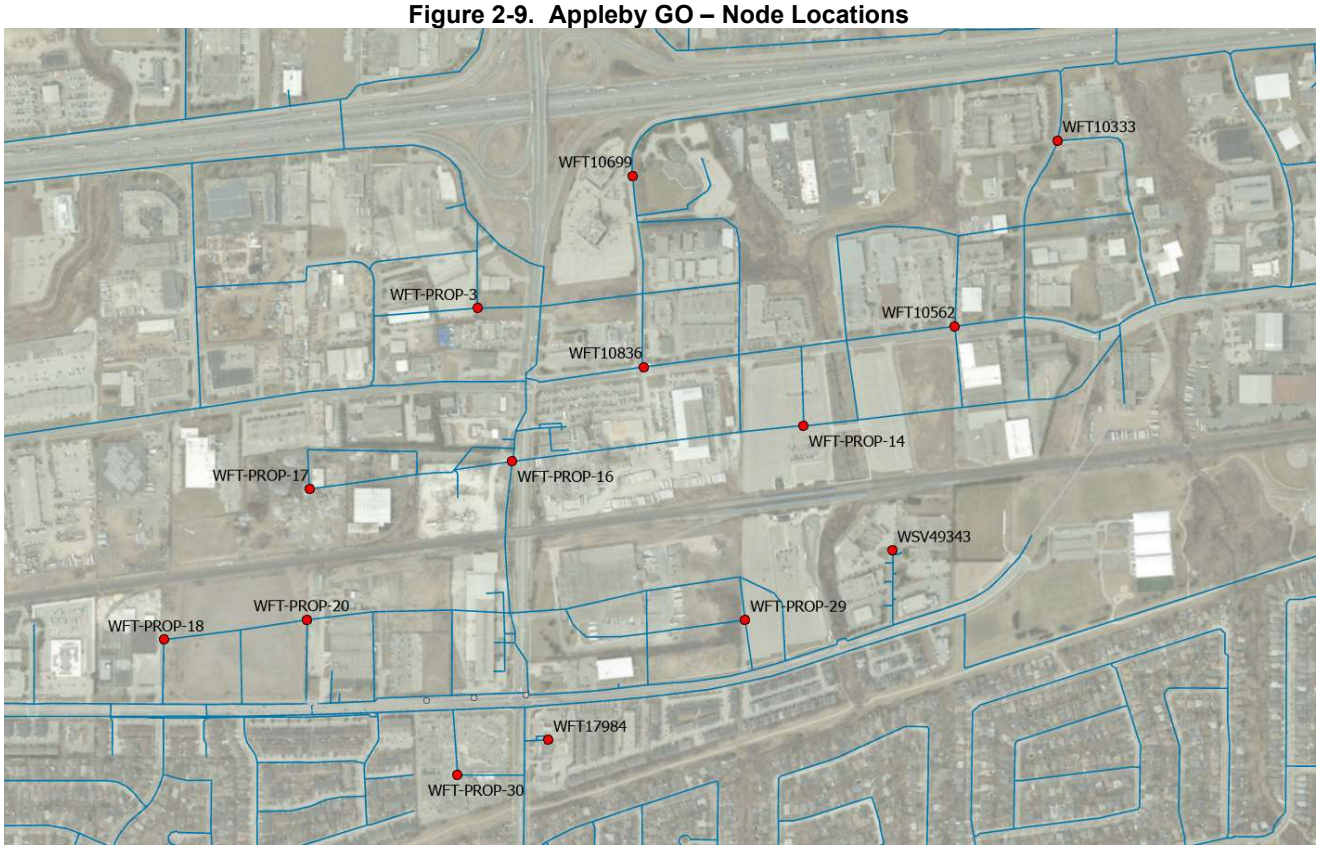
Table 2-7. Appleby GO – Modelling Results Under MDD

Junction ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (psi)
WFT-PROP-14	5.0	106.0	165.4	84.4
WFT-PROP-16	3.7	105.9	164.9	83.8
WFT-PROP-17	3.7	106.5	164.9	83.0
WFT-PROP-18	16.7	102.0	164.3	88.5
WFT-PROP-20	16.7	101.0	164.3	90.0
WFT-PROP-29	24.7	102.0	164.2	88.4
WFT-PROP-3	6.0	115.5	165.5	71.1
WFT-PROP-30	6.3	99.0	135.9	52.4
WFT10333	5.2	116.0	165.6	70.5
WFT10562	10.2	108.8	165.5	80.5
WFT10699	5.2	116.9	165.4	69.0
WFT10836	10.2	108.7	165.3	80.5
WFT17984	24.7	99.7	135.9	51.4
WSV49343	24.7	102.7	163.9	87.0

Table 2-8. Appleby GO – Modelling Fire Flow Results

ID	Total Demand (L/s)	Hydrant Available Flow (L/s)	Critical Pressure for Design Run (psi)
WFT-PROP-14	285.0	821.4	28.4
WFT-PROP-16	283.7	730.2	28.4
WFT-PROP-17	283.7	392.7	28.4
WFT-PROP-18	296.7	378.2	28.4
WFT-PROP-20	296.7	444.2	28.4
WFT-PROP-29	304.7	447.6	28.4
WFT-PROP-3	286.0	710.5	28.4
WFT-PROP-30	286.3	606.5	28.4
WFT10333	285.2	558.3	28.4
WFT10562	290.2	804.7	28.4
WFT10699	285.2	527.1	28.4
WFT10836	290.2	800.4	28.4
WFT17984	304.7	647.6	28.4

Figure 2-9. Appleby GO – Node Locations



2.5.5 APPLEBY GO - WATER MODELING RESULTS

The hydraulic water model was updated using the Region's most up to date data for a 2031 time-horizon. No additional Regional based servicing constraints regarding water purification plants,

reservoirs, pump stations, or linear infrastructure were identified for the Aldershot GO MTSA. Expansion and upgrade requirements for the Aldershot GO MTSA to accommodate projected residential and employment populations are identified in the following section. The model output for the available fire flow indicator is 273.4 L/s to 821.4 for the subject lands as shown in **Figure 2.9**. This confirms the network is suitable to support the needs of a variety of building types. All tested nodes in the Appleby Go MTSA had sufficient fire flows of more than 250L/s available (see **Table 2-8**). The MDD+FF scenarios were completed with the residual pressure set as 28.4 psi and the available fire flows are expected to be higher than what have been presented in the report with the minimum residual pressure requirement of 20 psi. Although current results are adequate, it is suggested to re-run the model with the pressure set at 20 psi for even better results if deemed necessary.

2.6 SUMMARY AND COST ESTIMATE

The Appleby GO MTSA can be adequately serviced from Halton Region's Lake based system as per the plans described in Section 2.4.2 (Proposed Wastewater Services) and Section 2.5.2 (Proposed Water Services).

Preliminary Cost Estimates are provided for information purposes in **Table 2-**9 and **Table 2-10** and based on 2022 construction costs. Costs are provided for planning purposes only. Note that actual costs can vary considerably due to labour, materials, unknown design factors, ground conditions, staging.

The estimate represents an overall budget for transmission and collection servicing upgrades to provide an opportunity for collective cost sharing of servicing at the level of the MTSA or as an intensification fund levied from intensification developments within targeted areas in the City of Burlington.

External Servicing and Life-Cycle Costs associated with the Halton Lake Based Trunk wastewater collection & treatment, as well as the treated water supply, storage, transmission and pumping are not included in the estimates below.

No specific external services are identified for the Appleby GO MTSA.

The following estimated costs are based on the Regional Municipality of Halton 2022 Water/Wastewater Development Charges Update and include full road reconstruction.

Table 2-9. Cost Estimate – Appleby GO MTSA - Internal Sanitary Servicing[3]

Description	Unit	Quantity	Unit Cost	Extended Cost	Amount
Reach #1					**$416,700**
375 mm dia & 2.5-3 m deep Sanitary Sewer pipe in Proposed Roads	per meter	470	$810/m	$380,700	
1200 mm Sanitary Manhole 2.5m -3m deep	each	6	$6,000/each	$36,000	
Reach #2					**$607,000**
375 mm dia & 3.5-5 m deep Sanitary Sewer pipe in Proposed Roads	per meter	700	$810/m	$567,000	
1200 mm Sanitary Manhole 3.5-5 m deep	each	5	$8,000/each	$40,000	
Reach #3					**$1,526,500**
300 mm dia & 3-4.5 m deep Sanitary Sewer pipe in Proposed Roads	per meter	1,350	$760/m	$1,026,000	
375 mm dia & 3-5 m deep Sanitary Sewer pipe in Proposed Roads	per meter	450	$810/m	$364,500	
1200 mm Sanitary Manhole 3-5 m deep	each	17	$8,000/each	$136,000	
Reach #4					**$224,800**
300 mm dia & 2.5-3 m deep Sanitary Sewer pipe in Proposed Roads	per meter	280	$760/m	$212,800	
1200 mm Sanitary Manhole 2.5-3 m deep	each	2	$6,000/each	$12,000	
Reach #5					**$355,000**
300 mm dia & 2.5-4.5 m deep Sanitary Sewer pipe in Proposed Roads	per meter	425	$760/m	$323,000	
1200 mm Sanitary Manhole 2.5-4.5 m deep	each	4	$8,000/each	$32,000	
Reach #6					**$246,000**
300 mm dia & 2.5-3.5 m deep Sanitary Sewer pipe in Proposed Roads	per meter	300	$760/m	$228,000	
1200 mm Sanitary Manhole 2.5-3.5 m deep	each	3	$6,000/each	$18,000	
Reach #7					**$331,800**
375 mm dia & 3-6 m deep Sanitary Sewer pipe in Proposed Roads	per meter	380	$810/m	$307,800	
1200 mm Sanitary Manhole 3-6 m deep	each	3	$8,000/each	$24,000	
Secondary Sewer Servicing					**$2,280,000**
300 mm dia Sanitary Sewer pipe and 1200 mm Manholes@120m spacing	per meter	3,000	$760/m	$2,280,000	
Sub-Total Cost Estimate					**$5,987,800**
Contingency & Engineering Allowance 35%					$2,095,730
Total Cost Estimate (rounded)					**$8,083,530**

Table 2-10. Cost Estimate - Appleby GO MTSA - Internal Water Servicing[3]

Description	Unit	Quantity	Unit Cost	Extended Cost	Amount
New Watermains and their Connections					**$7,978,256**
300 mm dia. Watermains in Proposed Roads	per meter	8,242	$880/m	$7,252,960	
Allowance for connections, PRVs, etc.	L.S.	1		$725,296	
Sub-Total Cost Estimate					**$7,978,256**
Contingency & Engineering Allowance 35%					$2,792,389
Total Cost Estimate (rounded)					**$10,770,645**

[3] The cost of road reinstatement is included in the unit cost for planned work in existing roads. For planned work in proposed roads, the cost of new road construction is not included. The added cost of new full width road construction is estimated in the range of $5,200 to $5,900 per linear meter.

3 BURLINGTON GO MTSA

3.1 STUDY AREA

The Burlington GO MTSA study area is located in and around the existing Burlington GO station, and includes lands along major corridors including Brant Street from Plains Road to Prospect Street, Fairview Street from approximately 400 m to the West of Brant Street to Drury Lane, and Plains Road from Helena Street to Brenda Crescent. The area covers approximately 97 hectares (ha.) The site slopes from North to South. The studied area range in elevation approximately 110 m to approximately 91.5 m. The elevation contours are presented in **Figure 3-1**.

Figure 3-1. Burlington Go MTSA Topography Context

3.2 PLANNING CONTEXT

3.2.1 PROJECTED DENSITY

The Preferred Land Use Plan as per Brook McIlroy (Technical Memo of November 9, 2017, to the City of Burlington) is given in **Figure 2-2**. Density calculations for the hub are based on full build-out of the Preferred Land Use. The Burlington GO MTSA is projected to have capacity for 22,000 new people and 9500 new jobs, or a total of 31,500 people and jobs, and a gross density of 325 people and jobs per hectare at full build.

The MTSA land use Traffic Zone Allocations are considered more realistic numbers for this development and were carried through during this study and used for modeling purposes. The Burlington GO MTSA is projected to have an increase of 12,882 new people, 8354 new jobs, or a total of 21,317 new people and jobs, and a gross density of 220 new people and jobs per hectare.

The projected density calculations and block map for the Burlington GO MTSA are presented in **Appendix A**.

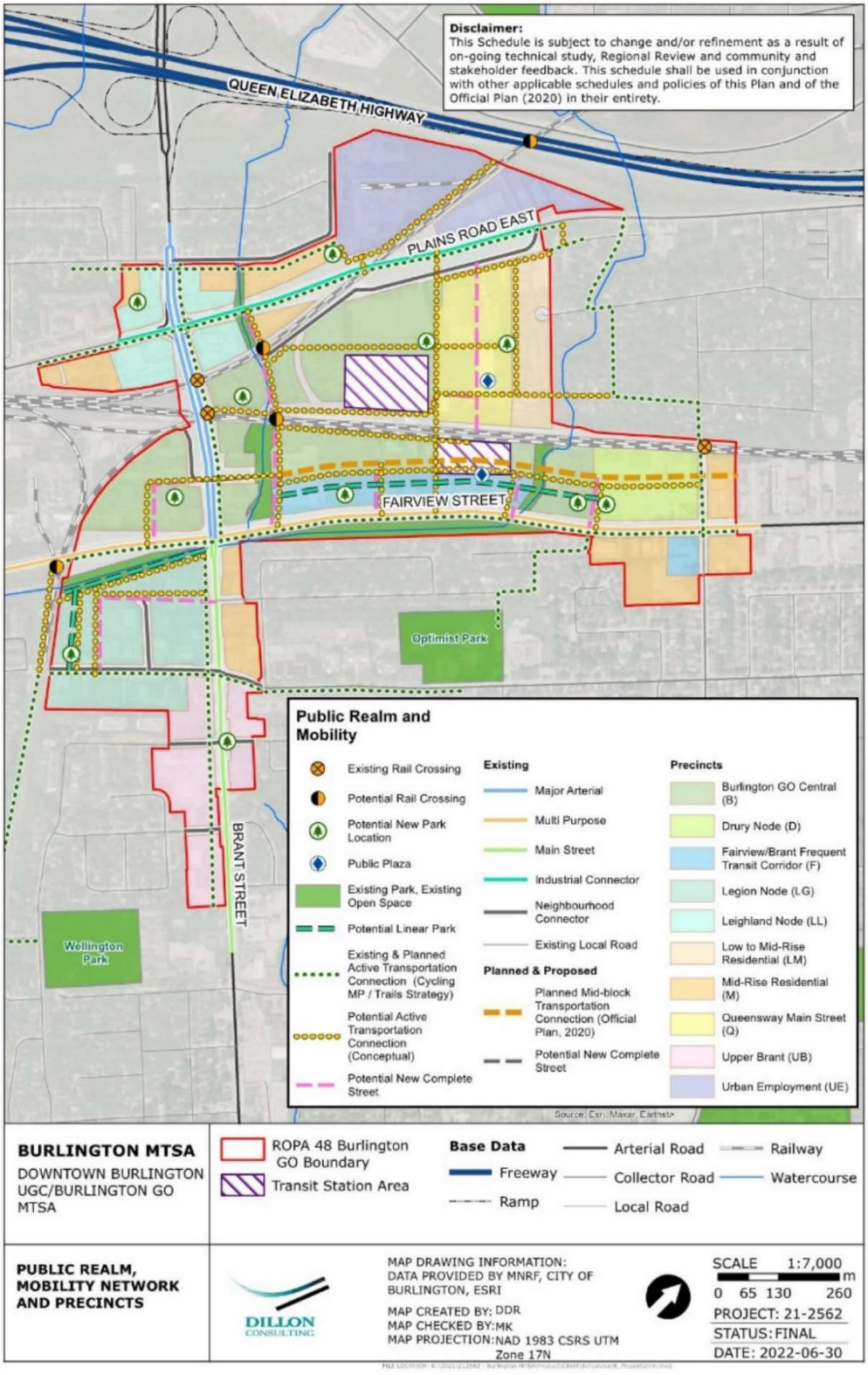


Figure3-2. Burlington Go MTSA Preferred Design Concept

3.3 EXISTING CONDITIONS

Existing land use within the future Burlington GO MTSA consists primarily of residential, commercial and industrial land uses as well as some park and open space uses.

3.4 WASTEWATER SERVICING EVALUATION

3.4.1 EXISTING WASTEWATER SERVICES

The Burlington GO MTSA is serviced by 3 major North South Trunk Sewer Systems that conveys flows for treatment in the Skyway Wastewater Treatment Plant via Skyway East Trunk Sewer (SETS) is in South Burlington. The SETS is a large capacity system that is designed to take on flows from most of the Skyway Wastewater Treatment Plant Service Area.

Lands within the MTSA are to be serviced by gravity sewers connecting to the 3 key North South Trunk Sewers.

Key existing wastewater infrastructure components around the Burlington GO MTSA lands are described as follows:

1. **Glendor - Plain –Maple Trunk Sewer:** A 750 mm – 825 mm sewer system that receives flows from the Northwest portion of the subject lands via a 450 mm – 525 mm sewer system along Leighland Road and connects to a 750 mm sewer along Glendor Road.
2. **Brant Street Trunk Sewer:** A 450 mm – 600 mm sewer system that runs along Brant Street and receives flows from the centre of the subject lands
3. **Drury Lane Trunk Sewer:** A 675 mm sewer system that runs along Drury Lane and is accessible to the subject lands in two locations.
4. **The Skyway East Trunk Sewer:** This consists of the trunk sewer that runs East West through Burlington at to the Skyway Wastewater Treatment Plant.

The existing sewer network is given in **Figure 3-3**.

Key external planned infrastructure upgrades include:

1. **New 2400 mm Sewer Inlet at Skyway WWTP**

Halton's model 2051 scenario identifies capacity deficiencies in the 3 trunk sewer systems that service the Hub lands. There are no identified capacity issues within the Skyway East Trunk Sewer. The sewers with existing capacity issues are shown in **Figure 3-4**. **Figure 3-5** shows the capacity deficiencies in the existing sewers with the demands associated with the proposed land use provided by Brook McIlroy.

Figure 3-3. Existing Wastewater Services Burlington Go MTSA

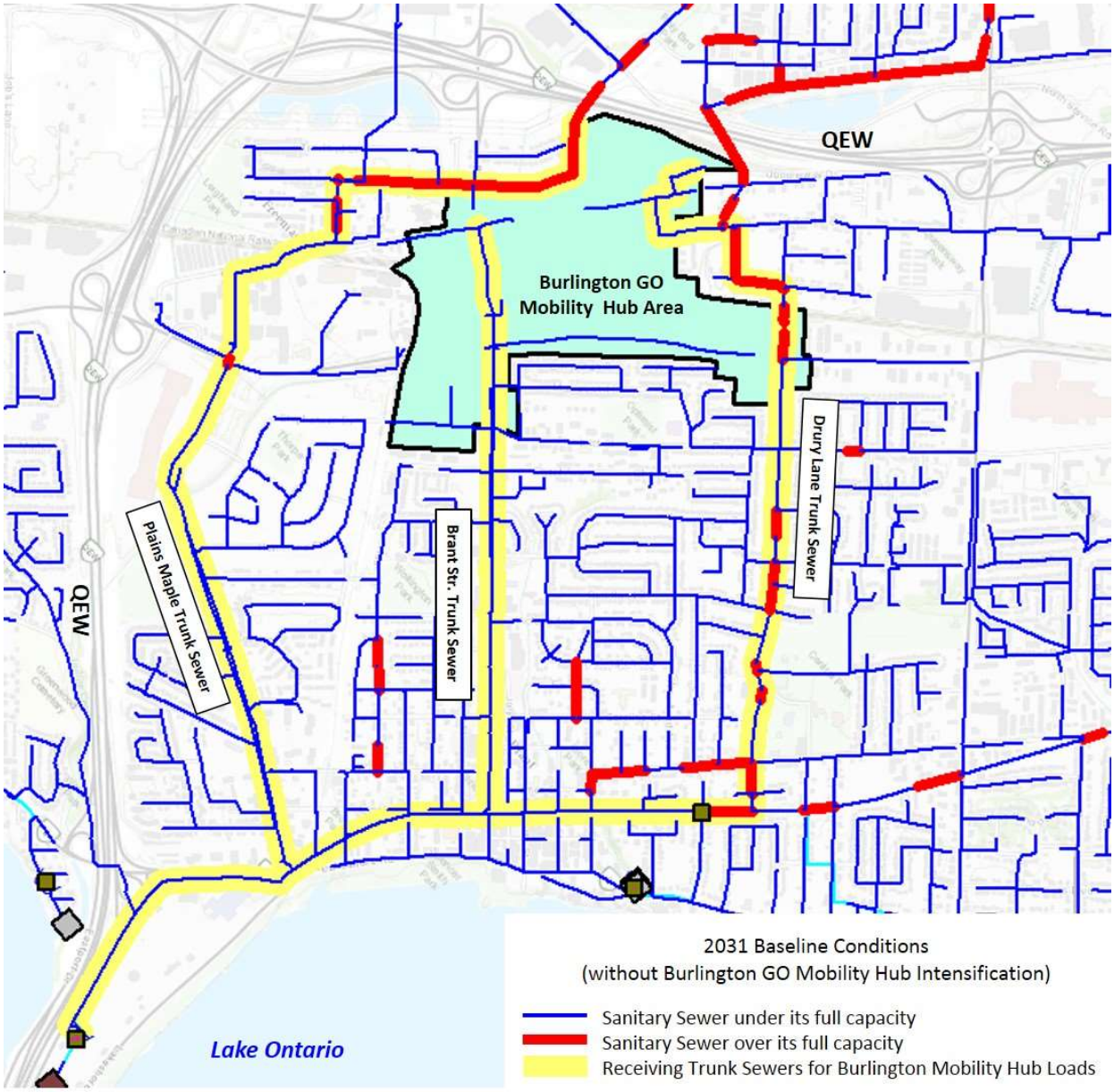


Figure 3-4. Existing Capacity Issues - Burlington GO MTSA

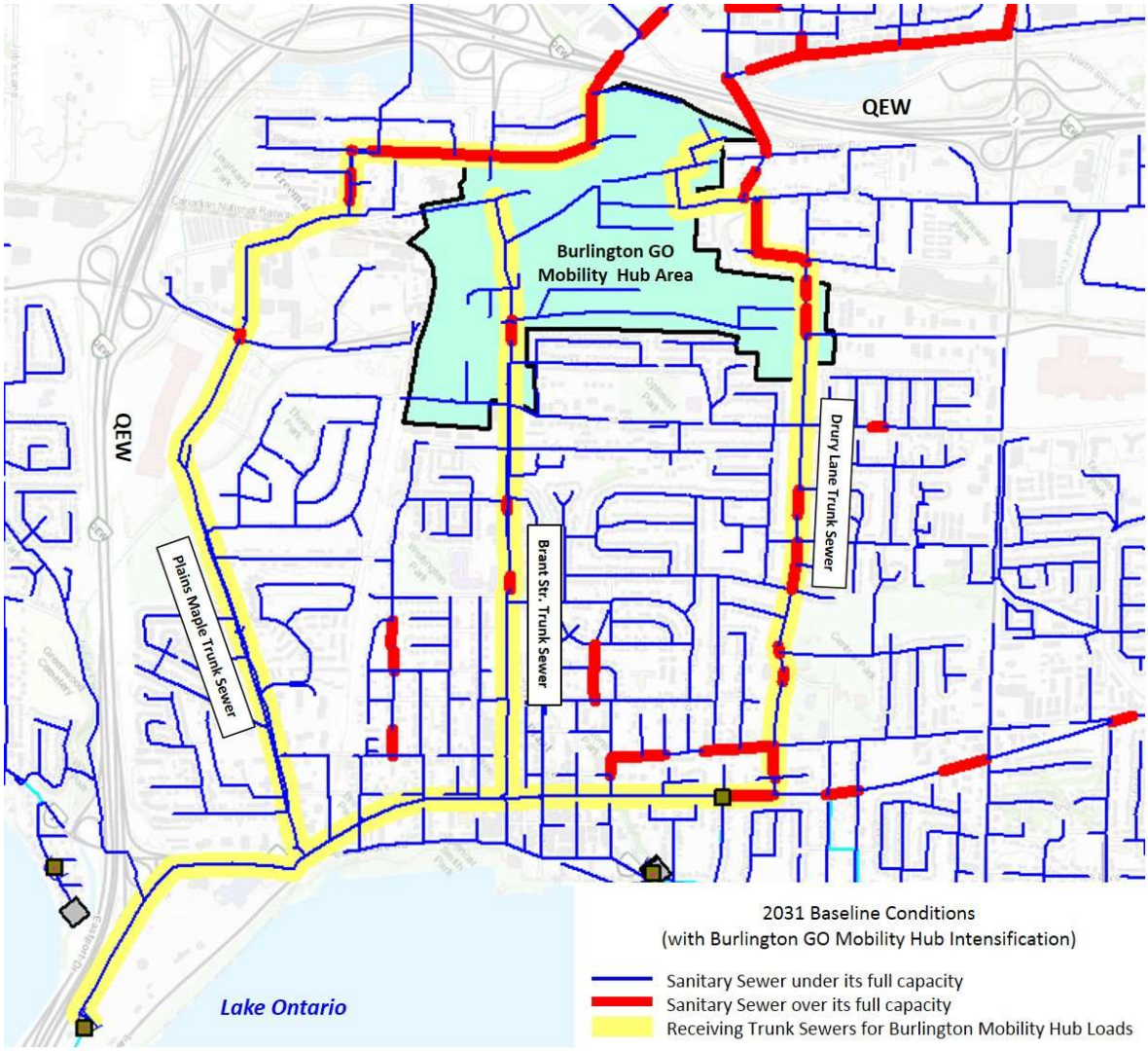


Figure 3-5. Capacity Issues in receiving sewer system with Burlington GO intensification

3.4.2 PROPOSED WASTEWATER SERVICES

The following is a brief discussion and summary of existing and planned wastewater services for the Burlington GO MTSA.

Internal Services

A plan of services for the proposed MTSA is provided in

Figure 3-6. This figure shows proposed main trunk sewer lines connecting to the available existing outlets to Halton's wastewater collection system. Profiles for the main lines are given in **Figure 3-7** and **Figure 3-8**. Additional sewer lines were labelled as "secondary lines", profiles for these sewers are not given, they are included as part of the overall servicing plan. The proposed plan includes sewer service along all the proposed roads in the MTSAs.

The proposed internal sewer layout also makes use of existing sewers within the existing roads. New Sewers are generally proposed in areas where there will be a change in land use or a new road. As such there is no restoration cost added to the sewer cost estimate as it is not expected that it will be built within an existing road. The new internal layout involves approximately 3,900 m of new sewers within the MTSA Lands.

Figure X-X Burlington GO Mobility Hub Proposed Wastewater System

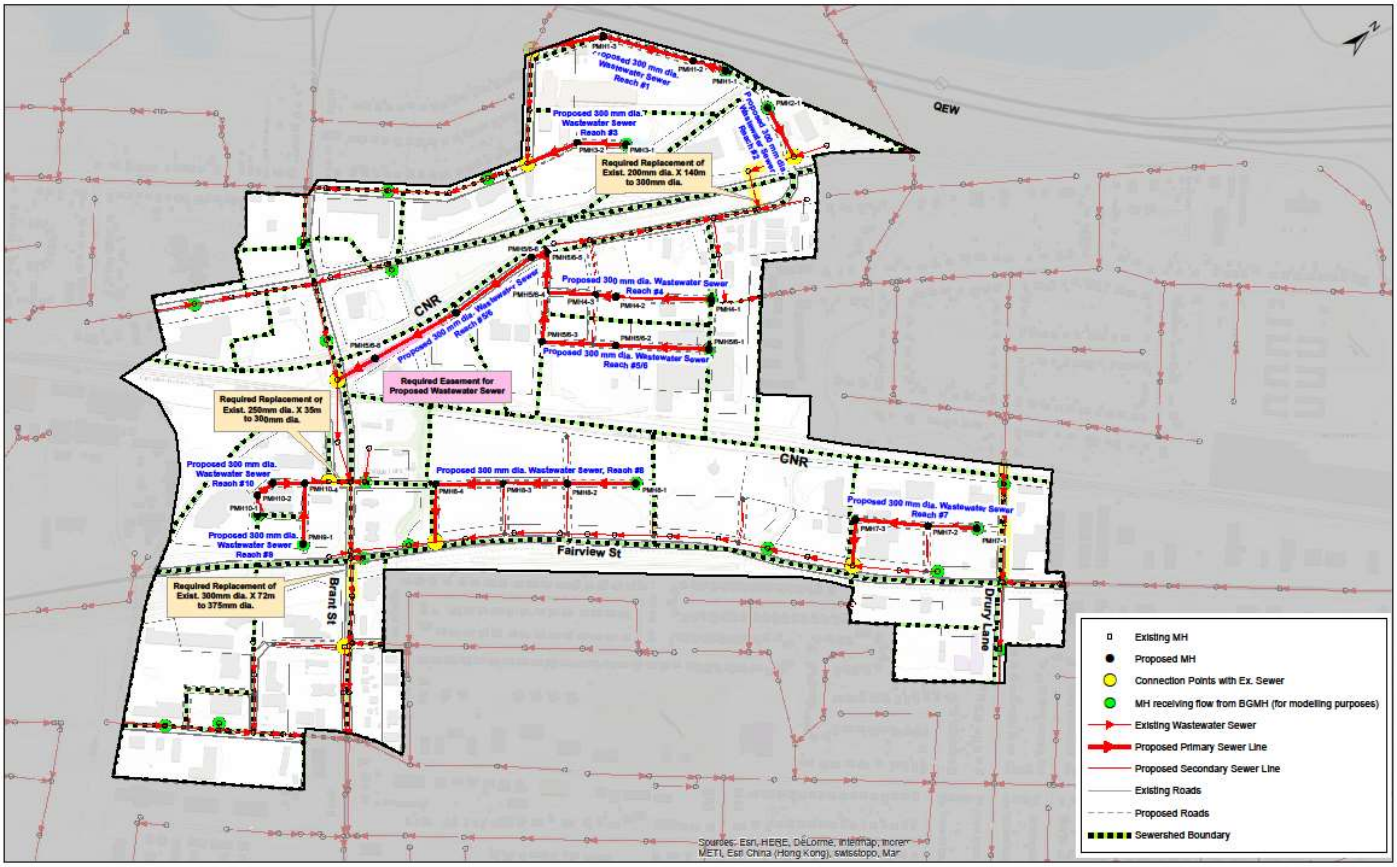


Figure 3-6 Burlington GO MTSA - Internal Sanitary Sewer Services

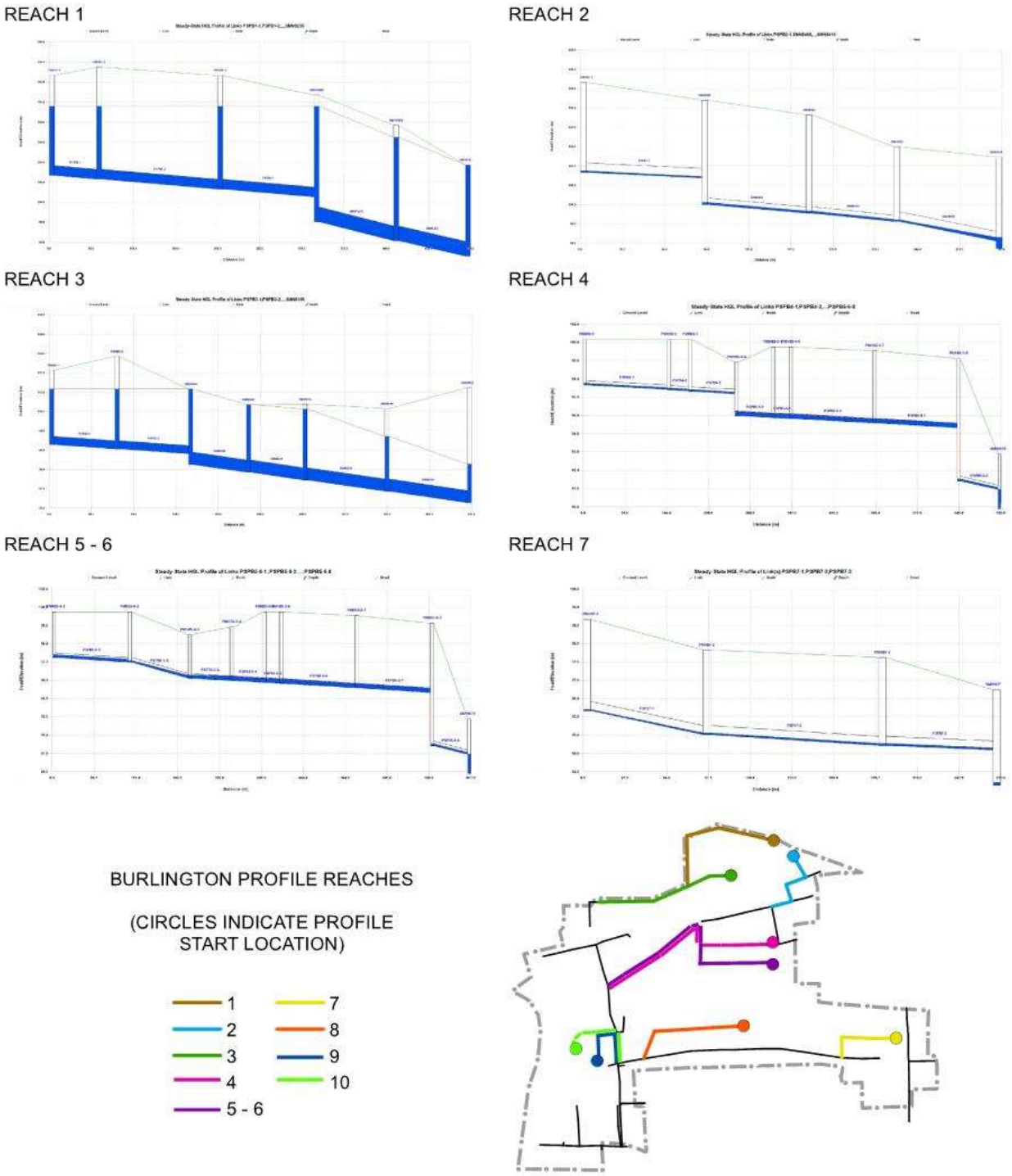


Figure 3-7 Burlington GO MTSA Internal Services - Sanitary Sewer Profiles

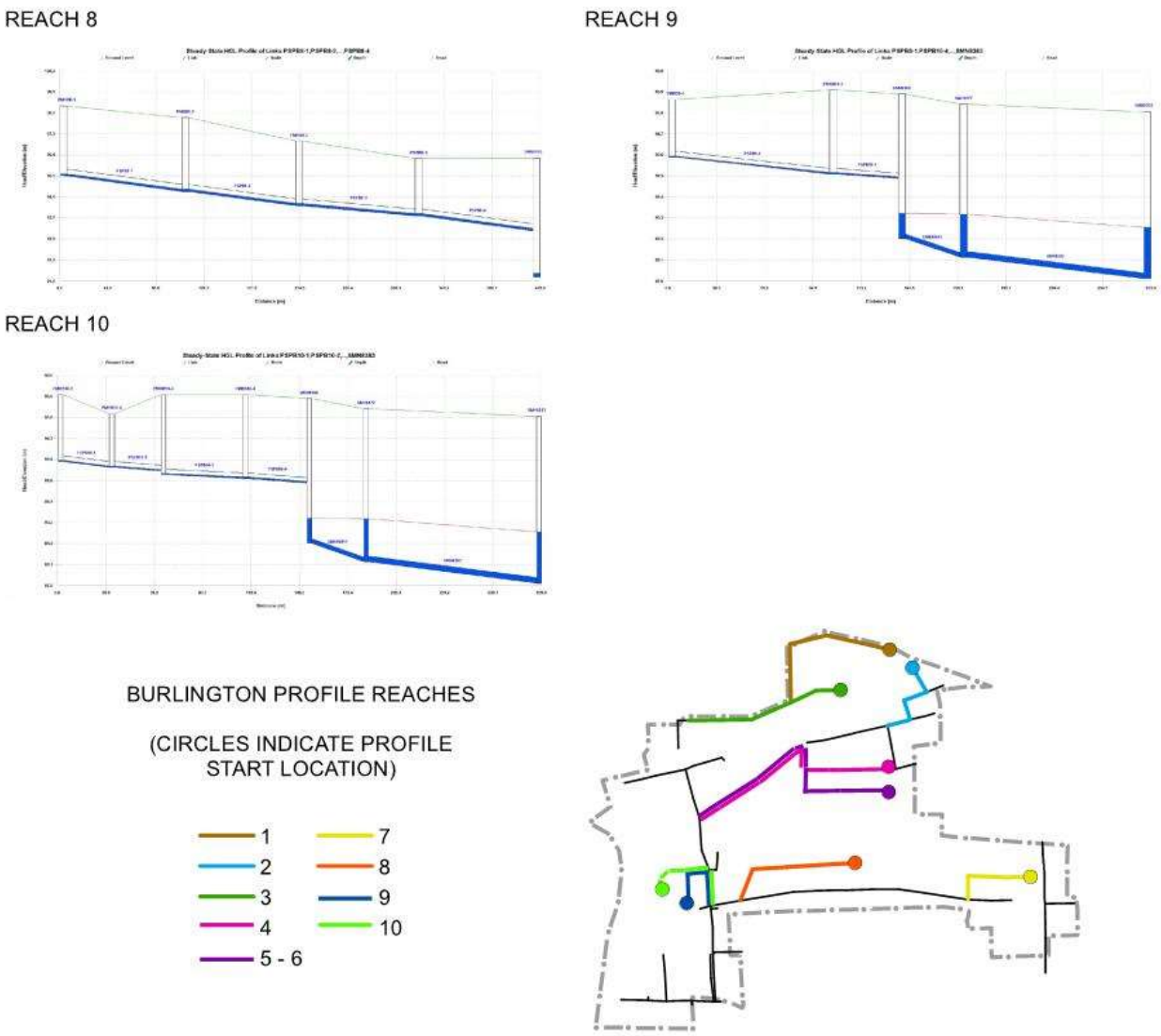


Figure 3-8 Burlington GO MTSA Internal Services - Sanitary Sewer Profiles

External Services

Halton's model 2031 scenario identifies capacity deficiencies in the 3 trunk sewer systems that service the Hub lands. The most significant issues are in the Plains Maple and the Drury Trunk Systems. Note that external capacity is reviewed by Halton Region as part of the Master Planning process and for the cumulative effect on major trunk systems. New developments that benefit from the existing capacity are typically assigned an overall development charge to pay for the life-cycle cost of the infrastructure.

The following baseline improvements have been proposed in this study to assist in understanding the scope of needs for the Burlington MTSAs. An overview of the proposed improvements is given in **Figure 3-9**. These upgrades are an initial concept that can be improved upon or refined by considering alternatives in a detailed design process:

Leighland Road Sewer Improvements: A replacement of the 450 mm/525 mm x 1.0 km sewer along Truman Street and Leighland Road with a higher capacity sewer (675 mm) AND a connection of the new sewer to the 750 mm sewer manhole near the intersection of Gabriel Place and Leighland Road. This configuration will eliminate the baseline capacity issues in the Plains Maple System shown in **Figure 3-5**.

Drury Lane Trunk Sewer Improvements: A replacement of the 2.0 km x 525mm/600/mm/675 mm sewer along Phyllis Street, Fassel Avenue, Orpha Street, across the railway and through Drury Lane. An upsizing of this sewer to 675mm for the portion upstream (North) of Prospect Street, and 750 mm for the portion downstream to Caroline Street, will eliminate the baseline capacity issues in the Plains Maple System shown in **Figure 3-5**. Note that alternate solutions could be considered to optimize the value of the investment as shown in **Figure 3-9**, the alternate approaches consider the replacement of a lower capacity sewer (200 mm) while maintaining the existing capacity in the 675 mm sewer on Drury Lane providing an opportunity for better value.

Key External Planned Infrastructure Projects:

1. ***New 2400 mm sewer inlet to Skyway WWTP parallel to QEW***

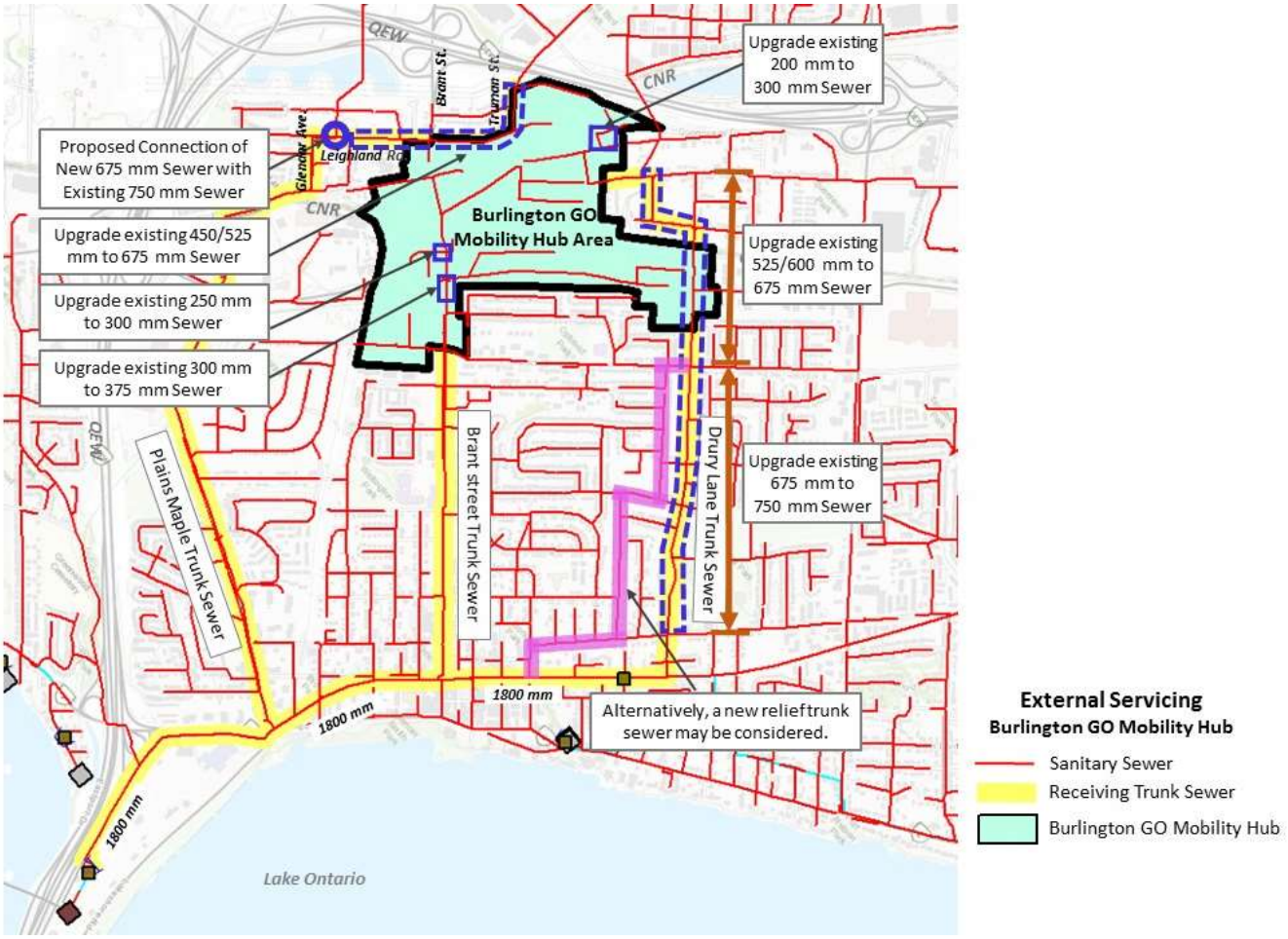


Figure 3-9. Proposed External Sewer Improvements - Burlington Go MTSAs

3.4.3 BURLINGTON GO - WASTEWATER SERVICING DESIGN CRITERIA

The following table outlines the design requirements for the Burlington GO wastewater collection system.

Table 3-1. Design Criteria – Wastewater Collection System

Pipe Flow		
Coefficient of Roughness	n = 0.013	Halton Region
Minimum Flow Velocity	0.6 m/sec	Halton Region
Maximum Flow Velocity	3.0 m/sec	Halton Region
Infiltration		
Infiltration Allowance	0.286 l/sec/ha	Halton Region
Wastewater Generation Rate		
Residential	210 L/cap/day	
Employment	185 L/cap/day	

3.4.4 BURLINGTON GO - WASTEWATER GENERATION

Wastewater generation rates have been calculated based on the preferred Land Use, utilizing Halton Region design criteria listed above.

Wastewater Loading and Infiltration/Inflow Generation

Infiltration and Inflow (I&I) = 0.286 Litres per hectare per second

Wastewater flow projection for the Burlington GO service area was estimated by applying these criteria to the total equivalent population and the area. The Inflow and Infiltration amounts were factored in by applying the Modified Harmon Peaking Method which is built into and calculated through the hydraulic model. The following wastewater loading and I&I generation rates were calculated for the Burlington GO MTSA.

Table 3-2. Burlington GO Loading and Generation

Parameter	Value
Average Daily Dry Weather Flow	49.42 L/s
Average Daily Wet Weather Flow	54.95 L/s
Total Peak Wastewater Flow Including I&I	188.68 L/s

Establish the expected sanitary flows (average dry weather flow, maximum wet weather flow (including I/I) for each MTSA based on future residential and employment population forecasts (specific time horizons required: 2031 and 2051). Confirm via hydraulic modeling that adequate capacity is available for servicing the proposed developments in 2031.
It is requested that wastewater generation rates and population/employment estimates are established and differentiated for both the 2031 time-horizon as well as for 2051.

3.4.5 BURLINGTON GO - WASTEWATER MODELLING

The hydraulic wastewater model was updated using the Region's most up to date data for a 2051 time-horizon. No additional Regional based servicing constraints regarding wastewater treatment plants, pumping stations or gravity sewers are identified for the Burlington GO MTSA at this point. For the purpose of this report, only linear infrastructure has been considered to date. Further analysis is required to confirm vertical infrastructure needs. Expansion and upgrade requirements for the Burlington GO MTSA to accommodate projected residential and employment populations are identified in the following section.

Summary of Proposed Additional Wastewater Servicing

To accommodate the full build out scenario for the Burlington GO MTSA, the proposed additional wastewater infrastructure is summarized below:

Table 3-3. Burlington GO – Proposed Wastewater Infrastructure

Gravity Mains	Meters
250 mm	35
300 mm	2,596

3.5 WATER SERVICING

3.5.1 EXISTING WATER SERVICES

The Burlington GO MTSA is serviced by Burlington Pressure Zones B1 with existing services shown in **Figure 3-10**. The flows from the Burlington WPP and the Washburn Pump Station align with the Region's modelling data.

The preferred service ground elevation range for the pressure zones is given in **Table 3-4**.

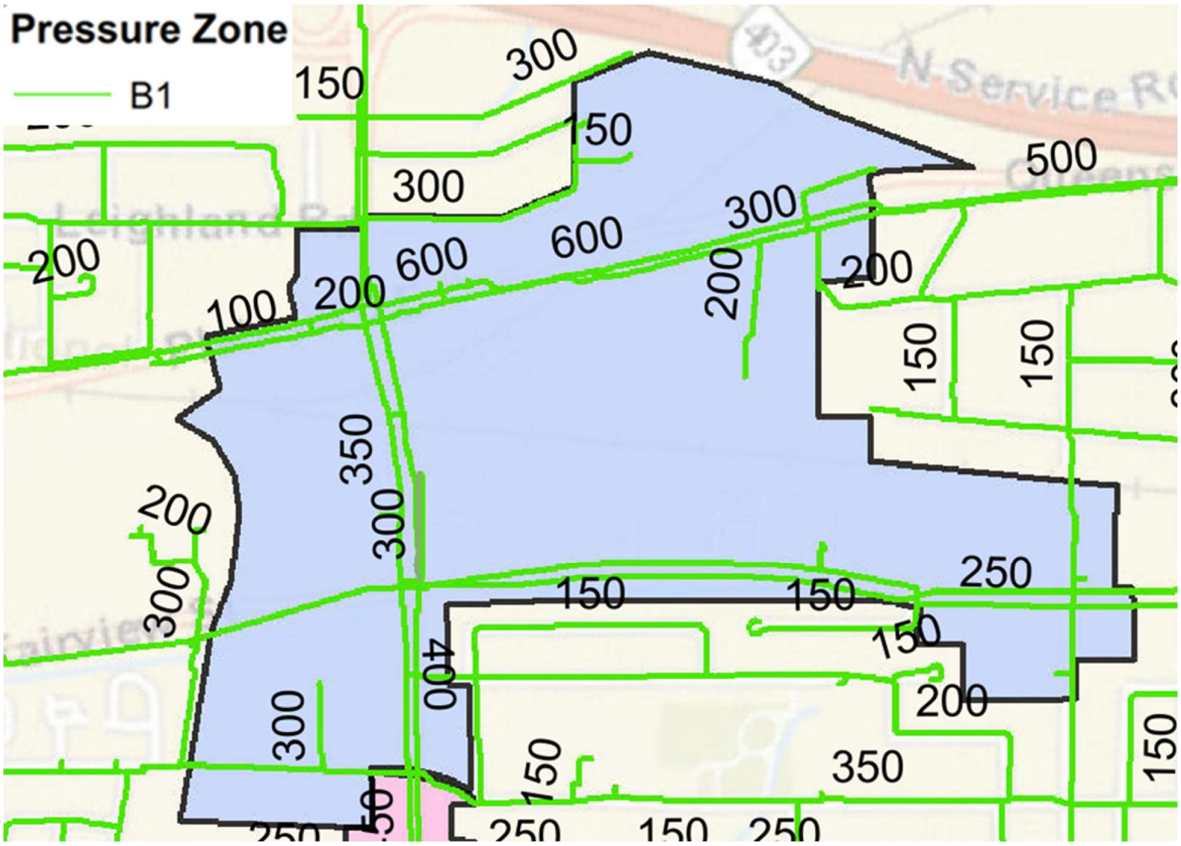


Figure 3-10. Existing Water Services at Burlington GO MTSA

Table 3-4. Burlington GO - MTSA Pressure Zone Suitability

	Required (MOECC)	Preferred (Halton Criteria)
Min Operating Pressure	28.0 m	35.0 m
Max Operating Pressure	50.0 m	56.0 m
Zone B1 Pressure Zone Characteristics		
Min Suitable Ground Service Elevation	**65.0 mASL**	**79.0 mASL**
Maximum Suitable Ground Service Elevation	**102.2 mASL**	**95.2 mASL**
Minimum HGL	130.2 mASL	
Max HGL	135.0 mASL	

Note that the ground elevations are suitable for service from Zone B1, however the lands in the North near the QEW are at the higher end and may experience lower than preferred pressure. This can be studied further as these lands develop, at this time it is planned for service from Zone B1.

Key External Planned Infrastructure Projects

Halton's Planning model indicates a number of planned infrastructure components that are to be in-service by 2031. Key Components were identified and Halton Region confirmed the status of the components as follows:

1. ***Zone 1 900 mm Feedermain from Guelph Line/Prospect Street to Washburn Reservoir.***
2. ***300mm WM on Brant St from Fairview St to 180 m northerly (BUR)***

The 2031 modeling results for the Burlington GO MTSA includes these components in service.

3.5.2 PROPOSED WATER SERVICES

The following is a brief discussion and summary of existing and planned water services for the Burlington GO MTSA.

Internal Services

A proposed servicing plan is given in **Figure 3-11**. A network of 300 mm watermains is proposed along all new road right-of-ways. A total of 4300 m of new watermain is proposed to service the Burlington Go MTSA.

External Services

Halton's water model 2031 scenario with the proposed build-out population in the Burlington MTSA, confirms there is sufficient capacity to meet the boundary conditions and support the demands as described below. Note that external capacity is reviewed by Halton Region as part of the Master Planning process and for the cumulative effect on major supply and transmission systems. New developments that benefit from the existing capacity are assigned an overall development charge to pay for the life-cycle cost of the infrastructure.

Confirmation of Capacity

The proposed system was modelled with the following elements:

- Halton's proposed, existing and upgraded infrastructure to 2031;
- The proposed updated population for the Burlington MTSA as well as the 2051 demands elsewhere in the Region;
- The proposed internal network as shown in **Figure 3-11**;

The model output for the available fire flow indicator is above 200 L/s for the subject lands as shown in **Figure 3-12**. This confirms the network is suitable to support the needs of a variety of building types.

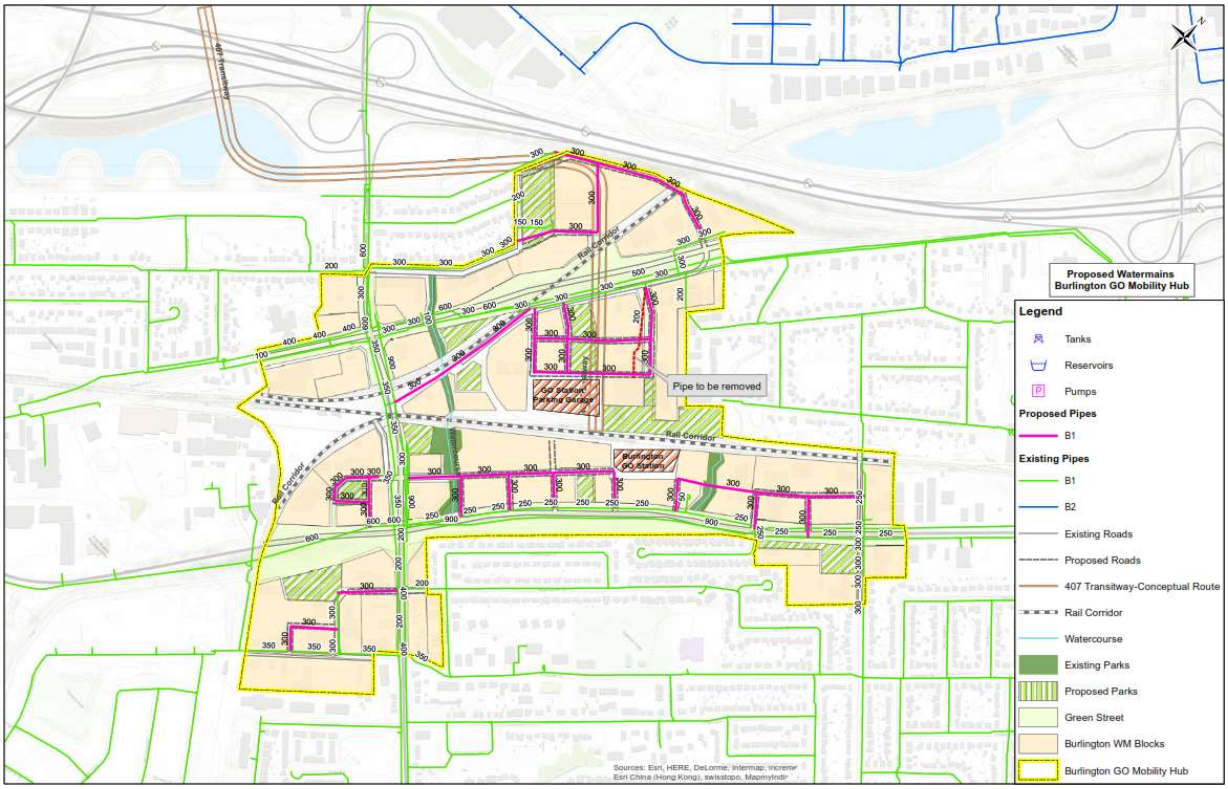


Figure 3-11. Burlington GO MTSA Proposed Water System

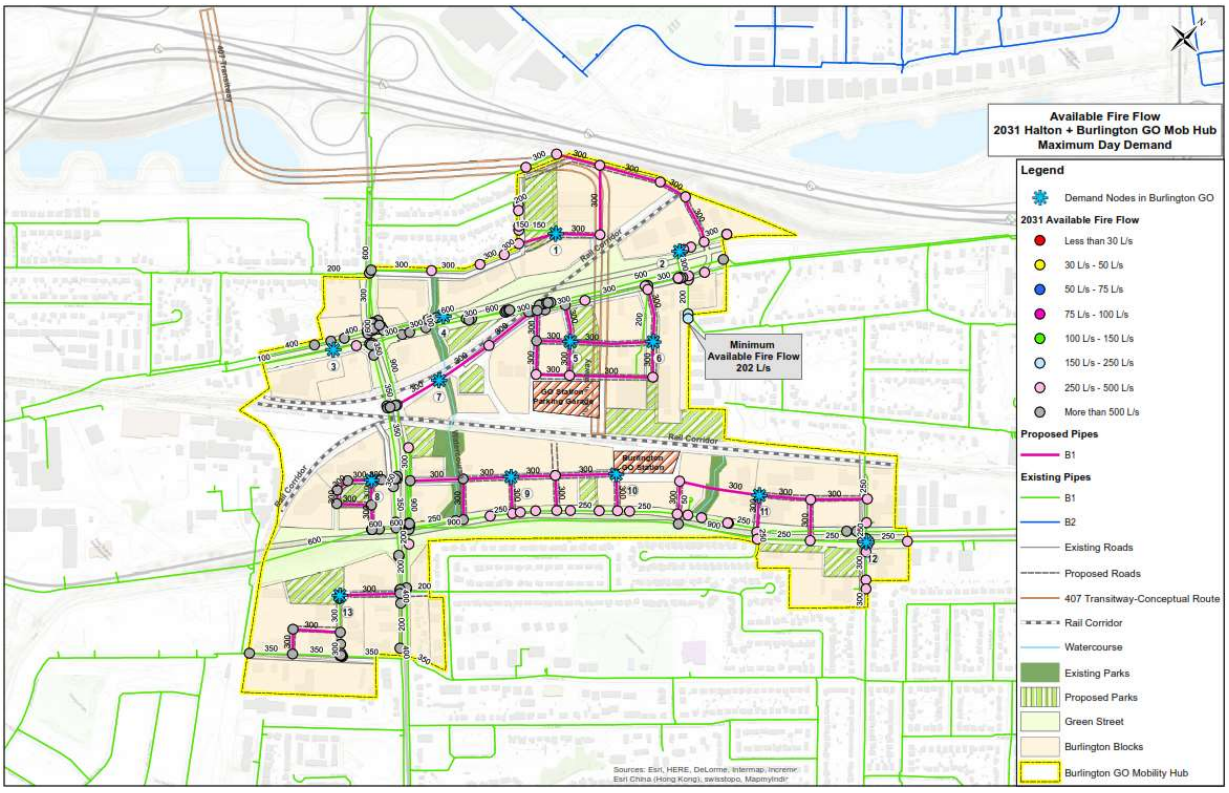


Figure 3-12. Burlington GO MTSA Available Fire Flow - Proposed

3.5.3 BURLINGTON GO – WATER DESIGN CRITERIA

Design water demands used to update the hydraulic modelling are outlined in the table below as per comments received which suggested using unit water usages rates for residential (255 L/p-d) and ICI (a single blended rate = 225 L/p-d). With these usage rates, the average demands (L/s) and Max Day Demand (MDD) were determined using a max day factor of 2.25 (Typically a maximum daily factor of 1.9 is used, however, based on the land use mix, a rate of 2.25 was used as the best-informed factor at the time that model was run. This slightly different factor should not influence any recommendation or outcome but can be corrected in the future if deemed necessary).

Table 3-5. Design Criteria – Water Demand

Land Use Type	Water Average Day Demands
Residential	255 L/person/day
Industrial/Commercial/Institutional (Blended)	225 L/employee/day

3.5.4 BURLINGTON GO – WATER DEMAND

The following hydraulic modelling results confirm supply and pressure availability to service the proposed developments at 2031. The anticipated water demand (average day demand, max day demand and fire flow) for the projected growth in each MTSA was calculated based on 2051 residential and employment population forecasts from the MTSA land use Traffic Zone Allocation. The average day demand (ADD) projection was estimated by applying the above criteria to the total equivalent population and the area. The following factors were utilized to estimate the maximum day demand (MDD) and peak hour demand (PHD).

MDD 2.25
PHD 3.0

Applying these criteria to the residential and employment populations and adding the demands up, the ADD, MDD and PHD are:

Table 3-6. Burlington GO – New Development Water Demand Growth

Parameter	Value
Residential Population	12,882
Employment Population	8,435
Average Daily Demand (ADD)	60.0 L/s
Maximum Daily Demand (MDD)	135.0 L/s
Peak Hour Demand (PHD)	180.0 L/s

For water analysis, the future demands were distributed to Demand 7 for anticipated residential growth and Demand 9 for anticipated employment growth.

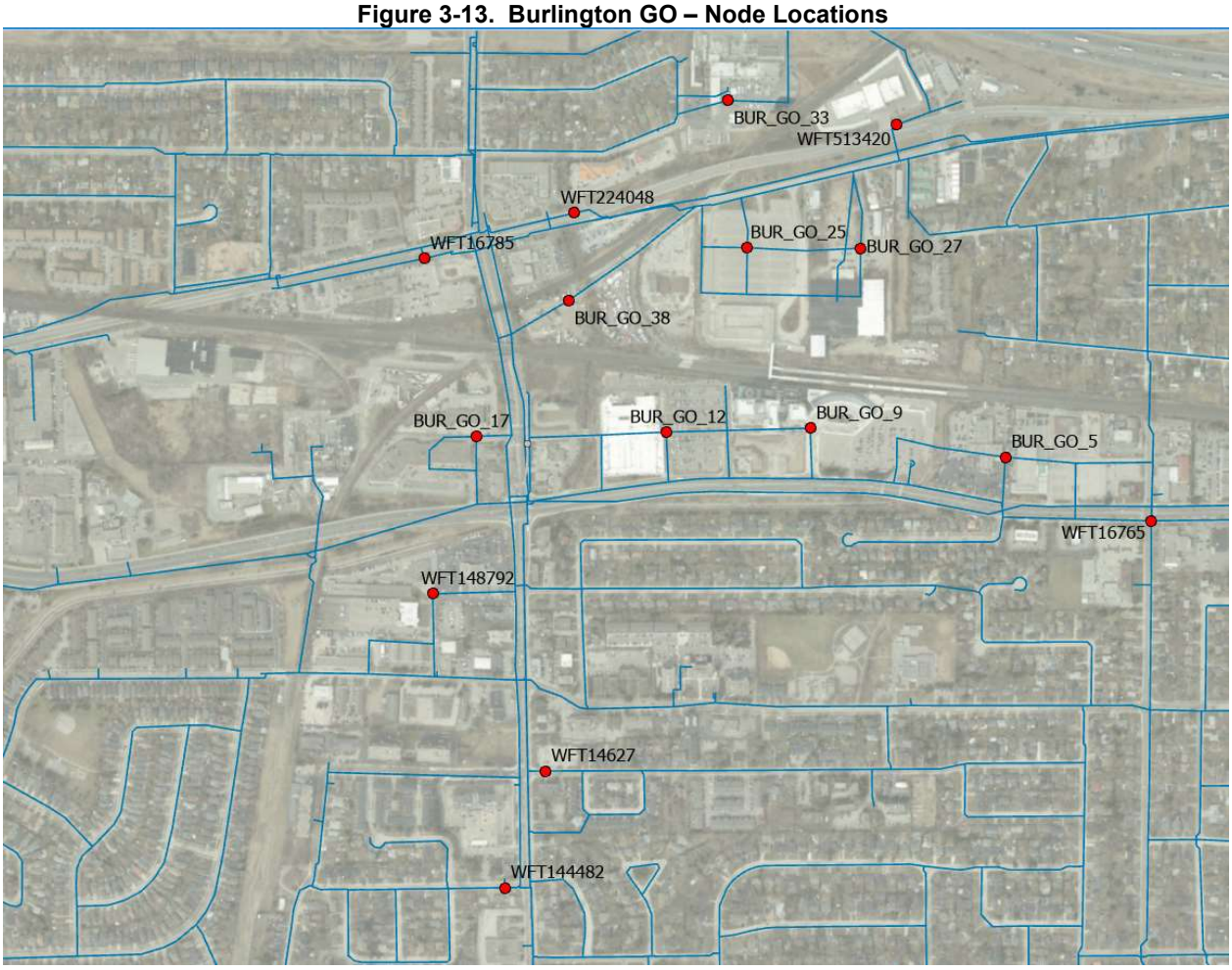
Table 3-7. Burlington GO – Modelling Results Under MDD

Junction ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (psi)
BUR_GO_12	11.7	99.0	134.9	51.1
BUR_GO_17	6.4	97.0	134.9	53.9
BUR_GO_25	11.7	100.5	134.9	49.0
BUR_GO_27	9.3	100.5	134.9	49.0
BUR_GO_33	2.4	103.0	135.0	45.4
BUR_GO_38	9.3	99.3	135.0	50.7
BUR_GO_5	9.3	97.0	135.0	54.0
BUR_GO_9	11.8	98.5	134.9	51.8
WFT144482	15.8	91.3	134.4	61.2
WFT14627	15.7	92	134.8	61
WFT148792	4.5	94.4	134.9	57.6
WFT16765	3.9	97.5	135	53.3
WFT16785	8	99.7	134.9	50
WFT224048	8	100.5	135	49.1
WFT513420	7.8	103.6	135	44.5

Table 3-8. Burlington GO – Modeling Results

ID	Total Demand (L/s)	Hydrant Available Flow (L/s)	Critical Pressure for Design Run (psi)
BUR_GO_12	291.7	464.1	28.4
BUR_GO_17	286.4	844.4	28.4
BUR_GO_25	291.7	535.6	28.4
BUR_GO_27	289.3	472.4	28.4
BUR_GO_33	282.4	346.4	28.4
BUR_GO_38	289.3	556.7	28.4
BUR_GO_5	289.3	419.6	28.4
BUR_GO_9	291.8	381.7	28.4
WFT144482	295.8	115.9	28.4
WFT14627	295.7	287.5	28.4
WFT148792	284.5	712.7	28.4
WFT16765	283.9	487.7	28.4
WFT16785	288	156	28.4
WFT224048	288	643.5	28.4
WFT513420	287.8	392.3	28.4

Figure 3-13. Burlington GO – Node Locations



3.5.5 BURLINGTON GO - WATER MODELING RESULTS

The hydraulic water model was updated using the Region's most up to date data for a 2031 time-horizon. No additional Regional based servicing constraints regarding water purification plants, reservoirs, pump stations, or linear infrastructure were identified for the Burlington GO MTSA. Expansion and upgrade requirements for the Burlington GO MTSA to accommodate projected residential and employment populations are identified in the following section. The model output for the available fire flow indicator is 116 L/s to 844 L/s for the subject lands as shown in **Figure 3-8**. Most of the junctions can deliver an available fire flow greater than 250 L/s and support the needs of a variety of building types, except for the junctions WFT16785 and WFT144482 with available fire flows of 116 L/s and 156 L/s. The MDD+FF scenarios were completed with the residual pressure set as 28.4 psi and the available fire flows are expected to be higher than what have been presented in the report with the minimum residual pressure requirement of 20 psi. Although current results are adequate, it is suggested to re-run the model with the pressure set at 20 psi for even better results if deemed necessary.

3.6 SUMMARY AND COST ESTIMATE

The Burlington GO MTSA can be adequately serviced from Halton Region's Lake based system as per the plans described in Section 3.4.2 (Proposed Wastewater Services) and Section 3.5.2 (Proposed Water Services).

Preliminary Cost Estimates are provided for information purposes and based on 2022 construction costs. Costs are provided for planning purposes only. Note that actual costs can vary considerably due to labour, materials, unknown design factors, ground conditions, staging.

The estimate represents an overall budget for transmission and collection servicing upgrades to provide an opportunity for collective cost sharing of servicing at the level of the MTSA or as an intensification fund levied from intensification developments within targeted areas in the City of Burlington.

External Servicing and Life-Cycle Costs associated with the Halton Lake Based Trunk Sanitary Collection and Treatment system, as well as the Treated Water Supply, Storage, Transmission and Pumping is not included in the estimates below.

Costs for wastewater treatment, as well as the treated water supply, storage, transmission and pumping are not included in the estimates below.

Servicing costs are summarized in **Table 3-9, Table 3-10 and Table 3-11**.

In regards to the external sanitary servicing, note that the base concepts shown herein may be refined through model calibration, flow monitoring demand studies and a more detailed review of alternative solutions.

Note that the external service improvements will benefit other users outside the Burlington Go Intensification Area and opportunities for cost sharing can be explored.

Note that there is available capacity within the Brant Street Sewer System and that areas directed to this sewer system are not dependent on the upgrades to the Drury and Leighland Road sewer Systems. Note that the proposed populations as shown in

Figure 3-6 can be serviced according to the Region's model.

An initial phase of development can proceed with the internal services within the sewer sheds draining to the Brant Street Sewer. The available capacity as provided in the Brant Street Sewer system can accommodate the proposed lands as shown in

Figure 3-6. The available capacity is based on information provided by Halton Region via the planning model. It is recommended that the available capacity in the Brant Street Sewer be validated by a review of existing buildings connections as well as flow monitoring and rainfall data.

It is further recommended that an integrated solution for Burlington GO and Downtown MTSA be considered for the Brant Street Sewer System.

The following estimated costs are based on the Regional Municipality of Halton 2022 Water/Wastewater Development Charges Update and include full road reconstruction.

Table 3-9. Cost Estimate - Burlington GO MTSA - Internal Sanitary Services[4]

Item	Description	Unit	Quantity	Unit Cost	Extended Cost	Amount
	Internal Servicing					
1.0	***Reach #1***					**$ 262,720**
1.1	300 mm, 2.7 - 3.5 m deep San Sewer in Proposed Road	meter	322	$760/m	$ 244,720	
1.2	1200 mm Sanitary Manhole 2.7m -3.5m deep	each	3	$6,000/each	$ 18,000	
2.0	***Reach #2***					**$ 73,640**
2.1	300 mm dia 2.5-3 m deep San Sewer in Proposed Road	meter	89	$760/m	$ 67,640	
2.2	1200 mm Sanitary Manhole 2.5-3 m deep	each	1	$6,000/each	$ 6,000	
3.0	***Reach #3***					**$ 137,400**
3.1	300 mm 2.5-3.5 m deep San Sewer in Proposed Road	meter	165	$760/m	$ 125,400	
3.3	1200 mm Sanitary Manhole 2.5 m deep	each	2	$6,000/each	$ 12,000	
4.0	***Reach #4***					**$ 220,160**
4.1	300 mm 2.7-3.1 m deep San Sewer pipe in Proposed Road	meter	266	$760/m	$ 202,160	
4.2	1200 mm Sanitary Manhole 2.7-3 m deep	each	3	$6,000/each	$ 18,000	
5.0	***Reach #5/6***					**$ 684,580**
5.1	300 mm 2.7-3.5 m deep San Sewer in Proposed Road	meter	738	$760/m	$ 560,880	
	300 mm 8.3 m deep San Sewer in Proposed Road	meter	70	$810/m	$ 57,700	
5.2	1200 mm Sanitary Manhole 2.5-4.5 m deep	each	7	$8,000/each	$ 56,000	
5.3	1200 mm Sanitary Manhole 7.8 m deep	each	1	$10,000/each	$ 10,000	
6.0	***Reach #7***					**$ 223,960**
6.1	300 mm 2.5-3.5 m deep San Sewer in Proposed Road	meter	271	$760/m	$ 205,960	
6.2	1200 mm Sanitary Manhole 2.5-3.5 m deep	each	3	$6,000/each	$ 18,000	
7.0	***Reach #8***					**$ 339,400**
7.1	300 mm 2.5-3.5 m deep San Sewer in Proposed Roads	meter	415	$760/m	$ 315,400	
7.2	1200 mm Sanitary Manhole2.5 -3.5 m deep	each	4	$6,000/each	$ 24,000	
8.0	***Reach #9***					**$ 79,720**
8.1	300 mm dia & 2.7-3 m deep Sanitary Sewer pipe in Proposed Roads	meter	97	$760/m	$ 73,720	
8.2	1200 mm Sanitary Manhole 3 m deep	each	1	$6,000/each	$ 6,000	
9.0	***Reach #10***					**$ 144,280**
9.1	300 mm 2.5-4.5 m deep San Sewer in Proposed Road	per meter	153	$760/m	$ 116,280	
9.2	1200 mm Sanitary Manhole 2.5-4.5 m deep	each	4	$7,000/each	$ 28,000	
10.0	***Secondary Sewer Servicing***					**$ 827,640**
10.1	300 mm San Sewer & 1200 mm Manholes@120m	meter	1,089	$760/m	$ 827,640	
11.0	***Upgrade/Replacement of Existing Sanitary Sewer (with Restoration, Traffic Control, etc.)***					**$ 144,240**
11.1	300 mm 3.5 m deep Sanitary Sewer in Existing Roads	per meter	174	$760/m	$ 132,240	
11.2	1200 mm Manholes (3 m deep)	each	2	$6,000/each	$ 12,000	
12.0	***Upgrade/Replacement of Exist. Sanitary Sewer (with Restoration, Traffic Control, etc.)***					**$ 84,150**
12.1	375 mm 8 m deep Sanitary Sewer pipe in Existing Roads	per meter	61	$1,150/m	$ 70,150	
12.2	1200 mm Manholes (7 m deep)	each	1	$14,000/each	$ 14,000	
	Sub-Total Cost Estimate					**$ 3,221,890**
	Contingency & Engineering Allowance 35%					$ 1,127,662
	Total Cost Estimate (rounded)					**$ 4,349,552**

[4] The cost of road reinstatement is included in the unit cost for planned work in existing roads. For planned work in proposed roads, the cost of new road construction is not included. The added cost of new full width road construction is estimated in the range of $5,200 to $5,900 per linear meter.

Table 3-10 Cost Estimate - Burlington GO MTSA - External Sanitary Services[5]

Item	Description	Unit	Quantity	Unit Cost	Extended Cost	Amount
1.0	***Upgrade/Replacement of Exist. Sanitary Sewer (with Restoration, Traffic Control, etc.) - Leighland Road Trunk Sewer Upgrades***					**$ 1,336,530**
1.1	675 mm dia & 2.5-3.5 m deep Sanitary Sewer pipe in Existing Roads	per meter	514	$1,490/m	$ 765,860	
1.2	675 mm dia & 4-4.5 m deep Sanitary Sewer pipe in Existing Roads	per meter	383	$1,490/m	$ 570,670	
2.0	***Upgrade/Replacement of Exist. Sanitary Sewer (with Restoration, Traffic Control, etc.) - Drury Road Trunk Sewer Upgrades***					**$ 6,668,860**
2.1	675 mm dia & 3.5- 4 m deep Sanitary Sewer pipe in Existing Roads	per meter	361	$1,490/m	$ 537,890	
2.2	675 mm dia & 4-4.5 m deep Sanitary Sewer pipe in Existing Roads	per meter	555	$1,490/m	$ 826,950	
2.3	675 mm dia & 4.5-5 m deep Sanitary Sewer pipe in Existing Roads using Trenchless Technology	per meter	80	$1,490/m	$ 119,200	
2.4	675 mm dia & 4-4.5 m deep Sanitary Sewer pipe in Existing Roads	per meter	583	$1,490/m	$ 868,670	
2.5	675 mm dia & 4-4.5 m deep Sanitary Sewer pipe in Existing Roads	per meter	363	$1,490/m	$ 540,870	
2.6	750 mm dia & 4-5 m deep Sanitary Sewer pipe in Existing Roads	per meter	1,151	$1,640/m	$ 1,887,640	
2.7	750 mm dia & 4-5 m deep Sanitary Sewer pipe in Existing Roads	per meter	791	$1,640/m	$ 1,297,240	
2.8	750 mm dia & 4-4.5 m deep Sanitary Sewer pipe in Existing Roads	per meter	360	$1,640/m	$ 590,400	
	Sub-Total Cost Estimate					**$ 8,005,390**
	Contingency & Engineering Allowance 35%					$ 2,801,887
	Total Cost Estimate (rounded)					**$ 10,807,277**

Table 3-11. Cost Estimate - Burlington GO MTSA - Internal Water Servicing[5]

Item	Description	Unit	Quantity	Unit Cost	Extended Cost	Amount
1.0	***New Watermains and their Connections***					**$ 4,162,400**
1.1	300 mm dia Watermains in Proposed Roads	per meter	4,300	$880/m	$3,784,00	
1.2	Allowance for connections, PRVs, etc.	L.S.	1		$ 378,400	
	Sub-Total Cost Estimate					**$ 4,162,400**
	Contingency & Engineering Allowance 35%					$ 1,456,840
	Total Cost Estimate (rounded)					**$ 5,620,000**

[5] The cost of road reinstatement is included in the unit cost for planned work in existing roads. For planned work in proposed roads, the cost of new road construction is not included. The added cost of new full width road construction is estimated in the range of $5,200 to $5,900 per linear meter.

4 ALDERSHOT GO MTSA

4.1 STUDY AREA

The Aldershot Go MTSA study area is bounded by Highway 403 to the northwest, Plains Road to the southeast, Daryl Drive to the southwest, and just northeast of Gallagher Road. The area covers approximately 127 hectares (ha.) The site slopes from North to South. The studied area range in elevation approximately 117 m to approximately 91 m. The elevation contours are presented in **Figure 4-1**.

Pressure zone boundaries are currently under review through the ongoing Regional Water and Wastewater Master Plan, including the B1A zone located within the Aldershot GO MTSA limits. If zone boundary limits are updated as part of the Master Plan, the water servicing strategy for Aldershot GO MTSA will need to be reviewed to ensure the servicing strategy proposed still serves the needs of the area. This may include reviewing: hydraulic modelling, locations of service connections, adding railway crossings, etc.

"The location of the two highway crossings proposed to support the Aldershot GO MTSA will be revisited through the ongoing Regional Water and Wastewater Master Plan. The number and location of highway crossings will ultimately depend on the requirements of the full Regional system. The strategy for Aldershot GO may need to be revisited after the completion of the Master Plan to review crossing locations and subsequent impacts to service."

Figure 4-1. Aldershot GO Hub Topography Context

4.2 PLANNING CONTEXT

4.2.1 PROJECTED DENSITY

The Preferred Land Use Plan as per Brook McIlroy (Technical Memo of November 9, 2017, to the City of Burlington) is given in **Figure 2-2**. Density calculations for the hub are based on full build-out of the Preferred Land Use. The Aldershot GO MTSA is projected to have capacity for 27,200 new people and 11,600 new jobs, or a total of 38,800 people and jobs, and a gross density of 306 people and jobs per hectare at full build.

The MTSA land use Traffic Zone Allocations are considered more realistic numbers for this development and were carried through during this study and used for modeling purposes. The Aldershot GO MTSA is projected to have an increase of 14,603 new people, 2595 new jobs, or a total of 17,198 new people and jobs, and a gross density of 135 new people and jobs per hectare.

The projected density calculations and block map for the Aldershot GO MTSA are presented in **Appendix A**.

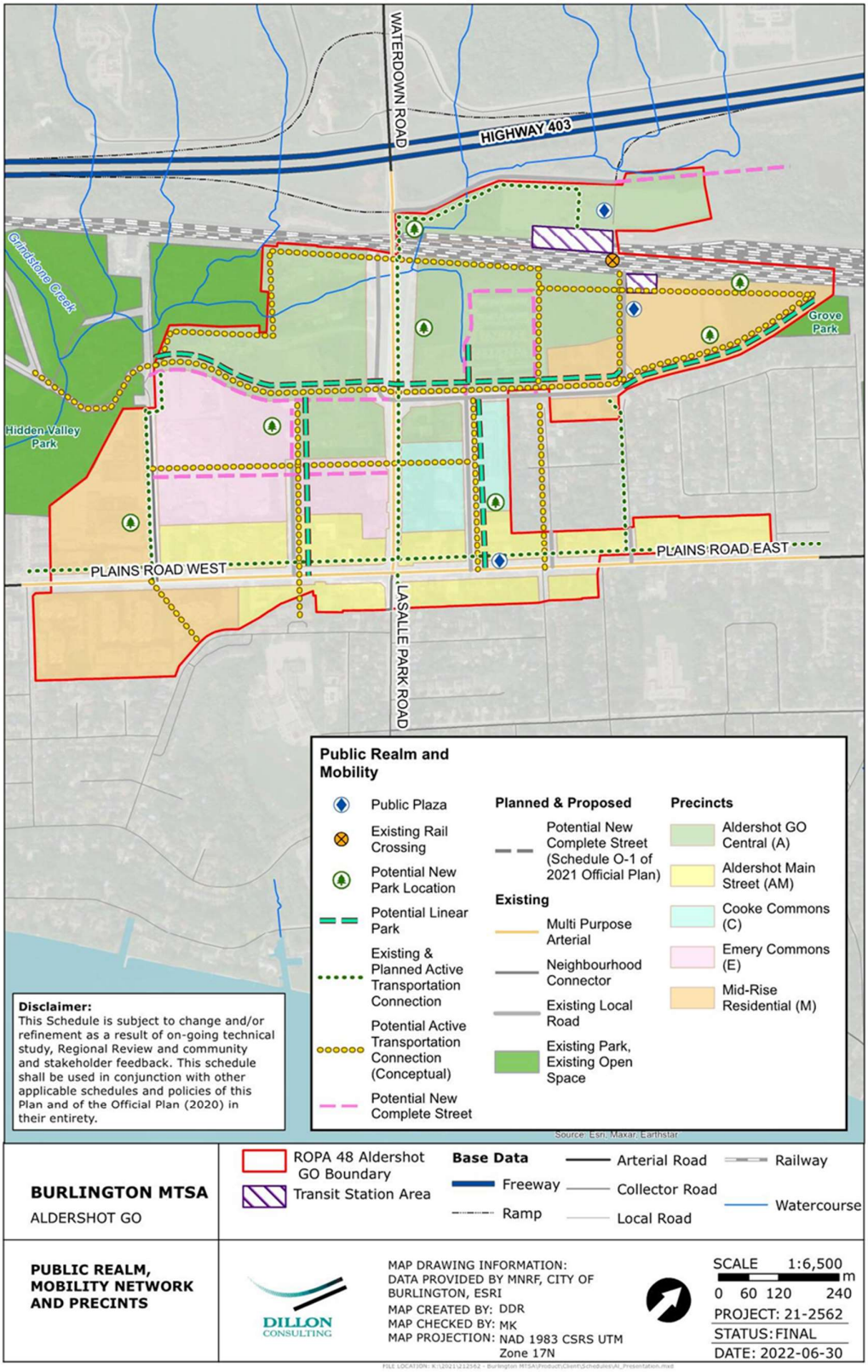

WATERDOWN ROAD
HIGHWAY 403
Grindstone Creek
Grove Park
Hidden Valley Park
PLAINS ROAD WEST
PLAINS ROAD EAST
LASALLE PARK ROAD
Public Realm and Mobility
Public Plaza
Existing Rail Crossing
Potential New Park Location
Potential Linear Park
Existing & Planned Active Transportation Connection
Potential Active Transportation Connection (Conceptual)
Potential New Complete Street
Planned & Proposed
Potential New Complete Street (Schedule O-1 of 2021 Official Plan)
Existing
Multi Purpose Arterial
Neighbourhood Connector
Existing Local Road
Existing Park, Existing Open Space
Precincts
Aldershot GO Central (A)
Aldershot Main Street (AM)
Cooke Commons (C)
Emery Commons (E)
Mid-Rise Residential (M)
Disclaimer:
This Schedule is subject to change and/or refinement as a result of on-going technical study, Regional Review and community and stakeholder feedback. This schedule shall be used in conjunction with other applicable schedules and policies of this Plan and of the Official Plan (2020) in their entirety.
Source: Esri, Maxar, Earthstar
BURLINGTON MTSA
ALDERSHOT GO
ROPA 48 Aldershot GO Boundary
Transit Station Area
Base Data
Freeway
Ramp
Arterial Road
Collector Road
Local Road
Railway
Watercourse
PUBLIC REALM, MOBILITY NETWORK AND PRECINTS
DILLON CONSULTING
MAP DRAWING INFORMATION:
DATA PROVIDED BY MNRF, CITY OF BURLINGTON, ESRI
MAP CREATED BY: DDR
MAP CHECKED BY: MK
MAP PROJECTION: NAD 1983 CSRS UTM Zone 17N
SCALE 1:6,500
m
0 60 120 240
PROJECT: 21-2562
STATUS: FINAL
DATE: 2022-06-30

Figure 4-2. Aldershot GO MTSA Preferred Design Concept

4.3 EXISTING CONDITIONS

Existing land use within the future Burlington GO MTSA consists primarily of residential, commercial and industrial land uses as well as some park and open space uses.

4.4 WASTEWATER SERVICING EVALUATION

4.4.1 EXISTING WASTEWATER SERVICES

The Aldershot Go MTSA is serviced by the Skyway West Trunk Sewer system, a 900 mm sewer which runs East towards the Skyway Wastewater Treatment Plant and is located to the South of the subject lands along Townsend Avenue. The subject lands drain towards the Skyway West Trunk Sewer via sub-trunk sewers along Lasalle Park Road (750 mm), Glenwood Avenue (450 mm), Shadeland Avenue (450 mm) and Enfield Road/Willowbrook Road (250 mm/450 mm). An overview of the existing sewers is given in **Figure 4-3**.

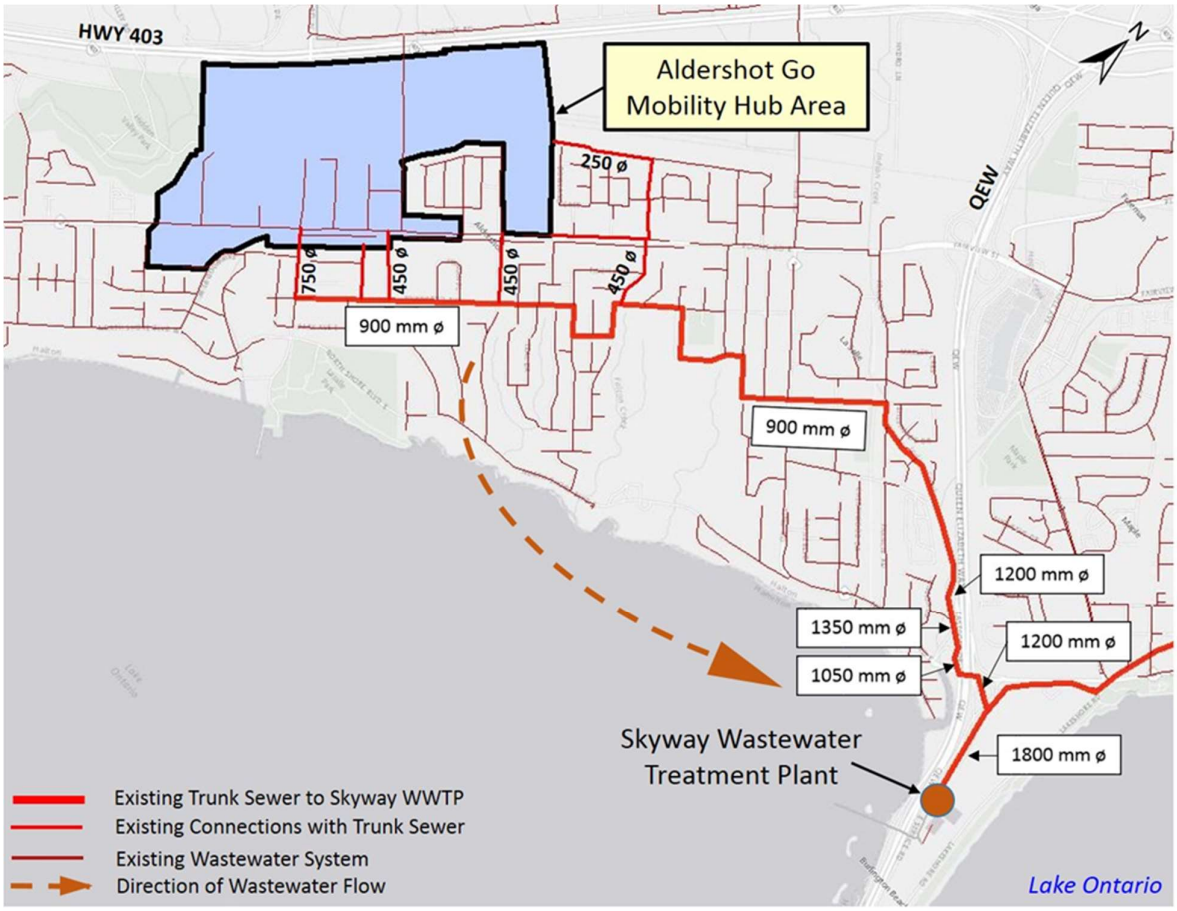


Figure 4-3. Existing Wastewater Services Aldershot Go MTSA

4.4.2 WASTEWATER SERVICES

Review of Existing and Planned Infrastructure

The following is a brief discussion and summary of existing and planned wastewater services for the Aldershot GO MTSA.

Internal Services

A plan of services for the proposed MTSA is provided in **Figure 4-4.** This figure shows proposed main trunk sewer lines connecting to the available existing outlets to Halton's wastewater collection system. Profiles for the main lines are given in **Figure 4-5**. Additional sewer lines were labelled as "secondary lines", profiles for these sewers are not given, they are included as part of the overall servicing plan. The proposed plan includes sewer service along all of the proposed roads in the MTSAs.

The proposed internal sewer layout also makes use of existing sewers within the existing roads. New Sewers are generally proposed in areas where there will be a change in land use or a new road. As such there is no restoration cost added to the sewer cost estimate as it is not expected that it will be built within an existing road. The new internal layout involves approximately 707 m of new sewers within the MTSA Lands.

External Services

Halton's model 2031 scenario with the proposed updated population in the Aldershot Go MTSA, confirms there is sufficient capacity in the existing connections downstream for conveyance to the Skyway Treatment Plant. Note that external capacity is reviewed by Halton Region as part of the Master Planning process and for the cumulative effect on major trunk systems such as the NEBTS, the SETS, and the Skyway WWTP. New developments that benefit from the existing capacity are assigned an overall development charge to pay for the life-cycle cost of the infrastructure.

Key external planned infrastructure upgrades indicated by Halton Region include:

1. ***New 2400 mm Sewer Inlet at Skyway WWTP***
2. ***300 mm WWM North Aldershot Servicing (BUR)***

3. ***Upsize WWM on Lasalle Park Road from Fairwood Pl to Lasalle WWPS (BUR)***

Figure X-X Aldershot GO Mobility Hub Proposed Wastewater System

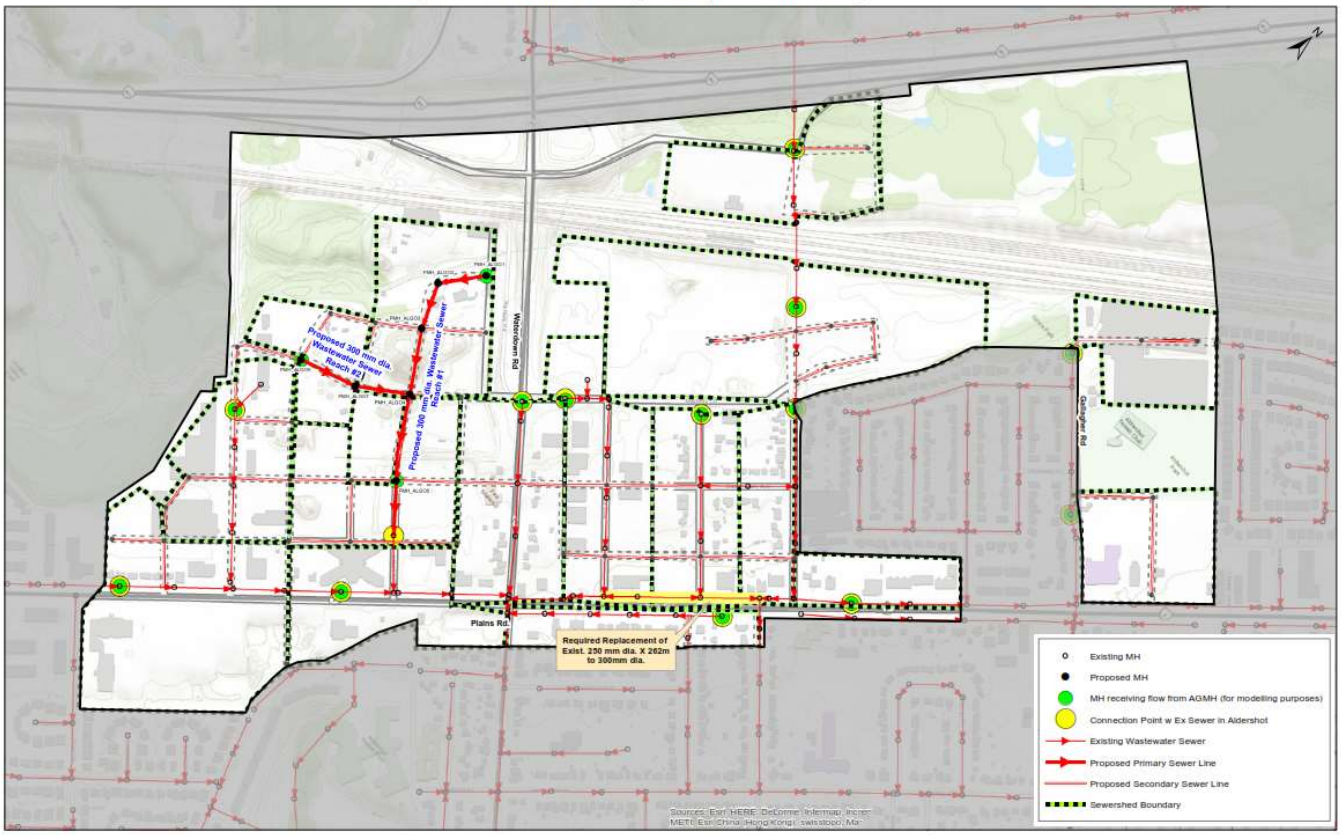
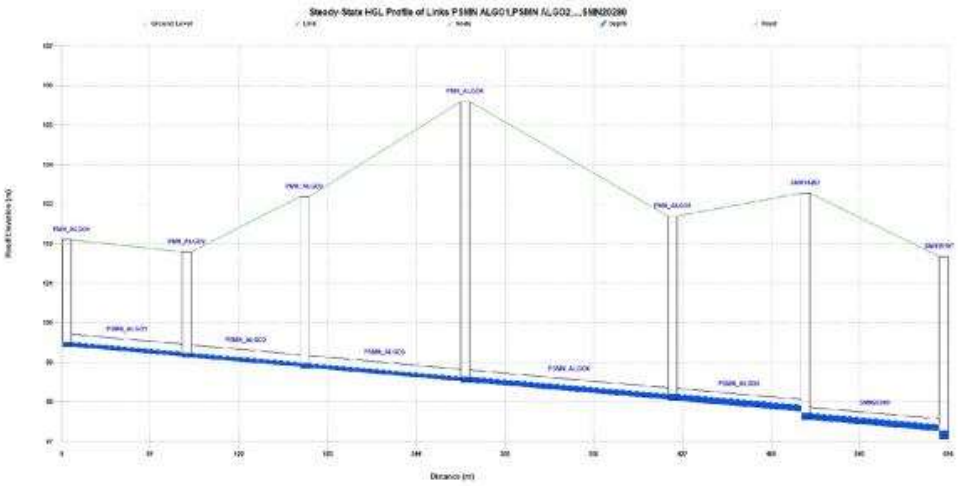
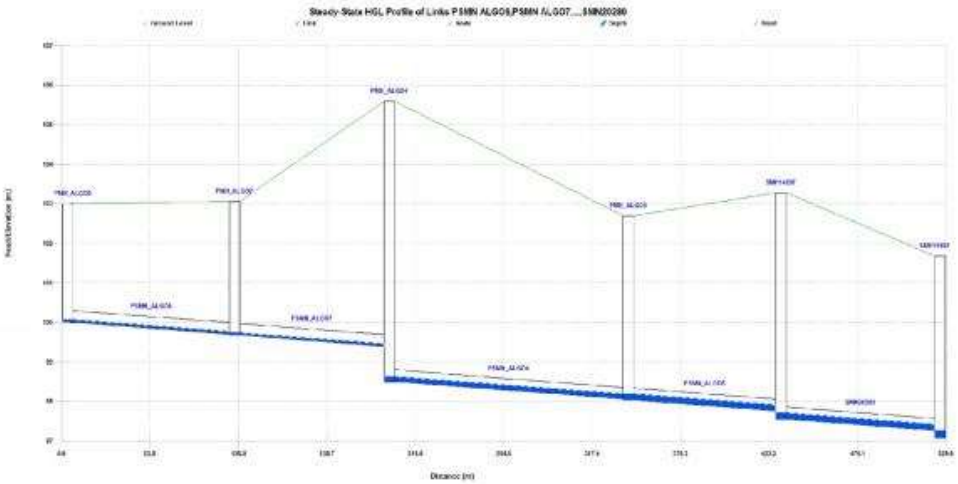


Figure 4-4. Aldershot Go MTSA - Internal Sanitary Sewer Services

REACH 1



REACH 2



ALDERSHOT PROFILE REACHES

(CIRCLES INDICATE PROFILE START LOCATION)

1 2

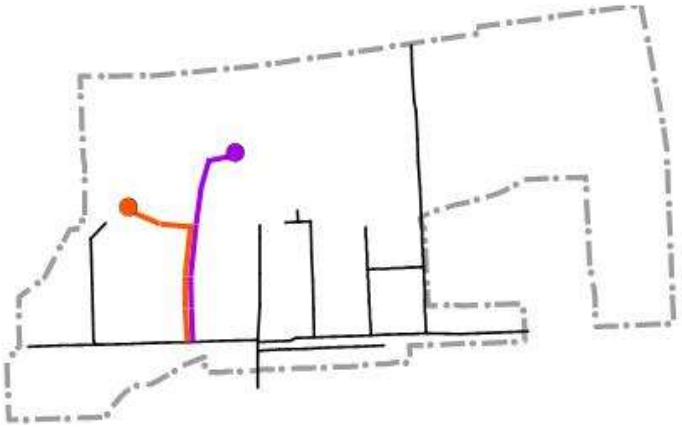


Figure 4-5. Aldershot Go MTSA Internal Services Sanitary Sewer Profiles

4.4.3 ALDERSHOT GO - WASTEWATER SERVICING DESIGN CRITERIA

The following table outlines the design requirements for the Appleby GO wastewater collection system.

Table 4-1. Design Criteria - Wastewater Collection System

Pipe Flow		
Coefficient of Roughness	n = 0.013	Halton Region
Minimum Flow Velocity	0.6 m/sec	Halton Region
Maximum Flow Velocity	3.0 m/sec	Halton Region
Infiltration		
Infiltration Allowance	0.286 l/sec/ha	Halton Region
Wastewater Generation Rate		
Residential	210 L/cap/day	
Employment	185 L/cap/day	

4.4.4 ALDERSHOT GO - WASTEWATER GENERATION

Wastewater generation rates have been calculated based on the preferred Land Use, utilizing Halton Region design criteria listed above.

Wastewater Loading and Infiltration/Inflow Generation

Infiltration and Inflow (I&I) = 0.286 Litres per hectare per second

Wastewater flow projection for the Aldershot GO service area was estimated by applying these criteria to the total equivalent population and the area. The Inflow and Infiltration amounts were factored in by applying the Modified Harmon Peaking Method which is built into and calculated through the hydraulic model. The following wastewater loading and I&I generation rates were calculated for the Aldershot GO MTSA.

Table 4-2. Aldershot GO Loading and Generation

Parameter	Value
Average Daily Dry Weather Flow	41.0 L/s
Average Daily Wet Weather Flow	44.38 L/s
Total Peak Wastewater Flow Including I&I	155.31 L/s

Establish the expected sanitary flows (average dry weather flow, maximum wet weather flow (including I/I) for each MTSA based on future residential and employment population forecasts (specific time horizons required: 2031 and 2051).

It is requested that wastewater generation rates and population/employment estimates are established and differentiated for both the 2031 time-horizon as well as for 2051.

The Region's forecasted wastewater flows contained in the model at the time of receipt were 7.75 L/s under Load 7 and 1.35 L/s under Load 9 for Aldershot GO MTSA. For this mandate, these loading values were scrubbed and the calculated growth projection by WSP were distributed in Load 7 for residential and Load 9 for employment in the model.

4.4.5 ALDERSHOT GO - WASTEWATER MODELLING

The hydraulic wastewater model was updated using the Region's most up to date data for a 2031 time-horizon. No additional Regional based servicing constraints regarding wastewater treatment plants, pumping stations or gravity sewers are identified for the Aldershot GO MTSA at this point. Further analysis is required to confirm vertical infrastructure needs. Expansion and upgrade requirements for the Aldershot GO MTSA to accommodate projected residential and employment populations are identified in the following section.

Summary of Proposed Additional Wastewater Servicing

To accommodate the full build out scenario for the Aldershot GO MTSA, the proposed additional wastewater infrastructure is summarized below:

Table 4-3. Aldershot GO – Proposed Wastewater Infrastructure

Gravity Mains	Meters
300 mm	707

4.5 WATER SERVICING

4.5.1 EXISTING WATER SERVICES

The Aldershot GO MTSA is serviced by Burlington Pressure Zones B1A and partially in Pressure Zone B2 with existing services shown in **Figure 4-6**. Zone B1A is a unique zone that is separate from Zone B1 and services Aldershot area. Zone B1A is about 5 m higher than Zone B1 and serviced by Kingsway Drive Booster Pumping Station with storage and pressure control provided by the Waterdown Reservoir. Halton's current planning direction is to provide service from the Halton Integrated Lake Based System.

The north part of Aldershot area is in Zone B2 which is relatively remote from the rest of Halton's Zone B2 at western end. This area is fed by a single pipe of 300mm/350mm/450 mm dia – 5 km long along the North Service Road from the 403/407/QEW interchange.

The preferred service ground elevation range for the pressure zones is given in **Table 4-4**.

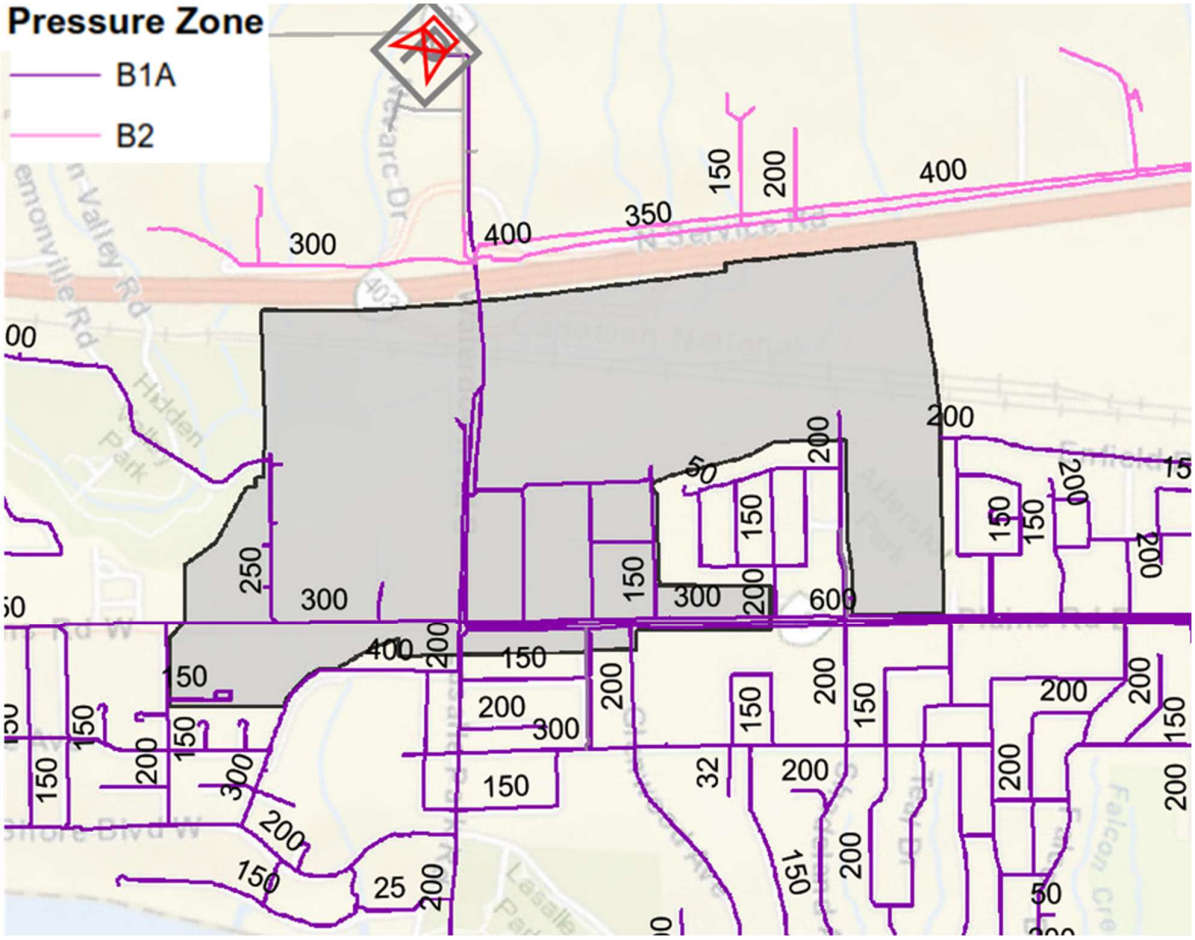


Figure 4-6. Existing Water Services at Aldershot GO MTSA

Table 4-4. Aldershot GO - MTSA Pressure Zone Suitability

	Required (MOECC)	Preferred
Min Operating Pressure	28.0 m	35.0 m
Max Operating Pressure	50.0 m	56.0 m
Zone B2 Pressure Zone Characteristics		
Min Suitable Ground Service Elevation	**97.8 mASL**	**111.8 mASL**
Maximum Suitable Ground Service Elevation	**132.3 mASL**	**125.3 mASL**
Minimum HGL	160.3 mASL	
Max HGL	167.8 mASL	
Zone B1A Pressure Zone Characteristics		
Min Suitable Ground Service Elevation	**70.2 mASL**	**84.2 mASL**
Maximum Suitable Ground Service Elevation	**107.2 mASL**	**100.2 mASL**
Minimum HGL	135.2 mASL	
Max HGL	140.0 mASL	

Key External Planned Infrastructure Projects

Halton's Planning model indicates a number of planned infrastructure components that are to be in-service by 2031. Key Components were identified and Halton Region confirmed the status of the components as follows:

1. ***Zone 2 - 400 mm pipe along North Service Rd. from East of Waterdown Rd N to King Rd.***
2. ***300mm WM on Birchwood Avenue from Plains Rd East southwards towards Fairwood Place East (BUR)***
3. ***300mm WM on Gallagher Rd from Plains Rd East to 160 m Northerly (BUR)***
4. ***7.5 ML storage expansion at Waterdown Reservoir (existing site) (Zone B1A) (BUR)***
5. ***300mm WM on Downsview Rd from Plains Rd East to Dowland Crescent (BUR)***

The 2031 modeling results for the Aldershot GO MTSA includes these components in service.

4.5.2 PROPOSED WATER SERVICES

In order to service the high ground North of the railway corridor it is recommended that the MTSA be serviced by the two pressure zones. It is proposed to designate the rail corridor as the Pressure Zone boundary between Zone B1A and Zone B2. A conceptual layout is a proposed servicing plan is given in **Figure 4-7**.

Internal Services
A network of 300 mm watermains is proposed along all new road right-of-ways. In north part of the lands, trenchless connection will be required to connect two of 400 mm watermain to Zone B2 existing watermains. Furthermore, it is recommended to upgrade some 150 mm and 200 mm distribution mains to 300 mm along Gallagher Road.

A total of approximately 8250 m of new watermain is proposed to service the Aldershot GO MTSA.

External Services
Halton's model 2031 scenario with the proposed updated population in the Burlington MTSA, confirms there is sufficient capacity to meet the boundary conditions and support the demands as described below. Note that external capacity is reviewed by Halton Region as part of the Master Planning process and for the cumulative effect on major supply and transmission systems. New developments that benefit from the existing capacity are assigned an overall development charge to pay for the life-cycle cost of the infrastructure.

Confirmation of Capacity
The proposed system was modelled with the following elements:

- Halton's proposed, existing and upgraded infrastructure to 2031;
- The proposed updated population for the Burlington MTSA as well as the 2051 demands elsewhere in the Region;
- The proposed internal network as shown in **Figure 4-7**;

The model output for the available fire flow indicator is above 150 L/s in Zone B2 and 190 L/s for the subject lands in Zone B1A as shown in **Figure 4-8**. This confirms the network is suitable to support the needs of a variety of building types.

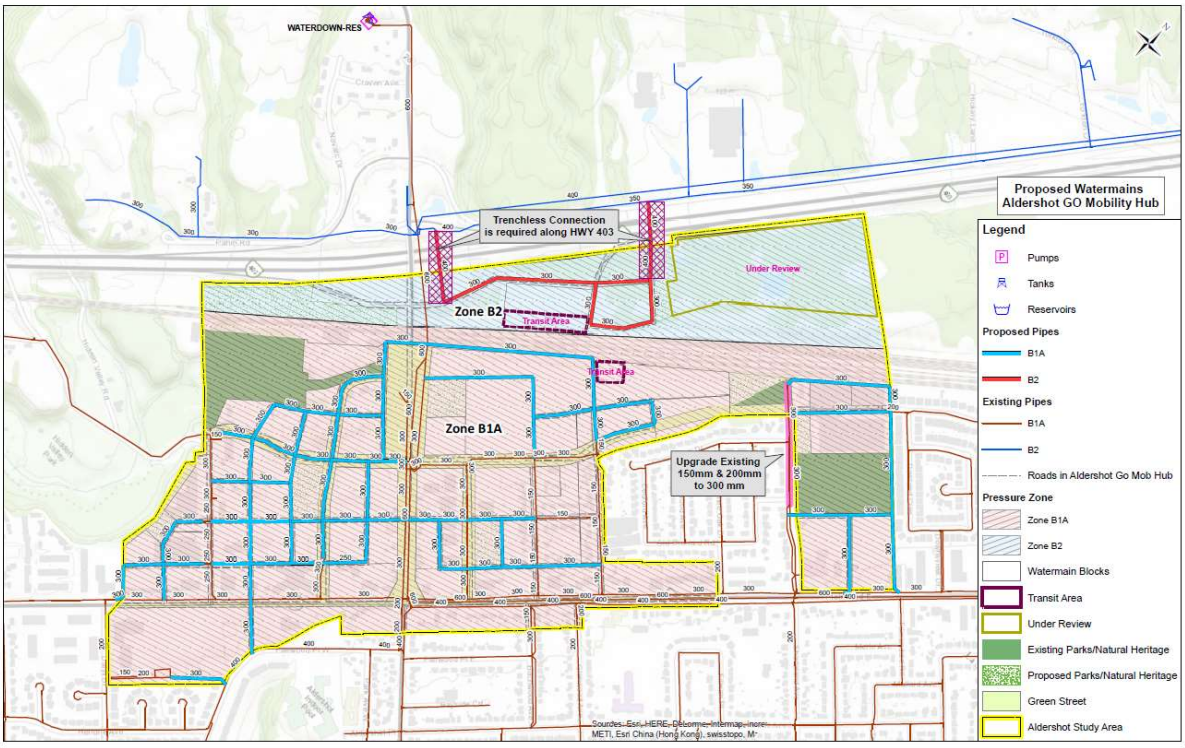


Figure 4-7. Proposed Water System - Aldershot GO MTSA

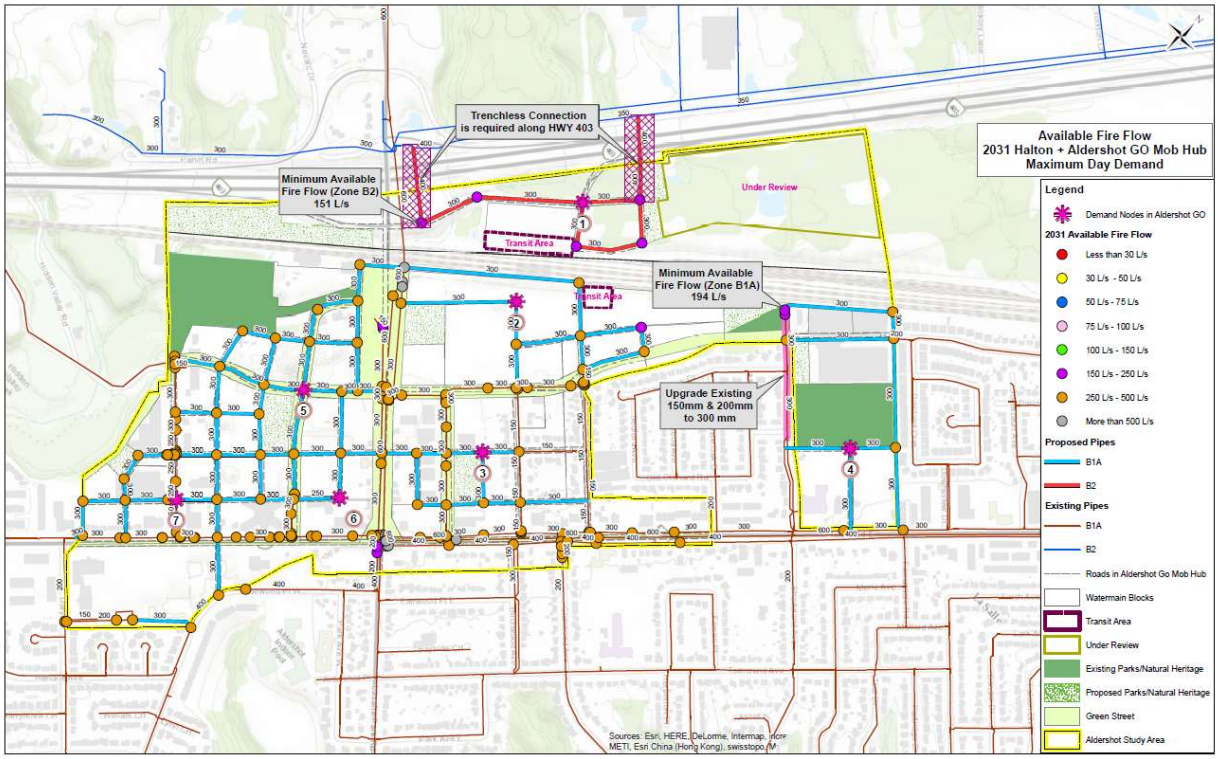


Figure 4-8. Aldershot GO - Available Fire Flow – Proposed

4.5.3 ALDERSHOT GO – WATER DESIGN CRITERIA

Design water demands used to update the hydraulic modelling are outlined in the table below as per comments received which suggested using unit water usages rates for residential (255 L/p-d) and ICI (a single blended rate = 225 L/p-d). With these usage rates, the average demands (L/s) and Max Day Demand (MDD) were determined using a max day factor of 2.25 (Typically a maximum daily factor of 1.9 is used, however, based on the land use mix, a rate of 2.25 was used as the best-informed factor at the time that model was run. This slightly different factor should not influence any recommendation or outcome but can be corrected in the future if deemed necessary).

Table 4-5. Design Criteria – Water Demand

Land Use Type	Water Average Day Demands
Residential	255 L/person/day
Industrial/Commercial/Institutional (Blended)	225 L/employee/day

4.5.4 ALDERSHOT GO - WATER DEMAND

The following hydraulic modelling results confirm supply and pressure availability to service the proposed developments in 2031. The anticipated water demand (average day demand, max day demand and fire flow) for the projected growth in each MTSA was calculated based on 2051 residential and employment population forecasts from the MTSA land use Traffic Zone Allocation. The average day demand (ADD) projection was estimated by applying the above criteria to the total equivalent population and the area. The following factors were utilized to estimate the maximum day demand (MDD) and peak hour demand (PHD).

MDD 2.25
PHD 3.0

Applying these criteria to the residential and employment populations and adding the demands up, the ADD, MDD and PHD are:

Table 4-6. Aldershot GO – New Development Water Demand Growth

Parameter	Value
Residential Population	14,603
Employment Population	2,595
Average Daily Demand (ADD)	49.9 L/s
Maximum Daily Demand (MDD)	112.2 L/s
Peak Hour Demand (PHD)	147.0 L/s

For water analysis, the future demands were distributed to Demand 7 for anticipated residential growth and Demand 9 for anticipated employment growth.

Table 4-7. Aldershot GO – Modelling Results Under MDD

Junction ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (psi)
ALD_GO_15	14.5	102.0	138.5	51.9
ALD_GO_21	15.3	103.0	138.5	50.5
ALD_GO_35	14.2	103.0	138.6	50.6
ALD_GO_50	37.5	103.0	138.6	50.6
ALD_GO_57	6.1	108.5	165.1	80.5
WFT15691	4.5	100.8	138.7	53.8
WFT20539	5.7	100.5	138.5	54.1
WFT63520	14.5	103.1	138.5	50.4

Table 4-8. Aldershot GO – Modelling Results

ID	Total Demand (L/s)	Hydrant Available Flow (L/s)	Critical Pressure for Design Run (psi)
ALD_GO_15	294.5	434.2	28.4
ALD_GO_21	295.3	419.8	28.4
ALD_GO_35	294.2	471.7	28.4
ALD_GO_50	317.5	416.7	28.4
ALD_GO_57	286.1	169.5	28.4
WFT15691	284.5	431.3	28.4
WFT20539	285.7	345	28.4
WFT63520	294.5	408.9	28.4

Figure 4-9. Aldershot GO – Node Locations

4.5.5 ALDERSHOT GO - WATER MODELING RESULTS

The hydraulic water model was updated using the Region's most up to date data for a 2031 time-horizon. No additional Regional based servicing constraints regarding water purification plants, reservoirs, pump stations, or linear infrastructure were identified for the Aldershot GO MTSA. Expansion and upgrade requirements for the Aldershot GO MTSA to accommodate projected residential and employment populations are identified in the following section. The model output for the available fire flow indicator is 170 L/s to 472 L/s for the subject lands as shown in Figure 4-8. Most of the junctions can deliver an available fire flow greater than 250 L/s and support the needs of a variety of building types, except for junction ALD_GO_57 with an available fire flow of 170 L/s. The MDD+FF scenarios were completed with the residual pressure set as 28.4 psi and the available fire flows are expected to be higher than what have been presented in the report with the minimum residual pressure requirement of 20 psi. Although current results are adequate, it is suggested to re-run the model with the pressure set at 20 psi for even better results if deemed necessary.

4.6 SUMMARY AND COST ESTIMATE

The Aldershot GO MTSA can be adequately serviced from Halton Region's Lake based system as per the plans described in Section 4.4.2 (Proposed Wastewater Services) and Section 4.5.2 (Proposed Water Services).

Preliminary Cost Estimates are provided for information purposes and based on 2022 construction costs. Costs are provided for planning purposes only. Note that actual costs can vary considerably due to labour, materials, unknown design factors, ground conditions, staging.

The estimate represents an overall budget for transmission and collection servicing upgrades to provide an opportunity for collective cost sharing of servicing at the level of the MTSA or as an intensification fund levied from intensification developments within targeted areas in the City of Burlington.

External Servicing and Life-Cycle Costs associated with the Halton Lake Based Trunk Sanitary Collection and Treatment system, as well as the Treated Water Supply, Storage, Transmission and Pumping is not included in the estimates below.

Servicing costs are summarized in **Table 4-9** and **Table 4-10**.

No specific external servicing costs are identified for water or wastewater services.

The following estimated costs are based on the Regional Municipality of Halton 2022 Water/Wastewater Development Charges Update and include full road reconstruction.

Table 4-9. Cost Estimate - Aldershot GO MTSA – Internal Sanitary Services[6]

Description	Unit	Quantity	Unit Cost	Extended Cost	Amount
Reach #1					**$471,640**
300 mm dia & 2.5-3.5 m deep Sanitary Sewer pipe in Proposed Roads	per meter	163	$760/m	$123,880	
300 mm dia & 5-6 m deep Sanitary Sewer pipe in Proposed Roads	per meter	352	$880/m	$309,760	
1200 mm Sanitary Manhole 3m deep	each	2	$6,000/each	$12,000	
1200 mm Sanitary Manhole 4.5m -5m deep	each	2	$8,000/each	$16,000	
1200 mm Sanitary Manhole 7-7.5m deep	each	1	$10,000/each	$10,000	
Reach #2					**$171,440**
300 mm dia & 3.5-5 m deep Sanitary Sewer pipe in Proposed Roads	per meter	194	$760/m	$147,440	
1200 mm Sanitary Manhole 3-4 m deep	each	3	$8,000/each	$24,000	
Upgrade/Replacement of Existing Sanitary Sewer (with Restoration, Traffic Control, etc)					**$215,120**
300 mm dia & 3-4 m deep Sanitary Sewer pipe in Existing Roads	per meter	262	$760/m	$199,120	
1200 mm Sanitary Manhole 3-4 m deep	each	2	$8,000/m	$16,000	
Secondary Sewer Servicing					**$3,739,200**
300 mm dia Sanitary Sewer pipe and 1200 mm Manholes@120m spacing	per meter	4,920	$760/m	$3,739,200	
Sub-Total Cost Estimate					**$4,597,400**
Contingency & Engineering Allowance 35%					$1,609,090
Total Cost Estimate (rounded)					**$6,206,490**

[6] The cost of road reinstatement is included in the unit cost for planned work in existing roads. For planned work in proposed roads, the cost of new road construction is not included. The added cost of new full width road construction is estimated in the range of $5,200 to $5,900 per linear meter.

Table 4-10. Cost Estimate - Aldershot GO MTSA – Internal Water Servicing[7]

Description	Unit	Quantity	Unit Cost	Extended Cost	Amount
New Watermains and their Connections					**$11,113,806**
250 mm dia Watermains in Proposed Roads	per meter	105	$740/m	$77,700	
300 mm dia Watermains in Proposed Roads	per meter	7,777	$880/m	$6,843,760	
400 mm dia Watermains with Trenchless Construction	per meter	370	$8,600/m	$3,182,000	
Allowance for connections, PRVs, etc.	L.S.	1		$1,010,346	
Upgrade/Replacement of Existing Sanitary Sewer (with Restoration, Traffic Control, etc)					**$255,400**
Upgrade 150 mm Existing watermains to 300 mm	per meter	150	$880/m	$132,200	
Upgrade 200 mm Existing watermains to 300 mm	per meter	140	$880/m	$123,200	
Sub-Total Cost Estimate					**$11,369,206**
Contingency & Engineering Allowance 35%					$3,979,222
Total Cost Estimate (rounded)					**$15,348,428**

[7] The cost of road reinstatement is included in the unit cost for planned work in existing roads. For planned work in proposed roads, the cost of new road construction is not included. The added cost of new full width road construction is estimated in the range of $5,200 to $5,900 per linear meter.

5 CONCLUSION

This purpose of this report is to determine the functional water and wastewater linear servicing requirements for the Appleby, Aldershot, and Burlington MTSAs in the City of Burlington. Further analysis, including modeling would be required to determine Regional vertical related water and wastewater infrastructure.

It is understood that development and intensification within the MTSAs may have an impact on the Regional water and wastewater system. In particular, the system-wide impacts are anticipated for the water conveyance, storage, pumping and treatment, as well as wastewater trunk mains, pumping and treatment.

While it is recognized that the impact of the MTSA intensification and development on the Regional scale needs to be evaluated, quantified and accounted for, it is also recognized that the trunks, pumping stations, storage reservoir and treatment plants have much broader service areas. As such, a Region-wide study such as a Master Servicing Plan, or another study focusing on the system-wide analysis is better suited to evaluate the impact of overall development to the Regional infrastructure than the current study, which focuses on local infrastructure.

The information presented in the current report will be a useful resource for the completion of a subsequent study especially in relation to the Burlington MTSAs. Based on the model check conducted, no existing water or wastewater services will become obsolete or abandoned in the future.

For all three subject MTSAs, although current results are adequate, it is suggested to re-run the model for even better results if deemed necessary. It is recommended that the City can use to inform a policy that would enabling phasing and bridge the gap to when the future modeling work can be done to align with the Region's Infrastructure Master Planning process.

We recommend additional modeling to confirm if the necessity of upsizing current infrastructure to accommodate the projected growth on a local basis first, then a broader analysis to confirm impact on Regional infrastructure.

Due to changes to the precinct plan through the implementation of OPA there may be deviation from the planned population and employment at a block-by-block level. Sensitivity testing may be necessary and direction for future phasing of infrastructure will be determined through other broader processes.

APPENDIX

A MODEL OUTPUT

Proposed Loading at WW nodes in Burlington Mobility Hubs

Aldersht GO Mobility Hub

	Description	Junction ID from Model	Loading	Population
SEWERSHED #1		MANHOLE: SMH19208	3.4 L/s	1611
SEWERSHED #2		MANHOLE: SMH13358	1.8 L/s	733
SEWERSHED #3		MANHOLE: SMH13382	3.9 L/s	1787
SEWERSHED #4		MANHOLE: SMH19212	11.7 L/s	5025
SEWERSHED #5		MANHOLE: SMH19214	3.2 L/s	1372
SEWERSHED #6		MANHOLE: SMH13368	2.0 L/s	926
SEWERSHED #7		MANHOLE: SMH13299	6.9 L/s	3022
SEWERSHED #8		MANHOLE: SMH14204	7.8 L/s	3728
SEWERSHED #9		MANHOLE: SMH13346	2.0 L/s	899
SEWERSHED #10		MANHOLE: SMH13269	7.7 L/s	3903
SEWERSHED #11	Aldershot GO New MH	MANHOLE: PMH_ALGO1	8.8 L/s	3989
SEWERSHED #12	Aldershot GO New MH	MANHOLE: PMH_ALGO5	7.6 L/s	3300
SEWERSHED #13		MANHOLE: SMH19202	4.5 L/s	2090
SEWERSHED #14	Aldershot GO New MH	MANHOLE: PMH_ALGO6	4.1 L/s	1822
SEWERSHED #15		MANHOLE: SMH13236	6.5 L/s	2776
SEWERSHED #16		MANHOLE: SMH19198	4.0 L/s	1792
		Subtotal =	**85.9 L/s**	**38774**

Burlington GO Mobility Hub

	Junction ID from Model	Loading	Coverage count
Brant Street Sewershed	PMHB10-1	2.4 L/s	1046
	PMHB4-1	5.2 L/s	2235
	PMHB5-6-1	5.3 L/s	2307
	PMHB7-1	3.3 L/s	1421
	PMHB8-1	4.7 L/s	2020
	PMHB9-1	1.5 L/s	665
	SMH9498	4.4 L/s	1933
	SFT367	1.1 L/s	478
	SMH9320	2.0 L/s	859
	SMH9311	4.3 L/s	1843
	SMH11520	0.0 L/s	0
	SMH9277	1.3 L/s	545
	SMH11522	1.7 L/s	715
	SMH11525	2.4 L/s	1066
	SMH9276	1.5 L/s	649
	SMH9236	3.0 L/s	1247
	SMH9231	0.0 L/s	0
	SMH9035	1.3 L/s	550
	SMH35548	0.7 L/s	294

	SMH9635	1.4 L/s	610
Drury Lane Sewershed	PMHB2-1	2.5 L/s	1341
	SMH19383	1.1 L/s	489
	SMH19384	1.1 L/s	489
	SMH57382	1.2 L/s	544
	SMH9226	0.0 L/s	0
	SMH9240	0.0 L/s	0
Leighland Road Sewershed	PMHB1-1	1.2 L/s	718
	PMHB3-1	2.5 L/s	1437
	SMH16805	0.0 L/s	0
	SMH8968	1.0 L/s	427
	SMH8986	1.5 L/s	628
	SMH9028	1.8 L/s	776
	Subtotal =	**61.4 L/s**	**27332**

	Average Flow	**Population**
Brant Street Sewershed	47.5 L/s	20,483
Drury Lane Sewershed	5.9 L/s	3,320
Leighland Road Sewershed	8.0 L/s	4,443
	61.4 L/s	**28246 (total pop)**
Subtotal =	**61.4 L/s**	**28250**

Burlington DT Mobility Hub

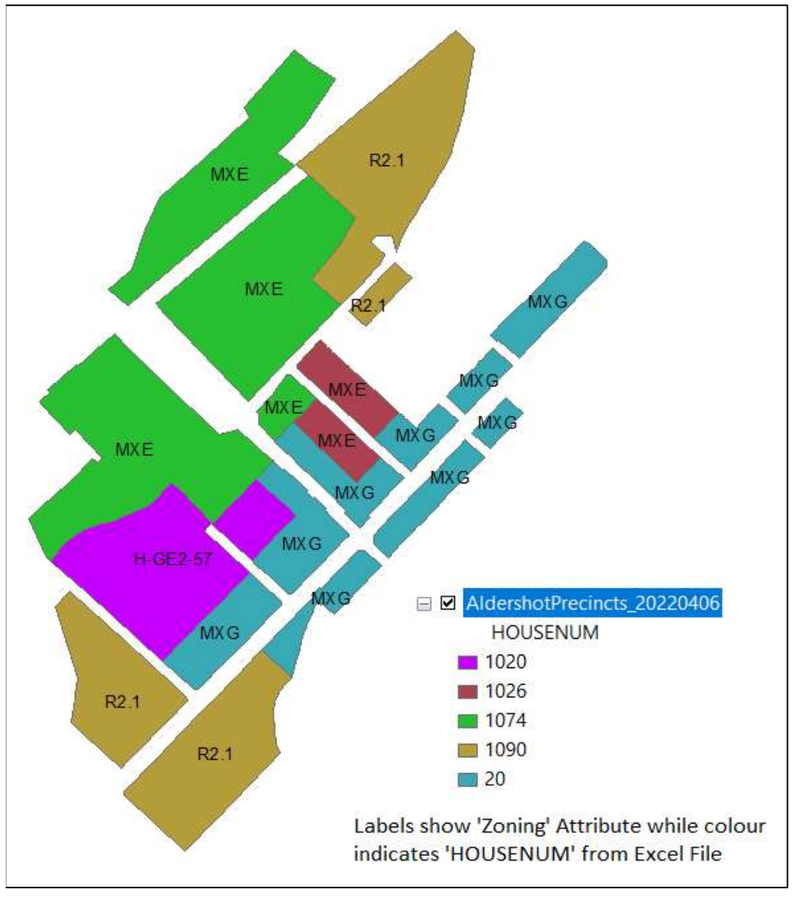
	Description	**Junction ID from Model**	**Loading**	**Population**
Node #1	Loading from DT hub	MANHOLE: SMH9384	3.8 L/s	1603
Node #2	Loading from DT hub	MANHOLE: SMH22951	3.8 L/s	1603
Node #3	Loading from DT hub	MANHOLE: SMH9627	3.8 L/s	1603
Node #4	Loading from DT hub	MANHOLE: SMH9740	3.8 L/s	1603
Node #5	Loading from DT hub	MANHOLE: SMH9820	3.8 L/s	1603
Node #6	Loading from DT hub	MANHOLE: SMH9976	3.8 L/s	1603
Node #7	Loading from DT hub	MANHOLE: SMH19374	3.8 L/s	1603
Node #8	Loading from DT hub	MANHOLE: SMH9849	3.8 L/s	1603
Node #9	Loading from DT hub	MANHOLE: SMH10035	3.8 L/s	1603
		Subtotal =	**34.0 L/s**	**14425**

Appleby GO Mobility Hub

	Average Flow	**Population**
Sewershed A1	7.0 L/s	4081
Sewershed A2	3.9 L/s	2249
Sewershed A3	1.1 L/s	660
Sewershed A4	6.0 L/s	3494
Sewershed A5	20.8 L/s	8598
Sewershed A6	8.1 L/s	3389
Sewershed A7	2.8 L/s	1156
Sewershed A8	8.3 L/s	4581

Sewershed A9		4.8 L/s	2820
Sewershed A10		6.5 L/s	3771
Sewershed A11		10.5 L/s	6112
Sewershed A12		11.6 L/s	4805
Sewershed A13		8.3 L/s	4038
Sewershed A14		4.7 L/s	2759
Sewershed A15		0.9 L/s	518
Sewershed A16		5.4 L/s	3144
Sewershed A17		2.8 L/s	1637
Sewershed A18		1.7 L/s	986
Sewershed A19		0.5 L/s	312
Sewershed A20		3.3 L/s	1945
Sewershed A21		2.8 L/s	1663
	Subtotal =	**121.7 L/s**	**62718**

GISID	PROPTYPE	HOUSENUM	STREET	STRTYPE	STRDIR	UNITTYPE	UNIT	ADDRESS	ROLL	ZONING	LEGALDESC
3348	10	20	Plains	Rd.	E			20 Plains Rd. E	2402010111108000000	MXG	CON BF PT 6
52617	10	1026	Cooke	Blvd.		Unit	1	1026 Cooke Blvd. Unit 1	2402010106074340000	MXE	HALT CONDO PLAN 416 LEVEL 1 UNIT 1
3060	10	1074	Cooke	Blvd.				1074 Cooke Blvd.	2402010106074150000	MXE	PLAN M507 LOT 2 SAVE AND EXCEPT RP 20R11122 PART 2
42568	10	1020	Emery	Ave.				1020 Emery Ave.	2402010106144210000	H-GE2-57	CON 1 EF PT LOT 7 RP 20R12569 PARTS 3,4,5,6 SAVE AND EXCEPT RP 20R12569 PARTS 5,6
2763	10	1090	St Matthew's	Ave.				1090 St Matthew's Ave.	2402010106095000000	R2.1	CON 1 EF PT LOT 6 PLAN 665 LOT 66



FRONTAGE	DEPTH	Shape_Leng	Shape_Area	Precincts	TotalAreaH	
30.48	54.86	5544.55683352000	137352.78281800000	Aldershot Main Street	13.51274961220	4068
		1072.87178185000	28180.76190030000	Cooke Commons	2.81807619003	849
		4910.78795605000	271535.98928800000	Aldershot GO Central	25.83189287180	7776
		1600.14662641000	88487.11600860000	Emery Commons	9.07267570019	2731
15.24	33.52	4019.95976689000	203426.64491100000	Mid-Rise Residential	20.19377720050	6079
						21503

Traffic Zone	Population	Employment
1	4,848	905
2	1,837	336
3	559	132.83
4	812	44
5	3,884	544
6	1,902	452
7	760.92	180.90
Sub-Total (Build-Out)	**14,603**	**2,595**

The following information was received from Zhongwei Shi (Brook McIlroy), on Nov 29/2017

APPLEBY			
MTSA ZONES			
ZONE 1			
	Number of People	ADD (L/s)	MDD (L/s)
Population (Residential)	4848	14.31	32.19
Employment	905	2.36	5.30
Total	5753	16.67	37.50
ZONE 2			
Population (Residential)	1837	5.42	12.20
Employment	336	0.88	1.97
Total	2173	6.30	14.17
ZONE 3			
Population (Residential)	559	1.65	3.71
Employment	133	0.35	0.78
Total	692	2.00	4.49
ZONE 4			
Population (Residential)	812	2.40	5.39
Employment	44	0.11	0.26
Total	856	2.51	5.65
ZONE 5			
Population (Residential)	3884	11.46	25.79
Employment	544	1.42	3.19
Total	4428	12.88	28.98
ZONE 6			
Population (Residential)	1902	5.61	12.63
Employment	452	1.18	2.65
Total	2354	6.79	15.28
ZONE 7			
Population (Residential)	761	2.25	5.05
Employment	181	0.47	1.06
Total	942	2.72	6.11
	17198	**49.9**	**112.2**

Total Residential Population	**14603**	97
Total Employment	**2595**	15
Total intensification	**17198**	

Flow Calculation

Res Flow= 255 L/cap/day

ICI Flow= 225 L/employee/day

MDD Peaking Factor = 2.25

		Contributing Zones	Junction ID from Model	ADD	MDD	Relocated?	New Junc ID	Old Junc ID
Node #1	Aldershot Dem Node 1	7	ALD_GO_57	2.72 L/s	6.11 L/s	No		Need to relocate some demand nodes
Node #2	Aldershot Dem Node 2	1	ALD_GO_50	16.67 L/s	37.50 L/s	No		
Node #3	Aldershot Dem Node 3	2	ALD_GO_35	6.30 L/s	14.17 L/s	No		
Node #4	Aldershot Dem Node 4	3	WFT15691	2.00 L/s	4.49 L/s	Relocated - Not in use	WFT15691	ALD_GO_46
Node #5	Aldershot Dem Node 5	6	ALD_GO_21	6.79 L/s	15.28 L/s	Relocated - Not in use	ALD_GO_21	ALD_GO_8
Node #6	Aldershot Dem Node 6	5	ALD_GO_15	6.44 L/s	14.49 L/s			
Node #7	Aldershot Dem Node 7	5	WFT63520	6.44 L/s	14.49 L/s			
Node #8 (New)	Aldershot Dem Node 8	4	WFT20539	2.51 L/s	5.65 L/s		WFT20539	
			subtotal	**49.9 L/s**	**112.2 L/s**			

The following table is for presentation in the map

New Demand Nodes	Residential Population	Employment Population	Total Population
Node #1	761	181	942
Node #2	4848	905	5753
Node #3	1837	336	2173
Node #4	559	133	692
Node #5	1902	452	2354
Node #6	1942	272	2214
Node #7	1942	272	2214
Node #8 (New)	812	44	856
	14603	2595	

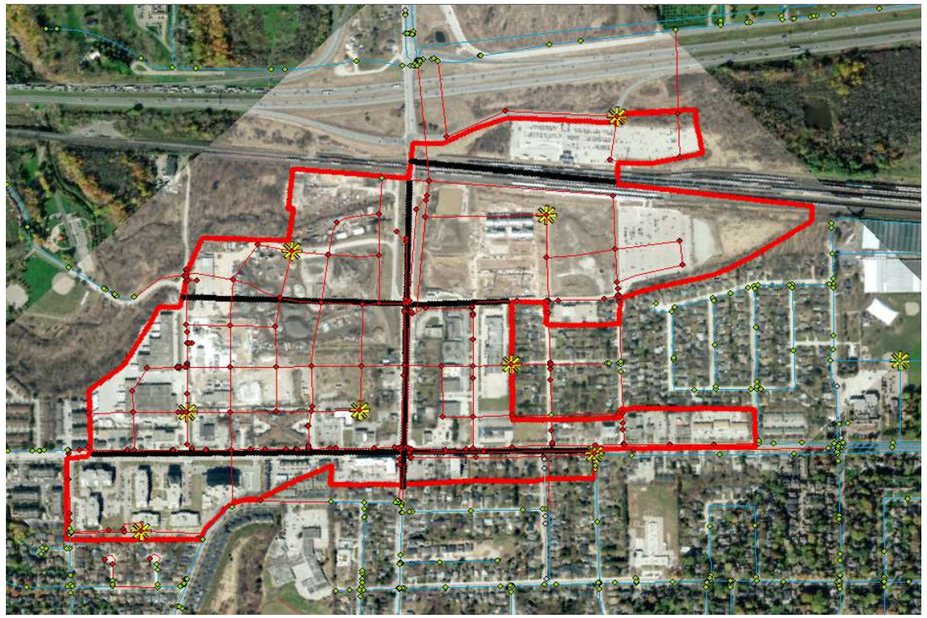
	ID (Char)	**Demand 7**	Demand 9		ID (Char)		
Node #1	ALD_GO_57	**5.05**	**1.06**		ALD_GO_15	12.90	1.59
Node #2	ALD_GO_50	**32.19**	**5.30**		ALD_GO_21	12.63	2.65
Node #3	ALD_GO_35	**12.20**	**1.97**		ALD_GO_35	12.20	1.97
Node #4	WFT15691	**3.71**	**0.78**		ALD_GO_50	32.19	5.30
Node #5	ALD_GO_21	**12.63**	**2.65**		ALD_GO_57	5.05	1.06
Node #6	ALD_GO_15	**12.90**	**1.59**		WFT15691	3.71	0.78
Node #7	WFT63520	**12.90**	**1.59**		WFT20539	5.39	0.26
Node #8 (New)	WFT20539	**5.39**	**0.26**		WFT63520	12.90	1.59
		97.0	15			**97.0**	**15.2**

* 2031MDD_ALDERSHOT_STRESS_TEST *

ID (Char)	Demand 1 (lps)	Pattern 1 (Char)	Demand 2 (lps)	Pattern 2 (Char)	Demand 3 (lps)	Pattern 3 (Char)	Demand 4 (lps)	Pattern 4 (Char)	Demand 5 (lps)	Pattern 5 (Char)	Demand 6 (lps)	Pattern 6 (Char)	Demand 7 (lps)	Pattern 7 (Char)	Demand 8 (lps)	Pattern 8 (Char)	Demand 9 (lps)	Pattern 9 (Char)	Demand 10 (lps)
ALD_GO_10																			
ALD_GO_11																			
ALD_GO_12																			
ALD_GO_13																			
ALD_GO_14																			
ALD_GO_15	0		0		0		0		23.3		0		0		0		0		0
ALD_GO_16																			
ALD_GO_17																			
ALD_GO_18																			
ALD_GO_19																			
ALD_GO_2																			
ALD_GO_20																			
ALD_GO_21																			
ALD_GO_22																			
ALD_GO_23																			
ALD_GO_24																			
ALD_GO_25																			
ALD_GO_26																			
ALD_GO_27																			
ALD_GO_28																			
ALD_GO_3																			
ALD_GO_31																			
ALD_GO_32																			
ALD_GO_33																			
ALD_GO_34																			
ALD_GO_35	0		0		0		0		49.4		0		0		0		0		0
ALD_GO_36																			
ALD_GO_37																			
ALD_GO_39																			
ALD_GO_4																			
ALD_GO_40																			
ALD_GO_41																			
ALD_GO_42																			
ALD_GO_43																			
ALD_GO_44																			
ALD_GO_5																			
ALD_GO_50	0		0		0		0		30.5		0		0		0		0		0
ALD_GO_51																			
ALD_GO_53																			
ALD_GO_54																			
ALD_GO_55																			
ALD_GO_57	0		0		0		0		7		0		0		0		0		0
ALD_GO_58																			
ALD_GO_6																			
ALD_GO_63																			
ALD_GO_7																			
ALD_GO_8	0		0		0		0		36.9		0		0		0		0		0
ALD_GO_9																			
WCV114867			0				0						0		0		0		0
WCV115574	0						0						0		0		0		0
WCV13794			0.1				0						0		0		0		0
WCV13878			0				0						0		0		0		0
WCV13879							0						0		0		0		0
WCV54589							0						0		0		0		0
WCV79577	0						0												
WCV79578							0						0		0		0		0
WCV79583	0						0						0		0		0		0
WCV79584							0						0		0		0		0
WCV79585	0		0				0						0		0		0		0
WCV79587							0						0		0		0		0
WCV79588							0						0		0		0		0
WCV79589	0						0						0		0		0		0
WCV79599							0						0		0		0		0
WCV79613							0						0		0		0		0
WCV8112			0.1				0						0		0		0		0
WCV8182							0						0		0		0		0
WCV8195			0.6				0						0		0		0		0
WCV8196							0						0		0		0		0
WCV8197							0						0		0		0		0
WCV8198							0						0		0		0		0
WCV8203							0						0		0		0		0
WCV8204							0						0		0		0		0
WCV8205							0						0		0		0		0
WCV8206							0						0		0		0		0
WCV8224							0						0		0		0		0
WCV8311							0						0		0		0		0
WCV8312							0						0		0		0		0
WCV83442							0						0		0		0		0
WCV83443	0						0						0		0		0		0
WCV83865							0						0		0		0		0
WCV83866							0						0		0		0		0
WCV83867	0.6						0						0		0		0		0
WCV83868							0						0		0		0		0
WCV83875			0				0						0		0		0		0
WCV83884							0						0		0		0		0
WCV8808							0						0		0		0		0
WCV8809							0						0		0		0		0
WCV8810	0		0.1				0						0		0		0		0
WCV8811							0						0		0		0		0
WCV8812			0				0						0		0		0		0
WCV8813							0						0		0		0		0
WCV8814	0						0						0		0		0		0
WCV8815	0		0.1				0						0		0		0		0
WDV87066							0						0		0		0		0
WFT147464							0						0		0		0		0
WFT147467			0.4				0						0		0		0		0
WFT147468			0.4				0						0		0		0		0
WFT147474							0						0		0		0		0
WFT147475	0						0						0		0		0		0
WFT147476							0						0		0		0		0
WFT147481	0						0						0		0		0		0
WFT147482	0		0.4				0						0		0		0		0
WFT147488	0						0						0		0		0		0
WFT147489	0						0						0		0		0		0
WFT147490	0.6						0						0		0		0		0
WFT147491							0						0		0		0		0
WFT147492			0				0						0		0		0		0
WFT147494	1.1		0.1				0						0		0		0		0
WFT147495	1.1		0				0						0		0		0		0
WFT147497	0		0				0						0		0		0		0
WFT147498							0						0		0		0		0
WFT147719							0						0		0		0		0
WFT147721	0		0.4				0						0		0		0		0
WFT148559							0						0		0		0		0
WFT15623							0						0		0		0		0
WFT15634	0.1						0						0		0		0		0

* 2031MDD_ALDERSHOT_STRESS_TEST *

ID (Char)	Demand 1	Pattern 1 (	Demand 2	Pattern 2 (	Demand 3	Pattern 3 (	Demand 4	Pattern 4 (	Demand 5	Pattern 5 (	Demand 6	Pattern 6 (	Demand 7	Pattern 7 (	Demand 8	Pattern 8 (	Demand 9	Pattern 9 (	Demand 10 (lps)
ALD_GO_1	0		0		0		0		23.3		0		0		0		0		0
ALD_GO_21																			
ALD_GO_3	0		0		0		0		49.4		0		0		0		0		0
ALD_GO_5	0		0		0		0		30.5		0		0		0		0		0
ALD_GO_5	0		0		0		0		7		0		0		0		0		0
WFT15691	0						0						0		0		0		0
WFT20539							0						0		0		0		0
WFT63520	0		0		0		0		27.1		0		0		0		0		0



WFT15645		0.1	0	0	0	0	0
WFT15653			0	0	0.1	0	0
WFT15657			0	0	0	0	0
WFT15659	0	0	0	0	0	0	0
WFT15664		0.2	0	0	0	0	0
WFT15670			0	0	0	0	0
WFT15674			0	0	0	0	0
WFT15676		0	0	0	0	0	0
WFT15677	0		0	0	0	0	0
WFT15682			0	0	0	0	0
WFT15687		0	0	0	0	0	0
WFT15689		0	0	0	0	0	0
WFT15691	0		0	0	0	0	0
WFT15698		0.2	0	0	0	0	0
WFT15701			0	0	0	0	0
WFT15703			0	0	0	0	0
WFT15704			0	0	0	0	0
WFT15705	0	0	0	0	0	0	0
WFT15718	0		0	0	0	0	0
WFT15719		0.2	0	0	0	0	0
WFT15722		0.1	0	0	0	0	0
WFT15726		0	0	0	0	0	0
WFT15735	0.1	0.1	0	0	0	0	0
WFT15736		0.1	0	0	0	0	0
WFT15739	0	0.1	0	0	0	0	0
WFT15742		0	0	0	0	0	0
WFT15752			0	0	0	0	0
WFT15754			0	0	0	0	0
WFT15755			0	0	0	0	0
WFT15760			0	0	0	0	0
WFT15762			0	0	0	0	0
WFT15764			0	0	0	0	0
WFT15776			0	0	0	0	0
WFT15783		0.1	0	0	0	0	0
WFT15789		0	0	0	0	0	0
WFT15793			0	0	0	0	0
WFT15794			0	0	0	0	0
WFT15803			0	0	0	0	0
WFT15808	0.4	0	0	0	0	0	0
WFT15831	0		0	0	0	0	0
WFT15840	0.9		0	0	0	0	0
WFT162856			0	0	0	0	0
WFT16855			0	0	0	0	0
WFT18628			0	0	0	0	0
WFT18637			0	0	0	0	0
WFT18644			0				
WFT18645			0	0	0	0	0
WFT18649			0	0	0	0	0
WFT18650			0	0	0	0	0
WFT18651			0	0	0	0	0
WFT18656	0.5		0	0	0	0	0
WFT18657	0.1		0	0	0	0	0
WFT18658	0.1		0	0	0	0	0
WFT190323			0	0	0	0	0
WFT20511		0	0	0	0	0	0
WFT20522			0	0	0	0	0
WFT20539			0	0	0	0	0
WFT20542	0.1		0	0	0	0	0
WFT221074		0	0	0	0	0	0
WFT221077	0		0	0	0	0	0
WFT221129			0	0	0	0	0
WFT223278	0.9		0	0	0	0	0
WFT223289			0	0	0	0	0
WFT243840	0	0	0	0	0	0	0
WFT63510		0.1	0	0	0	0	0
WFT63511			0	0	0	0	0
WFT63517		0	0	0	0	0	0
WFT63518		0.6	0	0	0	0	0
WFT63520	0	0	0	0	27.1	0	0	0	0	0
WFT63521			0	0	0	0	0
WFT63522		1.6	0	0	0	0	0
WFT63523		1.6	0	0	0	0	0
WFT89272			0				
WFT89273	0	0	0	0	0	0	0
WFT89274		0	0	0	0	0	0
WFT89275	0		0	0	0	0	0
WFT89276			0	0	0	0	0
WFT89277			0	0	0	0	0
WFT89278			0	0	0	0	0
WFT89279		0.1	0	0	0	0	0
WFT89280	0	0	0	0	0	0	0
WFT89302		0	0	0	0	0	0
WFT89303	0	0	0	0	0	0	0
WFT89304	0		0				
WFT90406			0	0	0	0	0
WMN_ALD_GO_12							
WPV2643			0				
WPV2644			0	0	0	0	0
WPV635			0	0	0	0	0
WSV54584			0	0	0	0	0
WSV54585			0	0	0	0	0
WSV54588			0	0	0	0	0
WSV54590			0	0	0	0	0
WSV8225			0	0	0	0	0
WSV8226			0	0	0	0	0
WSV8227			0	0	0	0	0

ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (psi)
WFT15645	0.2	101.2	138.7	53.3
WFT15646	0.2	101.1	138.7	53.4
WFT15653	0.1	103.4	138.7	50.2
WFT15657	0	101.9	138.7	52.3
WFT15664	0.2	101.6	138.6	52.7
WFT15670	0	103.1	138.6	50.5
WFT15673	0.1	101.8	138.7	52.4
WFT15674	0	101.3	138.6	53.1
WFT15676	0	104.9	138.7	48
WFT15682	0	102.8	138.6	50.9
WFT15687	0.1	100.9	138.6	53.7
WFT15689	0	108.8	138.6	42.5
WFT15691	4.5	100.8	138.7	53.8
WFT15698	0.2	101.6	138.6	52.7
WFT15701	0	107.8	138.6	43.8
WFT15702	0.1	99	138.7	56.3
WFT15703	0	109.6	138.7	41.3
WFT15704	0	109.6	138.7	41.3
WFT15705	0.1	106.9	138.6	45.1
WFT15718	0.1	100.5	138.7	54.2
WFT15719	0.2	100.6	138.6	54
WFT15722	0.1	100.1	138.6	54.8
WFT15726	0	99.8	138.6	55.2
WFT15735	0.2	104	138.6	49.2
WFT15736	0.1	99.7	138.6	55.3
WFT15739	0.1	100.3	138.7	54.5
WFT15742	0	99.5	138.6	55.6
WFT15752	0	100.6	138.7	54.1
WFT15754	0	100.7	138.6	54
WFT15755	0	99.6	138.7	55.5
WFT15760	0	99.5	138.6	55.6
WFT15762	0	99.6	138.5	55.3
WFT15764	0	100.6	138.5	53.9
WFT15776	0	102.9	138.5	50.7
WFT15783	0.1	102.5	138.5	51.3
WFT15803	0	103.1	138.5	50.4
WFT15808	0.5	98.6	138.6	56.9
WFT15822	0.5	98.2	138.5	57.4
WFT15843	0	101.4	138.5	52.8
WFT16855	0	99.9	138.6	55.1
WFT18637	0	103.8	138.7	49.6
WFT18644	0	99.3	138.5	55.7
WFT18645	0	102.8	138.5	50.8
WFT20517	0	100.5	138.7	54.2
WFT20522	0	100.6	138.7	54
WFT63510	0.1	101.3	138.5	52.9
WFT63517	0	102.8	138.5	50.8
WFT63518	0.6	102.8	138.5	50.8
WFT63520	14.5	103.1	138.5	50.4
WFT63521	0	103.2	138.5	50.2
WFT63522	1.6	103.3	138.5	50
WFT63523	1.6	103.3	138.5	50
WCV8110	0	100.6	138.7	54.1
WCV8111	0	101.3	138.7	53.2
WCV8195	0.6	102.8	138.5	50.8
WCV8197	0	100.6	138.5	53.9
WCV8198	0	101.9	138.5	52.1
WCV8203	0	109.6	138.7	41.3
WCV8204	0	109.5	138.7	41.4
WCV8205	0	108.8	138.7	42.4
WCV8206	0	102.1	138.7	52
WCV8311	0	99.7	138.6	55.3
WCV8312	0	99.7	138.6	55.4
WCV8808	0	99.9	138.6	55.1
WCV8809	0	99.9	138.6	55.1
WCV8810	0.1	99.9	138.6	55.1
WCV8811	0	101.1	138.6	53.4
WCV8812	0	101.2	138.6	53.3
WCV8813	0	99.6	138.7	55.5
WCV8814	0	99.6	138.7	55.5
WCV8815	0.1	99.6	138.7	55.6

Demand junctions/nodes

ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (psi)
ALD_GO_50	37.5	103	138.6	50.6
ALD_GO_57	6.1	108.5	165.1	80.5
ALD_GO_15	14.5	102	138.5	51.9
ALD_GO_35	14.2	103	138.6	50.6
WFT63520	14.5	103.1	138.5	50.4
ALD_GO_21	15.3	103	138.5	50.5
WFT20539	5.7	100.5	138.5	54.1
WFT15691	4.5	100.8	138.7	53.8

PROPOSED PIPES

ID	From Node	To Node	Length (m)	Diameter (mm)	Roughness	Flow (ML/d)	Velocity (m/s)	Headloss (m)	HL/1000 (m/k-m)
ALD_GO_57	ALD_GO_55	ALD_GO_54	99.2	300	110	0.1	0	0	0
ALD_GO_59	ALD_GO_53	ALD_GO_57	101.4	300	110	0.1	0	0	0
ALD_GO_58	ALD_GO_54	ALD_GO_53	152.8	300	110	0.1	0	0	0
ALD_GO_56	ALD_GO_57	ALD_GO_55	130.9	300	110	-0.2	0	0	0
ALD_GO_55	ALD_GO_58	ALD_GO_57	241.6	300	110	0.3	0	0	0
WMN_ALD_GO_80	ALD_GO_58	ALD_GO_63	140	300	110	-0.3	0	0	0
WMN_ALD_GO_81	ALD_GO_63	WFT243851	175.8	400	110	-0.3	0	0	0
WMN_ALD_GO_79	ALD_GO_55	ALD_GO_62	192	400	110	-0.3	0	0	0
WMN_ALD_GO_62	WFT18628	ALD_GO_43	146.8	300	110	0	0	0	0
WMN_ALD_GO_63	ALD_GO_43	ALD_GO_42	55.9	300	110	0	0	0	0
WMN_ALD_GO_64	ALD_GO_42	ALD_GO_41	140.6	300	110	0	0	0	0
WMN_ALD_GO_66	ALD_GO_41	WFT18628	77.4	300	110	0.1	0	0	0
WMN_ALD_GO_78	ALD_GO_40	ALD_GO_50	97.5	300	110	1.7	0.3	0	0.4
WMN_ALD_GO_69	ALD_GO_44	ALD_GO_41	121.4	300	110	1	0.2	0	0.2
WMN_ALD_GO_68	WFT15653	ALD_GO_44	401.5	300	110	1	0.2	0.1	0.2
WMN_ALD_GO_65	ALD_GO_41	ALD_GO_40	148.3	300	110	0.9	0.2	0	0.1
ALD_GO_52	ALD_GO_50	ALD_GO_51	263.4	300	110	-1.6	0.3	0.1	0.4
WMN_ALD_GO_32	ALD_GO_30	ALD_GO_24	83.5	300	110	2.1	0.3	0.1	0.6
WMN_ALD_GO_33	ALD_GO_24	ALD_GO_25	95.3	300	110	0.8	0.1	0	0.1
WMN_ALD_GO_34	ALD_GO_25	ALD_GO_22	108.6	300	110	1.4	0.2	0	0.3
WMN_ALD_GO_43	ALD_GO_25	ALD_GO_26	110.4	300	110	-0.6	0.1	0	0.1
WMN_ALD_GO_41	ALD_GO_22	ALD_GO_8	110.1	300	110	1.2	0.2	0	0.2
WMN_ALD_GO_67	ALD_GO_40	WFT89272	99.3	300	110	-0.7	0.1	0	0.1
WMN_ALD_GO_35	ALD_GO_24	ALD_GO_23	95.8	300	110	1.3	0.2	0	0.3
WMN_ALD_GO_36	ALD_GO_23	ALD_GO_22	77.4	300	110	1.3	0.2	0	0.3
WMN_ALD_GO_40	ALD_GO_7	ALD_GO_21	109.4	300	110	0.1	0	0	0
WMN_ALD_GO_37	ALD_GO_22	ALD_GO_21	78.7	300	110	1.5	0.2	0	0.3
WMN_ALD_GO_38	ALD_GO_21	ALD_GO_20	76.9	300	110	0.2	0	0	0
WMN_ALD_GO_39	ALD_GO_20	ALD_GO_6	95.9	300	110	0.2	0	0	0
WMN_ALD_GO_25	WCV8197	ALD_GO_6	103.8	300	110	-0.5	0.1	0	0
WMN_ALD_GO_30	ALD_GO_6	ALD_GO_5	107	300	110	0.1	0	0	0
WMN_ALD_GO_26	ALD_GO_6	ALD_GO_7	110.5	300	110	-0.3	0	0	0
WMN_ALD_GO_20	ALD_GO_5	ALD_GO_9	97.8	300	110	-0.3	0.1	0	0
WMN_ALD_GO_4	ALD_GO_5	ALD_GO_4	95.8	300	110	-0.1	0	0	0

WCV13794	0.1	101.3	138.6	53	WMN_ALD_GO_21	ALD_GO_9	ALD_GO_10	93.2	300	110	-0.4	0.1	0	0
WCV13878	0	109.4	138.6	41.6	WMN_ALD_GO_45	ALD_GO_13	ALD_GO_14	141.4	300	110	0.5	0.1	0	0
WCV13879	0	99.7	138.6	55.3	WMN_ALD_GO_29	ALD_GO_8	ALD_GO_12	149.1	300	110	-0.6	0.1	0	0.1
WFT89272	0	104.2	138.6	49	WMN_ALD_GO_28	ALD_GO_7	ALD_GO_8	90.4	300	110	-0.3	0	0	0
WFT90406	0	102.4	138.6	51.5	WMN_ALD_GO_27	ALD_GO_7	ALD_GO_9	67.8	300	110	-0.1	0	0	0
WFT89274	0.1	100.3	138.6	54.5	WMN_ALD_GO_42	ALD_GO_8	ALD_GO_13	88.5	300	110	-1.7	0.3	0	0.4
WFT89276	0	105.3	138.6	47.3	WMN_ALD_GO_51	ALD_GO_26	WFT15704	55.4	300	110	-2.8	0.5	0.1	1.1
WFT89278	0	105.6	138.6	46.9	WMN_ALD_GO_44	ALD_GO_26	ALD_GO_13	36.4	300	110	2.2	0.4	0	0.7
WFT89302	0	104.2	138.6	49	WMN_ALD_GO_50	ALD_GO_14	ALD_GO_32	93.3	300	110	-2	0.3	0.1	0.6
WFT89303	0	104.4	138.6	48.7	WMN_ALD_GO_52	ALD_GO_32	ALD_GO_33	80.2	300	110	-0.5	0.1	0	0
WFT89304	0	104.1	138.6	49.1	WMN_ALD_GO_53	ALD_GO_33	ALD_GO_34	117.5	300	110	-0.3	0	0	0
WCV79578	0	104.3	138.6	48.8	WMN_ALD_GO_47	ALD_GO_14	ALD_GO_15	101.7	300	110	1.2	0.2	0	0.2
WCV79577	0	104.2	138.6	49	WMN_ALD_GO_46	ALD_GO_12	ALD_GO_14	107.7	300	110	-1.2	0.2	0	0.2
WCV79588	0	105.5	138.6	47.1	WMN_ALD_GO_23	WFT18645	ALD_GO_12	91.5	300	110	0.1	0	0	0
WCV79589	0	105.1	138.6	47.7	WMN_ALD_GO_49	ALD_GO_15	ALD_GO_31	104.7	250	110	0	0	0	0
WCV79587	0	105	138.6	47.8	WMN_ALD_GO_48	ALD_GO_11	ALD_GO_31	75	300	110	-0.7	0.1	0	0.1
WCV79599	0	100.2	138.6	54.6	WMN_ALD_GO_22	ALD_GO_10	ALD_GO_12	75.9	300	110	-0.7	0.1	0	0.1
WCV79613	0	102.4	138.6	51.5	WMN_ALD_GO_18	ALD_GO_10	ALD_GO_11	101.4	300	110	-0.2	0	0	0
WSV54590	0	103.1	138.5	50.4	WMN_ALD_GO_17	ALD_GO_4	ALD_GO_10	100	300	110	-0.5	0.1	0	0
WFT18628	0	104.5	138.6	48.5	WMN_ALD_GO_2	ALD_GO_2	ALD_GO_3	86.8	300	110	0.5	0.1	0	0
WFT89277	0	104.7	138.6	48.3	WMN_ALD_GO_19	ALD_GO_11	ALD_GO_3	100.3	300	110	0.5	0.1	0	0
WFT147492	0.1	102.9	138.5	50.6	WMN_ALD_GO_3	ALD_GO_3	ALD_GO_4	102.1	300	110	0.2	0	0	0
WFT147719	0	100	138.6	54.9	WMN_ALD_GO_15	WFT15793	ALD_GO_4	93.5	300	110	-0.6	0.1	0	0.1
WFT147488	0.1	103	138.5	50.5	WMN_ALD_GO_16	ALD_GO_28	ALD_GO_5	93.9	300	110	-0.5	0.1	0	0
WFT147474	0	101.7	138.6	52.3	WMN_ALD_GO_7	ALD_GO_17	ALD_GO_18	48.3	300	110	0.4	0.1	0	0
WFT147490	0.7	103	138.5	50.5	WMN_ALD_GO_6	ALD_GO_16	ALD_GO_17	62.8	300	110	0.4	0.1	0	0
WFT147464	0	100	138.6	54.9	WMN_ALD_GO_5	ALD_GO_16	WFT18650	65.4	300	110	-0.4	0.1	0	0
WFT147489	0.1	103	138.5	50.5	WMN_ALD_GO_13	ALD_GO_18	WMN_ALD_GO_12	86.3	300	110	0.1	0	0	0
WFT147491	0	103	138.5	50.5	WMN_ALD_GO_9	ALD_GO_18	ALD_GO_19	96.7	300	110	0.3	0.1	0	0
WFT147495	1.2	102.7	138.5	50.9	WMN_ALD_GO_8	ALD_GO_18	WFT63523	97.8	300	110	0	0	0	0
WFT147494	1.2	102.8	138.5	50.7	WMN_ALD_GO_14	WFT63520	ALD_GO_3	93.2	300	110	-0.9	0.1	0	0.1
WFT147468	0.4	101.4	138.6	52.9	WMN_ALD_GO_1	ALD_GO_2	ALD_GO_1	132	300	110	-0.8	0.1	0	0.1
WFT147467	0.4	100.5	138.6	54.1	WMN_ALD_GO_82	WFT20539	WFT15822	141.3	300	110	-0.7	0.1	0	0.1
WFT148559	0	99.8	138.7	55.3	WMN_ALD_GO_10	ALD_GO_19	ALD_GO_27	78.3	300	110	0.3	0.1	0	0
WFT147476	0	102.9	138.5	50.6	WMN_ALD_GO_11	WFT243840	ALD_GO_27	19.5	300	110	-0.3	0.1	0	0
WFT162856	0	102	138.5	52	WMN7099	WFT18645	ALD_GO_31	11.9	300	120	-0.1	0	0	0
WFT147482	0.5	102.6	138.5	51.1	WMN_ALD_GO_54	ALD_GO_34	WFT15726	66.2	300	110	-0.3	0	0	0
WFT147475	0	102.2	138.5	51.6	WMN_ALD_GO_55	ALD_GO_33	ALD_GO_37	67.6	300	110	-0.2	0	0	0
WFT147481	0	102.9	138.5	50.7	WMN_ALD_GO_57	WFT15726	ALD_GO_36	85.6	300	110	0.3	0	0	0
WFT147721	0.5	102.9	138.5	50.7	WMN_ALD_GO_60	ALD_GO_36	ALD_GO_38	84.1	300	110	-0.2	0	0	0
WFT221129	0	109.5	138.6	41.5	WMN_ALD_GO_61	ALD_GO_38	ALD_GO_39	154	300	110	-0.1	0	0	0
WFT221074	0.1	100.1	138.6	54.7	WMN_ALD_GO_59	ALD_GO_35	WFT15670	83.9	300	110	-0.2	0	0	0
WFT190323	0	99.6	138.6	55.4	WMN_ALD_GO_56	ALD_GO_37	ALD_GO_35	82.9	300	110	0.6	0.1	0	0.1
WPV635	0	101.7	138.7	52.6	WMN_ALD_GO_31	WFT15653	ALD_GO_30	101.6	300	110	2.1	0.3	0.1	0.6
WPV2643	0	109.7	138.7	41.2										
WPV2644	0	109.5	138.6	41.5										
WCV83865	0	103	138.5	50.5										
WCV83866	0	103	138.5	50.5										
WCV83867	0.7	102.7	138.5	50.9										
WCV83884	0	99.8	138.7	55.3										
WCV83442	0	102.1	138.5	51.8										
WCV83443	0	102.9	138.5	50.7										
WCV114867	0	102.9	138.6	50.7										
WCV83875	0	100.1	138.6	54.7										
WDV87066	0	99.8	138.7	55.2										
WCV8222	0	101.2	138.5	53.1										
WFT15831	0	100.7	138.5	53.7										
WFT20539	5.7	100.5	138.5	54.1										
WFT15789	0	102.7	138.5	51										
WFT15793	0	102.8	138.5	50.8										
WFT15794	0	102.9	138.5	50.6										
WFT18650	0	102.9	138.5	50.6										
WSV8225	0	102.8	138.5	50.8										
WSV8226	0	102.9	138.5	50.6										
ALD_GO_1	0	99.5	138.5	55.5										
ALD_GO_2	0	103	138.5	50.5										
ALD_GO_3	0	104	138.5	49.1										
ALD_GO_4	0	103	138.5	50.5										
ALD_GO_5	0	105	138.5	47.7										
ALD_GO_6	0	103	138.5	50.5										
ALD_GO_7	0	103.5	138.5	49.8										
ALD_GO_8	36.9	103.5	138.5	49.8										
ALD_GO_9	0	103	138.5	50.5										

ALD_GO_10	0	104.5	138.5	48.4
ALD_GO_11	0	101.5	138.5	52.6
ALD_GO_12	0	103	138.5	50.5
ALD_GO_13	0	105	138.6	47.7
ALD_GO_14	0	103	138.6	50.6
ALD_GO_15	14.5	102	138.5	51.9
ALD_GO_16	0	102.3	138.5	51.6
ALD_GO_17	0	101.5	138.5	52.6
ALD_GO_18	0	102	138.5	51.9
ALD_GO_19	0	101	138.5	53.3
ALD_GO_20	0	102.7	138.5	50.9
ALD_GO_21	15.3	103	138.5	50.5
ALD_GO_22	0	103.5	138.6	49.8
ALD_GO_23	0	101.5	138.6	52.7
ALD_GO_24	0	102.5	138.6	51.3
ALD_GO_25	0	106	138.6	46.3
ALD_GO_26	0	108	138.6	43.5
ALD_GO_27	0	103.5	138.5	49.8
WMN_ALD_GO_12	0	102.7	138.5	50.9
ALD_GO_28	0	102.5	138.5	51.2
ALD_GO_30	0	102.5	138.7	51.4
ALD_GO_31	0	102.9	138.5	50.7
ALD_GO_32	0	104	138.6	49.2
ALD_GO_33	0	102	138.6	52.1
ALD_GO_34	0	101.2	138.6	53.1
ALD_GO_35	14.2	103	138.6	50.6
ALD_GO_36	0	100.5	138.6	54.2
ALD_GO_37	0	101.5	138.6	52.8
ALD_GO_38	0	101	138.6	53.5
ALD_GO_40	0	103.2	138.6	50.3
ALD_GO_41	0	107.5	138.6	44.3
ALD_GO_42	0	106.5	138.6	45.7
ALD_GO_43	0	106	138.6	46.4
ALD_GO_44	0	106.5	138.7	45.7
ALD_GO_50	37.5	103	138.6	50.6
ALD_GO_51	0	108.4	138.7	43
ALD_GO_53	0	107	165.1	82.6
ALD_GO_54	0	107.5	165.1	81.9
ALD_GO_55	0	108.5	165.1	80.5
ALD_GO_57	6.1	108.5	165.1	80.5
ALD_GO_58	0	108.5	165.1	80.5
ALD_GO_63	0	113.7	165.1	73.1
WFT89273	0.1	99.9	138.6	55.1
WCV8224	0	101.1	138.5	53.2
WFT18656	0.5	101.6	138.5	52.5
				41.20
				52.04
				82.60

ID	Total Demand (L/s)	Hydrant Available Flow (L/s)	Critical Node ID for Design Run	Critical Node Pressure at Available Flow (psi)	Critical Node Pressure at Fire Demand (psi)	Critical Pressure for Design Run (psi)	Hydrant Design Flow (L/s)	Hydrant Pressure at Design Flow (psi)
ALD_GO_15	294.5	434.2	ALD_GO_15	28.4	37.7	28.4	434.2	28.5
ALD_GO_21	295.3	419.8	ALD_GO_21	28.4	38.6	28.4	419.8	32.7
ALD_GO_35	294.2	471.7	ALD_GO_35	28.4	38.2	28.4	471.7	28.4
ALD_GO_50	317.5	416.7	ALD_GO_50	28.4	35.3	28.4	416.7	28.4
ALD_GO_57	286.1	169.5	ALD_GO_57	28.4	-65.8	28.4	169.5	28.4
WFT15691	284.5	431.3	WFT15691	28.4	41.4	28.4	436.2	28.4
WFT20539	285.7	345	WFT20539	28.4	34.3	28.4	345	28.4
WFT63520	294.5	408.9	WFT63520	28.4	38.2	28.4	408.9	32.7

APPLEBY		
MTSA ZONES		
ZONE 1		
	Number of People	ADD (L/s)
Population (Residential)	4848	11.78
Employment	905	1.94
Total	5753	13.72
ZONE 2		
Population (Residential)	1837	4.46
Employment	336	0.72
Total	2173	5.18
ZONE 3		
Population (Residential)	559	1.36
Employment	133	0.28
Total	692	1.64
ZONE 4		
Population (Residential)	812	1.97
Employment	44	0.09
Total	856	2.07
ZONE 5		
Population (Residential)	3884	9.44
Employment	544	1.16
Total	4428	10.61
ZONE 6		
Population (Residential)	1902	4.62
Employment	452	0.97
Total	2354	5.59
ZONE 7		
Population (Residential)	761	1.85
Employment	181	0.39
Total	942	2.24
	17198	**41.0**

Total Residential Population	**14603**
Total Employment	**2595**
Total intensification	**17198**

Flow Calculation

Res Flow= 210 L/cap/day
ICI Flow= 185 L/employee/day

ZONE 1	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop	
	MANHOLE: SMH19212	1.00	11.78	4848.00	1.94	905.00	4861.72

ZONE 2	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop	
	MANHOLE: SMH13368	0.14	0.63	257.53	0.10	47.10	1842.18
	MANHOLE: SMH14204	0.86	3.84	1579.47	0.62	288.90	

ZONE 3	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop	
	MANHOLE: SMH13346	1.00	1.36	4848.00	0.28	133.00	4849.64

ZONE 4	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop	
	MANHOLE: SMH19202	0.50	0.99	406.00	0.05	22.00	814.07
	MANHOLE: SMH19198	0.5	0.99	406.00	0.05	22.00	

	Avg Flow (L/s	Pop	Avg Flow (L/s	Pop
MANHOLE: SMH19202	1.98	813.08	0.17	79.02
MANHOLE: SMH19198	1.84	755.12	0.15	70.90

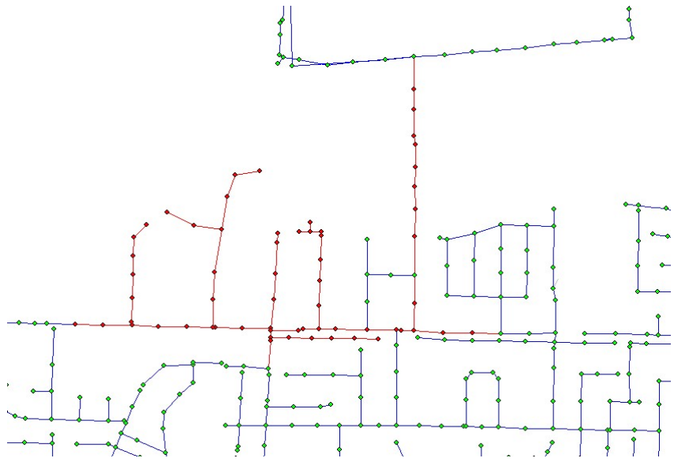
ZONE 5	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop	
	MANHOLE: SMH13269	0.20	1.85	760.30	0.23	106.49	3894.61
	MANHOLE: PMH_ALGO5	0.33	3.13	1285.83	0.39	180.10	
	MANHOLE: SMH19202	0.10	0.99	407.08	0.12	57.02	
	MANHOLE: SMH13236	0.28	2.63	1081.66	0.32	151.50	
	MANHOLE: SMH19198	0.09	0.85	349.12	0.10	48.90	

ZONE 6	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop	
	MANHOLE: PMH_ALGO1	0.69	3.17	1305.64	0.66	310.28	1907.59
	MANHOLE: PMH_ALGO6	0.31	1.45	596.36	0.30	141.72	

ZONE 7	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop	
	MANHOLE: SMH19208	1.00	1.85	761.00	0.39	181.00	763.24

ID (Char)	DIAMETER (Num)	IM_ELEV (Num	HEADLOSS (Num)	LOAD1 (Num)	TYPE1 (Num)	ATTERN1 (Char	COVERAGE1 (Num)	LOAD2 (Num)	TYPE2 (Num)	ATTERN2 (Char	OVERAGE2 (Num	LOAD3 (Num)	TYPE3 (Num)	ATTERN3 (Char	OVERAGE3 (Num	LOAD4 (Num)	TYPE4 (Num)	ATTERN4 (Char	COVERAGE4 (Num)	LOAD5 (Num)	TYPE5 (Num)	ATTERN5 (Char	COVERAGE5 (Num)	LOAD6 (Num)	TYPE6 (Num)
SMH14201	1.2	104.007	0		2: Peakable Coverage			0.026059	2: Peakable Coverage		19	0.111	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
PMH_ALGO2	1.2	101.8	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable
PMH_ALGO3	1.2	103.2	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable
PMH_ALGO4	1.2	105.6	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable
SMH22948	1.2	101.056			2: Peakable Coverage			0.010513	2: Peakable Coverage		6	0.113	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH19737	1.2	99.476		0.03107	2: Peakable Coverage		13		2: Peakable Coverage			0.111	0: Unpeakable		0				0	0.002	2: Peakable Coverage		1	0	2: Peakable Coverage
PMH_ALGO7	1.2	103.06	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable
SFT141818	1.2	104.05775	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable
SFT406	1.2	102.979			2: Peakable Coverage			0.13738	2: Peakable Coverage		317	0.111	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage
SMH19736	1.2	99.612			2: Peakable Coverage				2: Peakable Coverage			0.111	0: Unpeakable		0				0	0.002	2: Peakable Coverage		1	0	2: Peakable Coverage
SMH13242	1.2	102.71			2: Peakable Coverage			0.020004	2: Peakable Coverage		208	0.111	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage
SMH13247	1.2	102.958			2: Peakable Coverage				2: Peakable Coverage			0.111	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage
SMH13251	1.2	103.125			2: Peakable Coverage				2: Peakable Coverage			0.111	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage
SMH19218	1.2	100.964		0.020343	2: Peakable Coverage		6	0.079582	2: Peakable Coverage		32	0.113	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH13272	1.2	109.033		0.018593	2: Peakable Coverage		13	0.02753	2: Peakable Coverage		21	0.111	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH13285	1.2	104.764		0.033429	2: Peakable Coverage		16	0.019271	2: Peakable Coverage		10	0.111	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH13294	1.2	103.221		0.022137	2: Peakable Coverage		10	0.017048	2: Peakable Coverage		20	0.111	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH13295	1.2	101.314	0		2: Peakable Coverage			0.14536	2: Peakable Coverage		105	0.111	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH13301	1.2	100.692	0		2: Peakable Coverage			0.019554	2: Peakable Coverage		30	0.111	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH13310	1.2	100.203	0		2: Peakable Coverage				2: Peakable Coverage			0.111	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH13313	1.2	99.539			2: Peakable Coverage			0.073842	2: Peakable Coverage		24	0.111	0: Unpeakable		0				0	0.003	2: Peakable Coverage		1.42	0	2: Peakable Coverage
SMH13314	1.2	99.73	0		2: Peakable Coverage			0.006608	2: Peakable Coverage		9	0.111	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH13317	1.2	99.633			2: Peakable Coverage			0.026341	2: Peakable Coverage		26	0.111	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH13319	1.2	99.774	0		2: Peakable Coverage				2: Peakable Coverage			0.111	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH13320	1.2	99.8		0.015804	2: Peakable Coverage		30	0.117599	2: Peakable Coverage		11	0.111	0: Unpeakable		0				0	0.003	2: Peakable Coverage		1.42	0	2: Peakable Coverage
SMH13327	1.2	99.976	0		2: Peakable Coverage			0.110106	2: Peakable Coverage		27	0.111	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH13331	1.2	100.012		0.014658	2: Peakable Coverage		10		2: Peakable Coverage			0.111	0: Unpeakable		0				0	0.003	2: Peakable Coverage		1.42	0	2: Peakable Coverage
SMH13337	1.2	100.337		0.016745	2: Peakable Coverage		13		2: Peakable Coverage			0.111	0: Unpeakable		0				0	0.003	2: Peakable Coverage		1.42	0	2: Peakable Coverage
SMH13339	1.2	100.303	0		2: Peakable Coverage				2: Peakable Coverage			0.111	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH19217	1.2	101.414			2: Peakable Coverage			0.091817	2: Peakable Coverage		40	0.113	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH19216	1.2	100.315		0.024307	2: Peakable Coverage		10	0.055896	2: Peakable Coverage		20	0.113	0: Unpeakable		0				0	-0.004	2: Peakable Coverage		0.01	0	2: Peakable Coverage
SMH23880	1.2	102.796			2: Peakable Coverage				2: Peakable Coverage			0.111	0: Unpeakable		0				0	0.003	2: Peakable Coverage		1.17	0	2: Peakable Coverage
SMH14202	1.2	104.536			2: Peakable Coverage				2: Peakable Coverage			0.111	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage
SMH14203	1.2	106.141			2: Peakable Coverage				2: Peakable Coverage			0.111	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage
SMH19214	1.2	105.012	0	0.098483	2: Peakable Coverage		45	0	2: Peakable Coverage		0	0.113	0: Unpeakable		0	0	0: Unpeakable		0	-0.004	2: Peakable Coverage		0.01	0	2: Peakable Coverage
SMH14287	1.2	103.286			2: Peakable Coverage			0.089577	2: Peakable Coverage		62	0.111	0: Unpeakable		0				0	0.003	2: Peakable Coverage		1.17	0	2: Peakable Coverage
SMH16996	1.2	101.172			2: Peakable Coverage			0.139212	2: Peakable Coverage		65	0	0: Unpeakable		0				0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH17967	1.2	101.633			2: Peakable Coverage			0.047121	2: Peakable Coverage		4	0.111	0: Unpeakable		0				0	0.003	2: Peakable Coverage		1.17	0	2: Peakable Coverage
SMH19197	1.2	101.677			2: Peakable Coverage				2: Peakable Coverage			0.111	0: Unpeakable		0				0	0.003	2: Peakable Coverage		1.17	0	2: Peakable Coverage
SMH19213	1.2	107.06		0.007544	2: Peakable Coverage		3		2: Peakable Coverage			0.113	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage
SMH19199	1.2	102.637			2: Peakable Coverage			0.050998	2: Peakable Coverage		19	0.111	0: Unpeakable		0				0	0.003	2: Peakable Coverage		1.17	0	2: Peakable Coverage
SMH19200	1.2	102.772			2: Peakable Coverage			0.039885	2: Peakable Coverage		49	0.111	0: Unpeakable		0				0	0.003	2: Peakable Coverage		1.17	0	2: Peakable Coverage
SMH19201	1.2	103.219			2: Peakable Coverage			0.026199	2: Peakable Coverage		10	0.111	0: Unpeakable		0				0	0.003	2: Peakable Coverage		1.17	0	2: Peakable Coverage
SMH19211	1.2	106.252			2: Peakable Coverage				2: Peakable Coverage			0.113	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage
SMH19203	1.2	100.877			2: Peakable Coverage			0.221817	2: Peakable Coverage		49	0.111	0: Unpeakable		0				0	0.003	2: Peakable Coverage		1.17	0	2: Peakable Coverage
SMH19204	1.2	100.034			2: Peakable Coverage				2: Peakable Coverage			0.111	0: Unpeakable		0				0	0.003	2: Peakable Coverage		1.17	0	2: Peakable Coverage
SMH19205	1.2	99.877			2: Peakable Coverage				2: Peakable Coverage			0.111	0: Unpeakable		0				0	0.003	2: Peakable Coverage		1.17	0	2: Peakable Coverage
SMH19207	1.2	108.553			2: Peakable Coverage				2: Peakable Coverage			0.113	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.02	2: Peakable Coverage
SMH19210	1.2	103.84			2: Peakable Coverage				2: Peakable Coverage			0.113	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.02	2: Peakable Coverage
SMH19209	1.2	106.595			2: Peakable Coverage				2: Peakable Coverage			0.113	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.02	2: Peakable Coverage
SMH13368	1.2	101.57	0	0	2: Peakable Coverage		0	0.000875	2: Peakable Coverage		26	0	0: Unpeakable		0	0	0: Unpeakable		0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH13346	1.2	100.793	0	0.000718	2: Peakable Coverage		3	0	2: Peakable Coverage		0	0.111	0: Unpeakable		0	0	0: Unpeakable		0	0.003	2: Peakable Coverage		1.42	0	2: Peakable Coverage
PMH_ALGO6	1.2	103	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable
SMH19198	1.2	103.117	0	0.00569	2: Peakable Coverage		6	1.882555	2: Peakable Coverage		129	0.111	0: Unpeakable		0	0	0: Unpeakable		0	0.003	2: Peakable Coverage		1.17	0	2: Peakable Coverage
SMH19208	1.2	108.763	0	0	2: Peakable Coverage		0	0.000184	2: Peakable Coverage		115	0.113	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0.02	2: Peakable Coverage
SMH13269	1.2	109.644	0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0.111	0: Unpeakable		0	0	0: Unpeakable		0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH19202	1.2	102.862	0	0	2: Peakable Coverage		0	0.501723	2: Peakable Coverage		81	0.111	0: Unpeakable		0	0	0: Unpeakable		0	0.003	2: Peakable Coverage		1.17	0	2: Peakable Coverage
SMH13236	1.2	102.4	0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0.111	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage
PMH_ALGO5	1.2	102.7	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable
PMH_ALGO1	1.2	102.1	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable
SMH14204	1.2	107.45	0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0.111	0: Unpeakable		0	0	0: Unpeakable		0	0.004	2: Peakable Coverage		1.81	0	2: Peakable Coverage
SMH19212	1.2	106.515	0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0.113	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage

Notes
Table is for the current domain that includes all nodes and pipes within the service area



ATTERN6 (Char	COVERAGE6 (Num)	LOAD7 (Num)	TYPE7 (Num)	ATTERN7 (Char	OVERAGE7 (Num	LOAD8 (Num)	TYPE8 (Num)	ATTERN8 (Char	COVERAGE8 (Num)	LOAD9 (Num)	TYPE9 (Num)	PATTERN9 (Char)	COVERAGE9 (Num)	LOAD10 (Num)	TYPE10 (Num)	PATTERN10 (Char)	COVERAGE10 (Num)	SWS_AREA (Num)	WS_RUNOFF (Nur	SWS_SLOPE (Num)	SWS_LEN (Num)	HYETOGRAPH (Char)	HYDROGRAPH (Char
	0.11	0	0: Unpeakable		0	0			0	0			0	0			0						
	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0	0	0		
	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0	0	0		
	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0	0	0		
	0.11	0	0: Unpeakable		0	0			0	0			0	0			0						
	0	0	0: Unpeakable		0	0			0	0			0	0			0						
	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0	0	0		
	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0	0	0		
	0.27	0	0: Unpeakable		0	0			0	0			0	0			0						
	0	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.27	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.27	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.27	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.11	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.11	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.11	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.11	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.11	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.11	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.11	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.19	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.11	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.11	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.11	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.19	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.11	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.19	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.19	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.11	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.11	0	0: Unpeakable		0	0			0	0			0	0			0						
	0	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.13	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.26	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.26	0	0: Unpeakable		0	0			0	0			0	0			0						
	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		1,372.00	0	0	0	0		
	0.13	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.11	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.13	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.13	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.57	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.13	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.13	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.13	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.57	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.13	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.13	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.13	0	0: Unpeakable		0	0			0	0			0	0			0						
	8.23	0	0: Unpeakable		0	0			0	0			0	0			0						
	8.23	0	0: Unpeakable		0	0			0	0			0	0			0						
	0.11	0.63	2: Peakable Coverage		257.53	0	0: Unpeakable		0	0.1	2: Peakable Coverage		47.1	0	2: Peakable Coverage		926	0	0	0	0		
	0.19	1.36	2: Peakable Coverage		4,848.00	0	0: Unpeakable		0	0.28	2: Peakable Coverage		133	0	2: Peakable Coverage		899	0	0	0	0		
	0	1.45	2: Peakable Coverage		596.36	0	0: Unpeakable		0	0.3	2: Peakable Coverage		141.72	0	2: Peakable Coverage		1,822.00	0	0	0	0		
	0.13	1.84	2: Peakable Coverage		755.12	0	0: Unpeakable		0	0.15	2: Peakable Coverage		70.9	0	2: Peakable Coverage		1,792.00	0	0	0	0		
	8.23	1.85	2: Peakable Coverage		761	0	0: Unpeakable		0	0.39	2: Peakable Coverage		181	0	2: Peakable Coverage		1,611.00	0	0	0	0		
	0.11	1.85	2: Peakable Coverage		760.3	0	0: Unpeakable		0	0.23	2: Peakable Coverage		106.49	0	2: Peakable Coverage		3,903.00	0	0	0	0		
	0.13	1.98	2: Peakable Coverage		813.08	0	0: Unpeakable		0	0.17	2: Peakable Coverage		79.02	0	2: Peakable Coverage		2,090.00	0	0	0	0		
	0.27	2.63	2: Peakable Coverage		1,081.66	0	0: Unpeakable		0	0.32	2: Peakable Coverage		151.5	0	2: Peakable Coverage		2,776.00	0	0	0	0		
	0	3.13	2: Peakable Coverage		1,285.83	0	0: Unpeakable		0	0.39	2: Peakable Coverage		180.1	0	2: Peakable Coverage		3,300.00	0	0	0	0		
	0	3.17	2: Peakable Coverage		1,305.64	0	0: Unpeakable		0	0.66	2: Peakable Coverage		310.28	0	2: Peakable Coverage		3,989.00	0	0	0	0		
	0.11	3.84	2: Peakable Coverage		1,579.47	0	0: Unpeakable		0	0.62	2: Peakable Coverage		288.9	0	2: Peakable Coverage		3,728.00	0	0	0	0		
	0.57	11.78	2: Peakable Coverage		4,848.00	0	0: Unpeakable		0	1.94	2: Peakable Coverage		905	0	2: Peakable Coverage		5,025.00	0	0	0	0		
		35.51								5.55													
		41.06																					

SWS_PERIMP (Num)	SWS_PERV (Num)	SWS_IMPERV (Num)	SWS_INFIL1 (Num)	SWS_INFIL2 (Num)	SWS_DECAY (Num)	i_REGEN (N	S_TOC (Num)
0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0	0	0	0	0	0	0

Below is table for all manholes in the domain (aka service area)

ID	Rim Elevation (m)	Base Flow (L/s)	Total Flow (L/s)	Storm Flow (L/s)	Grade (m)	Status	Hydraulic Jump	Surcharge Depth (m)	Unfilled Depth (m)
SMH19207	108.553	0.133	0.201447	0	105.486164	Not Full	No	-0.334836	3.066836
SMH19208	108.763	2.37318	8.661315	0	104.910964	Not Full	No	-0.338036	3.852036
SMH19209	106.595	0.133	0.201447	0	102.861658	Not Full	No	-0.359342	3.733342
SMH19210	103.84	0.133	0.201447	0	101.721682	Not Full	No	-0.319318	2.118318
SMH19211	106.252	0.114	0.117479	0	101.170515	Not Full	Yes	-0.287485	5.081485
SMH19212	106.515	13.833977	43.8549	0	100.980625	Not Full	No	-0.265375	5.534375
SMH19213	107.06	0.121544	0.151008	0	100.433831	Not Full	No	-0.254169	6.626169
SMH19214	105.012	0.207483	0.521517	0	99.772693	Not Full	No	-0.293307	5.239307
SMH16996	101.172	0.143212	0.614029	0	97.748465	Not Full	No	-0.199535	3.423535
SMH13368	101.57	0.734874	2.982893	0	98.089294	Not Full	No	-0.200706	3.480706
SMH19216	100.315	0.189203	0.444841	0	98.170075	Not Full	Yes	0.530075	2.144925
SMH19217	101.414	0.208817	0.527866	0	98.089294	Not Full	No	-0.790706	3.324706
SMH19218	100.964	0.216925	0.56338	0	96.545584	Not Full	No	-0.254416	4.418416
SMH22948	101.056	0.127513	0.17721	0	96.763362	Not Full	No	-0.266638	4.292638
SMH13269	109.644	2.194996	8.110655	0	103.410719	Not Full	No	-0.113281	6.233281
SMH13272	109.033	0.161123	0.328628	0	103.242074	Not Full	No	-0.148926	5.790926
SMH13285	104.764	0.1677	0.358207	0	99.908898	Not Full	No	-0.129102	4.855102
SMH13294	103.221	0.154185	0.29888	0	98.899968	Not Full	No	-0.145032	4.321032
SMH13295	101.314	0.26036	0.743633	0	97.779818	Not Full	Yes	-0.190182	3.534182
SMH13301	100.692	0.134554	0.213474	0	97.480284	Not Full	No	-0.189716	3.211716
SMH13310	100.203	0.115	0.128852	0	97.111584	Not Full	No	-0.188416	3.091416
SMH13313	99.539	0.187842	0.446479	0	96.508284	Not Full	No	-0.058716	3.030716
SMH13314	99.73	0.121608	0.157795	0	96.2199	Not Full	Yes	-0.1091	3.5101
SMH13317	99.633	0.141341	0.243284	0	96.463182	Not Full	No	-0.164818	3.169818
SMH13319	99.774	0.115	0.128852	0	96.745509	Not Full	No	-0.134491	3.028491
SMH13320	99.8	0.247403	0.701434	0	96.659548	Not Full	No	-0.178452	3.140452
SMH14201	104.007	0.141059	0.242603	0	101.349015	Not Full	No	-0.240985	2.657985
SMH14202	104.536	0.112	0.115486	0	101.906615	Not Full	No	-0.238385	2.629385
SMH14203	106.141	0.112	0.115486	0	103.410225	Not Full	No	-0.240775	2.730775
SMH14204	107.45	4.574992	16.218284	0	104.916409	Not Full	No	-0.240591	2.533591
SMH19204	100.034	0.114	0.124411	0	96.036401	Not Full	No	-0.529599	3.997599
SMH19205	99.877	0.114	0.124411	0	95.517789	Not Full	No	-0.504211	4.359211
SFT141818	104.05775	0	0	0	103.66	Not Full	No	-0.3	0.39775
PMH_ALGO5	102.7	3.519994	12.977339	0	98.194872	Not Full	No	-0.137128	4.505128
SMH13346	100.793	1.754715	5.446795	0	97.689716	Not Full	No	-0.163284	3.103284
SMH13339	100.303	0.115	0.128852	0	96.961081	Not Full	No	-0.272919	3.341919
SMH13327	99.976	0.225106	0.608219	0	96.961081	Not Full	No	-0.614919	3.014919
SMH13331	100.012	0.128658	0.188853	0	97.182848	Not Full	No	-0.182152	2.829152
SMH13337	100.337	0.130745	0.197838	0	97.567432	Not Full	No	-0.188568	2.769568
SMH19736	99.612	0.113	0.119945	0	95.276246	Not Full	No	-0.572754	4.335754
SMH19737	99.476	0.14407	0.256489	0	95.185619	Not Full	Yes	-0.529381	4.290381
SMH14287	103.286	0.203577	0.50844	0	97.713715	Not Full	No	-0.136285	5.572285
SMH17967	101.633	0.161121	0.333446	0	97.229555	Not Full	No	-0.485445	4.403445
SMH19197	101.677	0.114	0.124411	0	97.2607	Not Full	No	-0.4863	4.4163
SMH19203	100.877	0.335816	1.08095	0	96.875524	Not Full	No	-0.484476	4.001476
SFT406	102.979	0.24938	0.673926	0	99.736863	Not Full	No	-0.091137	3.242137
SMH13236	102.4	3.061995	11.145965	0	99.672401	Not Full	No	-0.160599	2.727599
PMH_ALGO4	105.6	0	0	0	98.625453	Not Full	No	-0.173547	6.974547
PMH_ALGO7	103.06	0	0	0	99.744437	Not Full	No	-0.227563	3.315563
SMH13242	102.71	0.132004	0.197989	0	99.352706	Not Full	No	-0.160294	3.357294
SMH13247	102.958	0.112	0.115485	0	99.039885	Not Full	No	-0.152115	3.918115
SMH13251	103.125	0.112	0.115485	0	98.746971	Not Full	No	-0.155029	4.378029
SMH19200	102.772	0.153885	0.296023	0	98.406639	Not Full	No	-0.520361	4.365361
SMH23880	102.796	0.114	0.124411	0	98.411279	Not Full	No	-0.138721	4.384721
SMH19201	103.219	0.140199	0.239764	0	98.079227	Not Full	No	-0.520773	5.139773
SMH19202	102.862	2.765718	10.218231	0	97.704332	Not Full	No	-0.511668	5.157668
PMH_ALGO3	103.2	0	0	0	98.966139	Not Full	No	-0.194861	4.233861
PMH_ALGO1	102.1	3.829994	14.002256	0	99.505194	Not Full	No	-0.194806	2.594806
PMH_ALGO2	101.8	0	0	0	99.233139	Not Full	No	-0.194861	2.566861
SMH19199	102.637	0.164998	0.34751	0	99.264549	Not Full	No	-0.212451	3.372451
SMH19198	103.117	3.992238	14.901351	0	99.648007	Not Full	Yes	-0.209993	3.468993
PMH_ALGO6	103	1.749997	6.792058	0	100.072437	Not Full	No	-0.227563	2.927563

For proposed manholes

ID	Rim Elevation (m)	Base Flow (L/s)	Total Flow (L/s)	Storm Flow (L/s)	Grade (m)	Status	Hydraulic Jump	Surcharge Depth (m)	Unfilled Depth (m)
SMH19208	108.763	2.37318	8.661315	0	104.910964	Not Full	No	-0.338036	3.852036
PMH_ALGO1	102.1	3.829994	14.002256	0	99.505194	Not Full	No	-0.194806	2.594806
SMH19212	106.515	13.833977	43.8549	0	100.980625	Not Full	No	-0.265375	5.534375
SMH14204	107.45	4.574992	16.218284	0	104.916409	Not Full	No	-0.240591	2.533591
SMH13269	109.644	2.194996	8.110655	0	103.410719	Not Full	No	-0.113281	6.233281
PMH_ALGO5	102.7	3.519994	12.977339	0	98.194872	Not Full	No	-0.137128	4.505128
SMH19202	102.862	2.765718	10.218231	0	97.704332	Not Full	No	-0.511668	5.157668
PMH_ALGO6	103	1.749997	6.792058	0	100.072437	Not Full	No	-0.227563	2.927563
SMH13236	102.4	3.061995	11.145965	0	99.672401	Not Full	No	-0.160599	2.727599
SMH19198	103.117	3.992238	14.901351	0	99.648007	Not Full	Yes	-0.209993	3.468993
SMH13346	100.793	1.754715	5.446795	0	97.689716	Not Full	No	-0.163284	3.103284
SMH13368	101.57	0.734874	2.982893	0	98.089294	Not Full	No	-0.200706	3.480706

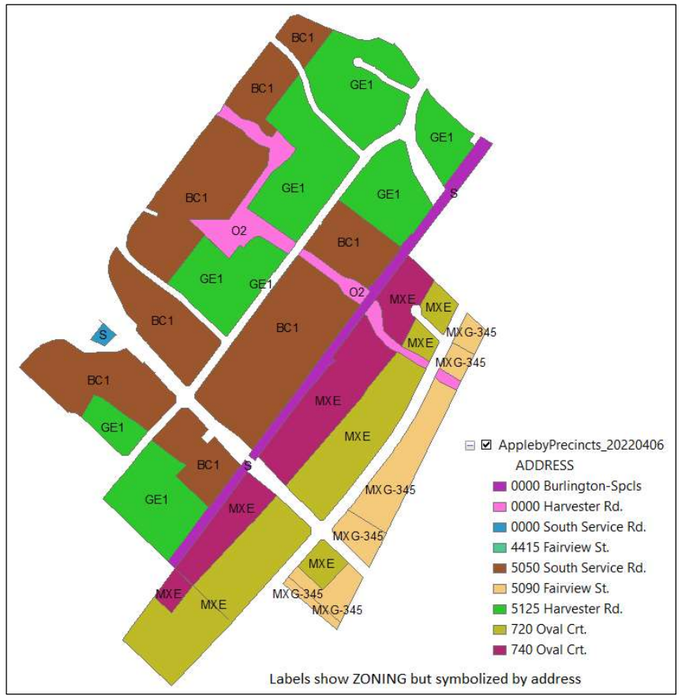
Results for all pipes in domain

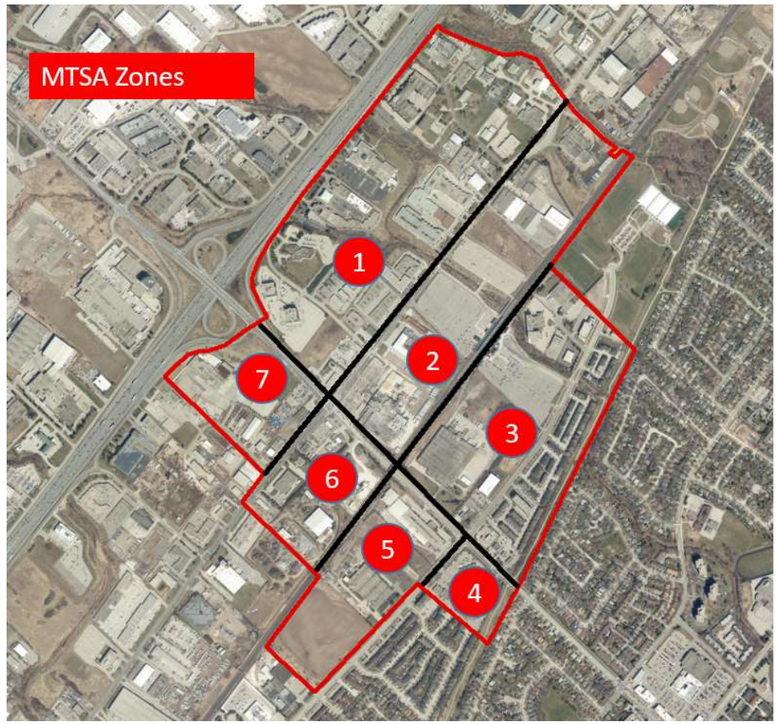
ID	From ID	To ID	Diameter (mm)	Length (m)	Slope	Total Flow (L/s)	Unpeakable Flow (L/s)	Peakable Flow (L/s)	Coverage Flow (L/s)	Infiltration Flow (L/s)	Storm Flow (L/s)	Flow Type	Velocity (m/s)	d/D	q/Q	Water Depth (m)	Critical Depth (m)	Froude Number	Full Flow (L/s)	Coverage Count	Backwater Adjustment	Adjusted Depth (m)	Adjusted Velocity (m/s)
SMN14735	SMH19213	SMH19214	450	91.831926	0.005467	82.96162	21.136901	0	20.821477	0	0	Free Surface	1.248799	0.435181	0.3925	0.195831	0.199211	1.033072	211.36692	9,667.19	No	0.195831	1.248799
SMN14736	SMH19212	SMH19213	450	78.370297	0.006737	82.826561	21.023901	0	20.812933	0	0	Free Surface	1.347836	0.410278	0.352977	0.184625	0.199041	1.154749	234.651439	9,663.62	No	0.184625	1.347836
SMN14737	SMH19210	SMH19211	450	77.16174	0.007167	44.497421	20.797902	0	7.090956	0	0	Free Surface	1.16008	0.290405	0.183862	0.130682	0.14412	1.208519	242.015715	3,909.48	Yes	0.131599	1.148854
SMN14738	SMH19211	SMH19212	450	64.524272	0.003131	44.613363	20.910901	0	7.091956	0	0	Free Surface	0.861765	0.361145	0.278913	0.162515	0.144314	0.79489	159.954379	3,910.05	Yes	0.16857	0.820135
SMN14739	SMH19209	SMH19210	450	29.245937	0.030432	44.323349	20.684902	0	7.070956	0	0	Free Surface	1.937049	0.201462	0.088877	0.090658	0.143829	2.455852	498.705595	3,901.25	No	0.090658	1.937049
SMN14740	SMH19208	SMH19209	450	90.542152	0.012955	44.149254	20.571902	0	7.050956	0	0	Free Surface	1.42947	0.24881	0.135681	0.111964	0.143536	1.619536	325.391053	3,893.02	No	0.111964	1.42947
SMN14741	SMH19207	SMH19208	450	69.487803	0.00816	37.054595	20.458902	0	4.790775	0	0	Free Surface	1.153058	0.25592	0.14349	0.115164	0.131127	1.286685	258.237463	2,827.79	No	0.115164	1.153058
SMN14742	SMH19206	SMH19207	450	110.89685	0.02267	36.877382	20.345902	0	4.770775	0	0	Free Surface	1.653959	0.197845	0.085675	0.08903	0.130803	2.117087	430.432483	2,819.56	No	0.08903	1.653959
SMN16918	SMH19214	SMH19215	450	131.208505	0.012522	83.31332	21.249901	0	20.91596	0	0	Free Surface	1.691205	0.348206	0.260432	0.156693	0.199652	1.592609	319.904092	9,712.20	Yes	0.218169	1.089792
SMN11476	SMH16996	SMH13381	250	95.524866	0.004407	3.532136	0	0	0.878086	0	0	Free Surface	0.498734	0.201859	0.089229	0.050465	0.046383	0.847452	39.584909	399.25	No	0.050465	0.498734
SMN14664	SMH13368	SMH16996	250	98.351411	0.003457	2.982893	0	0	0.734874	0	0	Free Surface	0.435573	0.197174	0.085083	0.049294	0.042558	0.749359	35.058714	332.44	No	0.049294	0.435573
SMN16920	SMH19217	SMH13368	250	96.633132	0.004967	0	0	0	0	0	0	Free Surface	0	0	0	0	0	0	42.024679	0	No	0	0
SMN14730	SMH19216	SMH19217	450	92.577194	0.004029	84.182759	21.5889	0	21.124278	0	0	Pressurized	1.119579	0.478607	0.463915	0.215373	0.200737	0.87386	181.461467	9,806.23	Yes	0.45	0.529309
SMN16916	SMH19215	SMH19216	450	95.331021	0.00622	83.871763	21.4759	0	21.048075	0	0	Free Surface	1.313284	0.422363	0.371983	0.190063	0.200349	1.105989	225.4718	9,776.22	Yes	0.45	0.527353
SMN24150	SMH19217	SMH22948	450	41.522948	0.007032	84.54075	21.701898	0	21.220093	0	0	Pressurized	1.376548	0.410095	0.352644	0.184543	0.201183	1.179658	239.733841	9,848.04	No	0.184543	1.376548
SMN14727	SMH13339	SMH19218	300	99.395333	0.002998	0.893566	0.443999	0	0.105207	0	0	Free Surface	0.282315	0.090271	0.016831	0.027081	0.022035	0.664191	53.091449	76.84	No	0.027081	0.282315
SMN24151	SMH22948	SMH19218	450	16.199193	0.007223	84.68947	21.814898	0	21.234606	0	0	Free Surface	1.390803	0.407471	0.348579	0.183362	0.201367	1.196384	242.956346	9,855.85	No	0.183362	1.390803
SMN11437	SMH13310	SMH13319	300	79.889811	0.003755	17.508204	0.776999	0	4.672965	0	0	Free Surface	0.73116	0.371948	0.294664	0.111584	0.100187	0.81219	59.4175	2,031.94	No	0.111584	0.73116
SMN12124	SMH13272	SMH13285	200	104.651804	0.031887	8.390788	0.222	0	2.134119	0	0	Free Surface	1.325837	0.255371	0.142883	0.051074	0.07716	2.221806	58.724811	904.41	Yes	0.052986	1.259081
SMN12125	SMH13285	SMH13294	200	88.391176	0.00965	8.700715	0.332999	0	2.190819	0	0	Free Surface	0.872602	0.354492	0.26932	0.070898	0.078629	1.220164	32.306279	932.22	No	0.070898	0.872602
SMN12126	SMH13295	SMH13301	300	70.094324	0.003852	17.21377	0.554999	0	4.645411	0	0	Free Surface	0.734557	0.366058	0.286046	0.109818	0.099311	0.823456	60.178298	1,998.32	No	0.109818	0.734557
SMN12127	SMH13301	SMH13310	300	85.343204	0.003867	17.384293	0.665999	0	4.668965	0	0	Free Surface	0.737584	0.367615	0.288327	0.110284	0.099819	0.824845	60.293701	2,030.13	No	0.110284	0.737584
SMN12331	SMH14201	SMH13295	300	81.723788	0.041114	16.649996	0.443999	0	4.496052	0	0	Free Surface	1.694028	0.196716	0.084687	0.059015	0.097615	2.663735	196.605128	1,891.51	No	0.059015	1.694028
SMN12370	SMH14202	SMH14201	300	13.802339	0.03369	16.447088	0.332999	0	4.465993	0	0	Free Surface	1.5733	0.205383	0.092414	0.061615	0.096998	2.418207	177.971138	1,870.70	No	0.061615	1.5733
SMN12371	SMH14203	SMH14202	300	36.058762	0.038992	16.332686	0.222	0	4.464993	0	0	Free Surface	1.65329	0.197418	0.085304	0.059225	0.096648	2.594799	191.463812	1,870.44	No	0.059225	1.65329
SMN14657	SMH13317	SMH13314	250	17.326509	0.015121	18.326215	1.109998	0	4.821412	0	0	Free Surface	1.241578	0.340729	0.249937	0.085182	0.108353	1.587968	73.323288	2,090.37	Yes	0.094541	1.077686
SMN14658	SMH13320	SMH13313	250	76.708824	0.003533	6.334045	0.443999	0	1.817521	0	0	Free Surface	0.54603	0.286194	0.17872	0.071548	0.062529	0.769295	35.441231	5,053.68	Yes	0.131416	0.242245
SMN14659	SMH13319	SMH13317	250	51.909454	0.004855	18.128738	0.998998	0	4.791071	0	0	Free Surface	0.817589	0.462036	0.436359	0.115509	0.107742	0.875034	41.545487	2,062.56	No	0.115509	0.817589
SMN14660	SMH13327	SMH13319	300	56.372275	0.00463	0.608219	0.111	0	0.114106	0	0	Free Surface	0.29238	0.067917	0.009219	0.020375	0.018156	0.795042	65.976142	28.809999	Yes	0.092795	0.032687
SMN14661	SMH13331	SMH13320	250	66.103581	0.003631	5.786713	0.332999	0	1.681118	0	0	Free Surface	0.537268	0.271393	0.161062	0.067848	0.059696	0.779189	35.928571	5,011.26	No	0.067848	0.537268
SMN14700	SMH19203	SMH19204	675	96.951848	0.003961	92.268855	18.09297	0	26.539107	0	0	Free Surface	1.112379	0.282257	0.173941	0.190524	0.186686	0.961029	530.459381	14,436.91	No	0.190524	1.112379
SMN14701	SMH19204	SMH19205	675	6.015046	0.013134	98.261723	18.647969	0	28.776111	0	0	Free Surface	1.73466	0.215408	0.101725	0.145401	0.192835	1.733154	965.958875	15,402.11	No	0.145401	1.73466
SMN14702	SMH13294	SMH19204	200	99.276099	0.027207	8.956004	0.443999	0	2.234004	0	0	Free Surface	1.27649	0.274841	0.165104	0.054968	0.079822	2.055615	54.244639	964.03	No	0.054968	1.27649
SMN14703	SMH13313	SMH19736	250	62.199611	0.000145	6.690234	0.554999	0	1.894363	0	0	Free Surface	0.166004	0.765137	0.932754	0.191284	0.06431	0.121519	7.172561	5,079.10	No	0.191284	0.166004
SMN14704	SMH19205	SMH19736	675	24.692233	0.008829	111.089318	19.979967	0	33.611131	0	0	Free Surface	1.561226	0.253021	0.140268	0.170789	0.205429	1.431232	791.977113	17,504.46	No	0.170789	1.561226
SMN14707	SMH13314	SMH19205	250	92.076364	0.002585	18.466583	1.220998	0	4.83202	0	0	Free Surface	0.647768	0.563599	0.609152	0.1409	0.108785	0.609816	30.315254	2,101.18	No	0.1409	0.647768
SMN19706	SMH13269	SMH13272	200	33.24154	0.004001	8.110655	0.111	0	2.083997	0	0	Free Surface	0.621046	0.433594	0.3899	0.086719	0.075809	0.772333	20.801859	868.6	No	0.086719	0.621046
SMN19756	SMH14204	SMH14203	300	37.022364	0.037977	16.218284	0.111	0	4.463993	0	0	Free Surface	1.63447	0.198029	0.085831	0.059409	0.096298	2.561088	188.955716	1,870.18	No	0.059409	1.63447
SMN40193	SFT141818	SMH14203	300	31.573477	0.005068	0	0	0	0	0	0	Free Surface	0	0	0	0	0	0	69.023699	0	No	0	0
PSMN_ALGO4	PMH_ALGO4	PMH_ALGO5	300	147.174845	0.003003	19.695637	0	0	5.579991	0	0	Free Surface	0.69576	0.421509	0.37066	0.126453	0.106488	0.718488	53.136603	2,354.00	Yes	0.132162	0.656421
PSMN_ALGO5	PMH_ALGO5	SMH14287	300	91.762514	0.003008	30.495661	0	0	9.099985	0	0	Free Surface	0.777948	0.542908	0.573478	0.162872	0.133703	0.685692	53.176694	3,819.93	No	0.162872	0.777948
SMN20270	SMH13346	SMH13337	250	77.691681	0.001249	5.446795	0.111	0	1.643715	0	0	Free Surface	0.360128	0.346863	0.258521	0.086716	0.057873	0.455989	21.069073	4,985.42	No	0.086716	0.360128
SMN14663	SMH13327	SMH13339	300	105.474776	0.002996	0	0	0	0	0	0	Free Surface	0	0	0	0	0	0	53.072394	0	Yes	-0.156919	0
SMN14662	SMH13337	SMH13331	250	77.131639	0.005069	5.619957	0.222	0	1.66346	0	0	Free Surface	0.600025	0.245728	0.132377	0.061432	0.058808	0.91819	42.454029	4,999.84	Yes	0.06464	0.558492
SMN14705	SMH19736	SMH19737	750	9.379214	0.006824	112.950381	20.645966	0	35.507494	0	0	Free Surface	1.415894	0.236328	0.122488	0.177246	0.201005	1.277373	922.131446	22,584.56	No	0.177246	1.415894
SMN14706	SMH19737	SMH19228	750	96.182123	0.00289	113.137784	20.756966	0	35.540564	0	0	Free Surface	1.043048	0.294159	0.188515	0.220619	0.201176	0.835766	600.152039	22,598.56	Yes	0.275953	0.767128
SMN14698	SMH19197	SMH17967	675	7.943358	0.004029	91.322515	17.87097	0	26.264169	0	0	Free Surface	1.115851	0.279556	0.170703	0.1887	0.185699	0.9691	534.979929	14,381.57	Yes	0.189128	1.11233
SMN14699	SMH17967	SMH19203	675	89.204544	0.00398	91.56955	17.98197	0	26.31429	0	0	Free Surface	1.111828	0.280823	0.172213	0.189555	0.185957	0.963228	531.722766	14,386.74	Yes	0.190039	1.107876
SMN16908	SMH19202	SMH19197	675	87.839166	0.003916	67.723384	17.648971	0	17.068608	0	0	Free Surface	1.013659	0.241974	0.128392	0.163332	0.15927	0.951837	527.472336	10,497.30	No	0.163332	1.013659
SMN20280	SMH14287	SMH19197	300	95.757338	0.003028	30.858642	0.111	0	9.192562	0	0	Free Surface	0.782186	0.545715	0.578315	0.163715	0.134532	0.687052	53.359581	3,883.10	No	0.163715	0.782186
SMN12121	SMH13236	SMH13242	250	63.857356	0.005011	11.557135	0.222	0	3.089375	0	0	Free Surface	0.733042	0.357605	0.2738	0.089401	0.085255	0.91226	42.210096	1,550.70	Yes	0.089554	0.731345
SMN19705	SFT406	SMH13236	125	60.01203	0.002	0.673926	0.111	0	0.13838	0	0	Free Surface	0.250915	0.270905	0.160491	0.033863	0.024112	0.515132	4.199152	317.27	Yes	0.061632	0.111809
PSMN_ALGO3	PMH_ALGO3	PMH_ALGO4	300	112.296497	0.003001	14.002256	0	0	3.829994	0	0	Free Surface	0.633921	0.350464	0.263613	0.105139	0.089262	0.728459	53.116725	1,615.92	No	0.105139	0.633921
PSMN_ALGO7	PMH_ALGO7	PMH_ALGO4	300	92.931065	0.003002	6.792058	0	0	1.749997	0	0	Free Surface	0.516223	0.241455	0.127844	0.072437	0.061579	0.727946	53.127709	738.08	No	0.072437	0.516223
SMN12122	SMH13242	SMH13247	250	64.188773	0.005001	11.618963	0.332999	0	3.110379	0	0	Free Surface	0.733559	0.358826	0.275548	0.089706	0.085491	0.911136	42.166718	1,758.97	Yes	0.093796	0.690593
SMN12123	SMH13247	SMH13251	250	78.643855	0.003688	11.733435	0.443999	0	3.111379	0	0	Free Surface	0.65849	0.391541	0.32405	0.097885	0.085927	0.777879	36.208741	1,759.24	No	0.097885	0.65849
SMN25213	SMH13251	SMH23880	250	83.722107	0.004204	11.847907	0.554999	0	3.112379	0	0	Free Surface	0.692479	0.379883	0.306439	0.094971	0.08636	0.832471	38.663225	1,759.51	Yes	0.103125	0.620209
SMN14655	SMH19200	SMH19201	675	86.134819	0.003854	60.239379	17.426971	0	14.38469	0	0	Free Surface	0.974253	0.229095	0.115116	0.154639	0.149999	0.942005	523.29217	9,511.86	Yes	0.156933	0.954118
SMN16905	SMH19199	SMH19200	380	98.506409	0.004873	51.074681	16.649972	0	11.226426	0	0	Free Surface	1.059758	0.440918	0.401743	0.167549	0.162831	0.946535	127.132764	7,701.01	No	0.167549	1.059758
SMN25214	SMH23880	SMH19200	250	11.46442	0.004187	11.969114	0.665999	0	3.115379	0	0	Free Surface	0.693406	0.382385	0.310221	0.095596	0.086817	0.830433	38.582591	1,760.68	Yes	0.132959	0.451115
SMN14656	SMH19201	SMH19202	675	95.374472	0.003921	60.430005	17.537971	0	14.413889	0	0	Free Surface	0.981043	0.228485	0.11449	0.154227	0.150242	0.949921	527.81812	9,523.03	No	0.154227	0.981043
PSMN_ALGO2	PMH_ALGO2	PMH_ALGO3	300	80.621951	0.003002	14.002256	0	0	3.829994	0	0	Free Surface	0.633921	0.350464	0.263583	0.105139	0.089262	0.728459	53.122741	1,615.92	No	0.105139	0.633921
PSMN_ALGO1	PMH_ALGO1	PMH_ALGO2	300	82.139959	0.002995	14.002256	0	0	3.829994	0	0	Free Surface	0.63347	0.350647	0.263881	0.105194	0.089262	0.727725	53.062751	1,615.92	No	0.105194	0.63347
SMN14637	SMH19198	SMH19199	380	91.92707	0.00458	50.8105	16.538973	0	11.172428	0	0	Free Surface	1.034352	0.447388	0.412254	0.170007	0.162391	0.915742	123.250433	7,680.84	Yes	0.188778	0.903429
PSMN_ALGO6	PMH_ALGO6	PMH_ALGO7	300	100.910823	0.003003	6.792058	0	0	1.749997	0	0	Free Surface	0.516223	0.241455	0.127835	0.072437	0.061579	0.727946	53.131477	738.08	No	0.072437	0.516223

Table below is for proposed pipe

ID	From ID	To ID	Diameter (mm)	Length (m)	Slope	Total Flow (L/s)	Unpeakable Flow (L/s)	Peakable Flow (L/s)	Coverage Flow (L/s)	Infiltration Flow (L/s)	Storm Flow (L/s)	Flow Type	Velocity (m/s)	d/D	q/Q	Water Depth (m)	Critical Depth (m)	Froude Number	Full Flow (L/s)	Coverage Count	Backwater Adjustment	Adjusted Depth (m)	Adjusted Velocity (m/s)
PSMN_ALGO1	PMH_ALGO1	PMH_ALGO2	300	82.139959	0.002995	14.002256	0	0	3.829994	0	0	Free Surface	0.63347	0.350647	0.263881	0.105194	0.089262	0.727725	53.062751	1,615.92	No	0.105194	0.63347
PSMN_ALGO2	PMH_ALGO2	PMH_ALGO3	300	80.621951	0.003002	14.002256	0	0	3.829994	0	0	Free Surface	0.633921	0.350464	0.263583	0.105139	0.089262	0.728459	53.122741	1,615.92	No	0.105139	0.633921
PSMN_ALGO3	PMH_ALGO3	PMH_ALGO4	300	112.296497	0.003001	14.002256	0	0	3.829994	0	0	Free Surface	0.633921	0.350464	0.263613	0.105139	0.089262	0.728459	53.116725	1,615.92	No	0.105139	0.633921
PSMN_ALGO7	PMH_ALGO7	PMH_ALGO4	300	92.931065	0.003002	6.792058	0	0	1.749997	0	0	Free Surface	0.516223	0.241455	0.127844	0.072437	0.061579	0.727946	53.127709	738.08	No	0.072437	0.516223
PSMN_ALGO6	PMH_ALGO6	PMH_ALGO7	300	100.910823	0.003003	6.792058	0	0	1.749997	0	0	Free Surface	0.516223	0.241455	0.127835	0.072437	0.061579	0.727946	53.131477	738.08	No	0.072437	0.516223
PSMN_ALGO4	PMH_ALGO4	PMH_ALGO5	300	147.174845	0.003003	19.695637	0	0	5.579991	0	0	Free Surface	0.69576	0.421509	0.37066	0.126453	0.106488	0.718488	53.136603	2,354.00	Yes	0.132162	0.656421
PSMN_ALGO5	PMH_ALGO5	SMH14287	300	91.762514	0.003008	30.495661	0	0	9.099985	0	0	Free Surface	0.777948	0.542908	0.573478	0.162872	0.133703	0.685692	53.176694	3,819.93	No	0.162872	0.777948

RSN	GISID	PROPTYPE	HOUSENUM	STREET	STRTYPE	STRDIR	UNITTYPE	UNIT	ADDRESS	ROLL	ZONING	LEGALDESC	FRONTAGE	DEPTH	Shape_Leng	Shape_Area	Precincts	TotalAreaH	
67024	40266	90	0	Harvester	Rd.				0000 Harvester Rd.	2402090909048400000	O2	CON 3 SDS PT LOT 4 RP 20R8361 PARTS 4,9,10			3327.36590829000	63448.05669910000	Existing Natural Open Space	6.34480566991	
66947	19501	10	5050	South Service	Rd.				5050 South Service Rd.	2402090909046000000	BC1	CON 3 SDS PT LOT 5 RP 20R5300 PART 2	153		8970.12908964999	533707.28268600000	Urban Employment	53.37072826860	16279
77943	19657	140	5125	Harvester	Rd.				5125 Harvester Rd.	2402090909048010481 3	GE1	HALT CONDO PLAN 212	0	0	8048.11188566000	405351.94021300000	General Employment	40.53519402130	12364
68003	20003	10	720	Oval	Crt.				720 Oval Crt.	2402090909404000000	MXE	PLAN M524 LOT 6			4781.39798120000	239450.52597900000	Fairview Frequent Transit Corridor	23.94505259790	7304
98017	63649	10	0	Burlington-Spcls					0000 Burlington-Spcls	2402080888888150000	S	RAILWAY (BRANT STREET TO BURLOAK DRIVE)	0	0	2639.93543394000	40109.70480770000		4.01097048077	
68001	19855	10	740	Oval	Crt.				740 Oval Crt.	2402090909402000000	MXE	PLAN M524 LOTS 4,5			3527.96979963000	152267.41174000000	Applyby GO Central	15.22674117400	4645
66943	44311	10	0	South Service	Rd.				0000 South Service Rd.	2402090909044000000	S	CON 3 SDS PT LOT 6			255.64313412000	3096.70395657000		0.30967039566	95
67356	14688	10	4415	Fairview	St.				4415 Fairview St.	2402090909064000000	H-MXC-414	PLAN 1496 PT BLK A RP 20R4212 PARTS 1,2,3			469.67355513400	36.27497398830		0.00362749740	2
98017	63649	10	0	Burlington-Spcls					0000 Burlington-Spcls	2402080888888150000	S	RAILWAY (BRANT STREET TO BURLOAK DRIVE)	0	0	878.11302544800	12061.14455270000		1.20611445527	
84842	54803	140	5090	Fairview	St.				5090 Fairview St.	2402090909495014959 9	MXG-345	HALT CONDO PLAN 435			2090.80905863000	64193.96031580000	Low to Mid-Rise Residential	10.62815222900	3242
84842	54803	140	5090	Fairview	St.				5090 Fairview St.	2402090909495014959 9	MXG-345	HALT CONDO PLAN 435			1591.26702261000	42087.56081560000	Mid-Rise Residential	10.62815222900	3242
																			47173





Traffic Zone	Population	Employment
1		3,535
2		2,544
3	5,351	6,563
4	670	320
5	2,449	2,935
6	-	1,254
7		1,027
Sub-Total (Build Out)	**8,471**	**18,176**

APPLEBY			
MTSA ZONES			
ZONE 1			
	Number of People	ADD (L/s)	MDD (L/s)
Population (Residential)	0	0.00	0.00
Employment	3535	9.21	20.71
Total	3535	9.21	20.71
ZONE 2			
Population (Residential)	0	0.00	0.00
Employment	2544	6.63	14.91
Total	2544	6.63	14.91
ZONE 3			
Population (Residential)	5351	15.79	35.53
Employment	6563	17.09	38.46
Total	11914	32.88	73.99
ZONE 4			
Population (Residential)	670	1.98	4.45
Employment	320	0.83	1.88
Total	990	2.81	6.32
ZONE 5			
Population (Residential)	2449	7.23	16.26
Employment	2935	7.64	17.20
Total	5384	14.87	33.46
ZONE 6			
Population (Residential)	0	0.00	0.00
Employment	1254	3.27	7.35
Total	1254	3.27	7.35
ZONE 7			
Population (Residential)	0	0.00	0.00
Employment	1027	2.67	6.02
Total	1027	2.67	6.02
	26648	**72.3**	**162.8**

Total Residential Population	**8470**	56.25
Total Employment	**18178**	106.51
Total intensification	**26648**	162.76

Flow Calculation

Res Flow= 255 L/cap/day

ICI Flow= 225 L/employee/day

MDD Peaking Factor = 2.25

		Contributing Zones	Junction ID from Model	ADD	MDD
Node #1	Appleby Dem Node 1	1	WFT10333	2.30 L/s	5.18 L/s
Node #2	Appleby Dem Node 2	1	WFT10699	2.30 L/s	5.18 L/s
Node #3	Appleby Dem Node 3	7	WFT-PROP-3	2.67 L/s	6.02 L/s
Node #4	Appleby Dem Node 4	1, 2	WFT10836	4.51 L/s	10.15 L/s
Node #5	Appleby Dem Node 5	1, 2	WFT10562	4.51 L/s	10.15 L/s
Node #6	Appleby Dem Node 6	2	WFT-PROP-14	2.21 L/s	4.97 L/s
Node #7	Appleby Dem Node 7	6	WFT-PROP-16	1.63 L/s	3.67 L/s
Node #8	Appleby Dem Node 8	6	WFT-PROP-17	1.63 L/s	3.67 L/s
Node #9	Appleby Dem Node 9	5	WFT-PROP-18	7.44 L/s	16.73 L/s
Node #10	Appleby Dem Node 10	5	WFT-PROP-20	7.44 L/s	16.73 L/s
Node #11	Appleby Dem Node 11	4	WFT-PROP-30	2.81 L/s	6.32 L/s
Node #12	Appleby Dem Node 12	3	WFT17984	10.96 L/s	24.66 L/s
Node #13	Appleby Dem Node 13	3	WFT-PROP-29	10.96 L/s	24.66 L/s
Node #14	Appleby Dem Node 14	3	WSV49343	10.96 L/s	24.66 L/s
			subtotal	**72.3 L/s**	**162.8 L/s**

	ID (Char)	**Demand 7**	Demand 9
Node #6	WFT-PROP-14	0.00	4.97
Node #7	WFT-PROP-16	0.00	3.67
Node #8	WFT-PROP-17	0.00	3.67
Node #9	WFT-PROP-18	8.13	8.60
Node #10	WFT-PROP-20	8.13	8.60
Node #13	WFT-PROP-29	11.84	12.82
Node #3	WFT-PROP-3	0.00	6.02
Node #11	WFT-PROP-30	4.45	1.88
Node #1	WFT10333	0.00	5.18
Node #5	WFT10562	0.00	10.15
Node #2	WFT10699	0.00	5.18
Node #4	WFT10836	0.00	10.15
Node #12	WFT17984	11.84	12.82
Node #14	WSV49343	11.84	12.82
		56.25	**106.5**

The following table is for presentation in the map

New Demand Nodes	Residential Population	Employment Population	Total Population
Node #1	0	884	884
Node #2	0	884	884
Node #3	0	1027	1027
Node #4	0	1732	1732
Node #5	0	1732	1732
Node #6	0	848	848
Node #7	0	627	627
Node #8	0	627	627
Node #9	1225	1468	2692
Node #10	1225	1468	2692
Node #11	670	320	990
Node #12	1784	2188	3971
Node #13	1784	2188	3971
Node #14	1784	2188	3971
	8470	18178	26648
	56.24609375	106.5117188	

* 2031MDI ID (Char)	Demand 1	Pattern 1 (I	Demand 2	Pattern 2 (I	Demand 3	Pattern 3 (I	Demand 4	Pattern 4 (I	Demand 5	Pattern 5 (I	Demand 6	Pattern 6 (I	Demand 7	Pattern 7 (I	Demand 8	Pattern 8 (I	Demand 9	Pattern 9 (I	Demand 10 (lps)
WCV117062			0				0						0		0		0		0
WCV12465			0				0						0		0		0		0
WCV12616							0						0		0		0		0
WCV12617	0.1						0						0		0		0		0
WCV12665							0						0		0		0		0
WCV12666			0.2				0						0		0		0		0
WCV12670							0						0		0		0		0
WCV12671			0.2				0						0		0		0		0
WCV12675	0.1						0						0		0		0		0
WCV12676							0						0		0		0		0
WCV12678							0						0		0		0		0
WCV12679							0						0		0		0		0
WCV12680							0						0		0		0		0
WCV12681							0						0		0		0		0
WCV12682			0				0						0		0		0		0
WCV12683			0				0						0		0		0		0
WCV12684							0						0		0		0		0
WCV12685			0.4				0						0		0		0		0
WCV12686	0		0.2				0						0		0		0		0
WCV12687	0.1		0.1				0						0		0		0		0
WCV12689			0				0						0		0		0		0
WCV12740							0						0		0		0		0
WCV12741							0						0		0		0		0
WCV12743							0						0		0		0		0
WCV12744							0						0		0		0		0
WCV12745							0						0		0		0		0
WCV12746							0						0		0		0		0
WCV12749							0						0		0		0		0
WCV13668			0.1				0						0		0		0		0
WCV13865							0						0		0		0		0
WCV13867							0						0		0		0		0
WCV14084							0						0		0		0		0
WCV14098							0						0		0		0		0
WCV15897							0						0		0		0		0
WCV200411			0				0						0		0		0		0
WCV200811							0						0		0		0		0
WCV4820							0						0		0		0		0
WCV4824			0.4				0						0		0		0		0
WCV4825							0						0		0		0		0
WCV4826							0						0		0		0		0
WCV4827							0						0		0		0		0
WCV4828							0						0		0		0		0
WCV4837							0						0		0		0		0
WCV4838							0						0		0		0		0
WCV4839							0						0		0		0		0
WCV4840			0.2				0						0		0		0		0
WCV4841			0				0						0		0		0		0
WCV4842			0				0						0		0		0		0
WCV4843							0						0		0		0		0
WCV4844							0						0		0		0		0
WCV4845							0						0		0		0		0
WCV4846							0						0		0		0		0
WCV4847							0						0		0		0		0
WCV5021			0				0						0		0		0		0
WCV5431			0.4				0						0		0		0		0
WCV81206							0						0		0		0		0
WCV81212							0						0		0		0		0
WCV81269							0						0		0		0		0
WFT-F-1069																			
WFT-PROP-1																			
WFT-PROP-10																			
WFT-PROP-11																			
WFT-PROP-12																			
WFT-PROP-13																			
WFT-PROP	16.1		0		0		0		0		0		0		0		0		0
WFT-PROP-15																			
WFT-PROP	49.7		0		0		0		0		0		0		0		0		0
WFT-PROP	4		0		0		0		0		0		0		0		0		0
WFT-PROP	10.2		0		0		0		0		0		0		0		0		0
WFT-PROP-19																			
WFT-PROP-2																			
WFT-PROP	41.8		0		0		0		0		0		0		0		0		0
WFT-PROP-21																			
WFT-PROP-22																			
WFT-PROP-23																			
WFT-PROP-24																			
WFT-PROP-25																			
WFT-PROP-26																			
WFT-PROP-28																			
WFT-PROP	53.5		0		0		0		0		0		0		0		0		0
WFT-PROP	20.8		0		0		0		0		0		0		0		0		0
WFT-PROP	15.2		0		0		0		0		0		0		0		0		0
WFT-PROP-31																			
WFT-PROP-32																			
WFT-PROP-35																			
WFT-PROP-36																			
WFT-PROP-37																			
WFT-PROP-38																			
WFT-PROP-5																			
WFT-PROP-6																			
WFT-PROP-7																			
WFT-PROP-8																			
WFT-PROP-9																			
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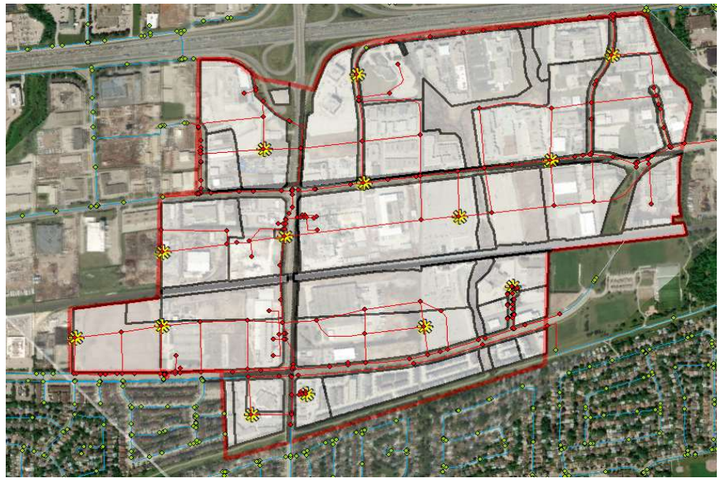

* 2031MDD_APPLEBY_STRESS_TEST *

ID (Char)	Demand 1	Pattern 1 (I	Demand 2	Pattern 2 (I	Demand 3	Pattern 3 (I	Demand 4	Pattern 4 (I	Demand 5	Pattern 5 (I	Demand 6	Pattern 6 (I	Demand 7	Pattern 7 (I	Demand 8	Pattern 8 (I	Demand 9	Pattern 9 (I	Demand 10 (lps)
WFT-PROP-14	16.1		0		0		0		0		0		0		0		0		0
WFT-PROP-16	49.7		0		0		0		0		0		0		0		0		0
WFT-PROP-17	4		0		0		0		0		0		0		0		0		0
WFT-PROP-18	10.2		0		0		0		0		0		0		0		0		0
WFT-PROP-20	41.8		0		0		0		0		0		0		0		0		0
WFT-PROP-29	53.5		0		0		0		0		0		0		0		0		0
WFT-PROP-3	20.8		0		0		0		0		0		0		0		0		0
WFT-PROP-30	15.2		0		0		0		0		0		0		0		0		0
WFT10333	22.8		0.1		0		0		0		0		0		0		0		0
WFT10562	19.6		0.1		0		0		0		0		0		0		0		0
WFT10699	51.5		0.1		0		0		0		0		0		0		0		0
WFT10836	34.1		0.2		0		0		0		0		0		0		0		0
WFT17984	0.1		0.1		16.4		0		0		0		0		0		0		0
WSV49343	23.6		0		0		0		0		0		0		0		0		0

WFT10285		0.1		0			0	0	0	0
WFT10286		0		0			0	0	0	0
WFT10305		0.2		0			0	0	0	0
WFT10333	22.8	0.1	0	0	0	0	0	0	0	0
WFT10339		0		0			0	0	0	0
WFT10345		0.2		0			0	0	0	0
WFT10364		0.1		0			0	0	0	0
WFT10367		0		0			0	0	0	0
WFT10375				0			0	0	0	0
WFT10383		0.6		0			0	0	0	0
WFT10388		0.1		0			0	0	0	0
WFT10395				0			0	0	0	0
WFT10421		0.6		0			0	0	0	0
WFT10435				0			0	0	0	0
WFT10444		0.1		0			0	0	0	0
WFT10448		0.4		0			0	0	0	0
WFT10449				0			0	0	0	0
WFT10451		0.2		0			0	0	0	0
WFT10472		0		0			0	0	0	0
WFT10495		0		0			0	0	0	0
WFT10502		0.2		0			0	0	0	0
WFT10506		0.1		0			0	0	0	0
WFT10511		0		0			0	0	0	0
WFT10556		0.2		0			0	0	0	0
WFT10562	19.6	0.1	0	0	0	0	0	0	0	0
WFT10619		0		0			0	0	0	0
WFT10622		0.1		0			0	0	0	0
WFT10693		0		0			0	0	0	0
WFT10699	51.5	0.1	0	0	0	0	0	0	0	0
WFT10720		0		0			0	0	0	0
WFT10724		0.3		0			0	0	0	0
WFT10743		0		0			0	0	0	0
WFT10750		0		0			0	0	0	0
WFT10777		0.5		0			0	0	0	0
WFT10790		0.1		0			0	0	0	0
WFT10804				0			0	0	0	0
WFT10810	0.1	0		0			0	0	0	0
WFT10833	0.1			0			0	0	0	0
WFT10836	34.1	0.2	0	0	0	0	0	0	0	0
WFT10851				0			0	0	0	0
WFT10853				0			0	0	0	0
WFT10858		0		0			0	0	0	0
WFT10860				0			0	0	0	0
WFT10888	0.1			0			0	0	0	0
WFT10921				0			0	0	0	0
WFT10938				0			0	0	0	0
WFT10944				0			0	0	0	0
WFT10957	0.2	0		0			0	0	0	0
WFT10965				0			0	0	0	0
WFT10967		0		0			0	0	0	0
WFT10972		28.3		0			0	0	0	0
WFT10978	0.2			0			0	0	0	0
WFT10981				0			0	0	0	0
WFT10990		0.2		0			0	0	0	0
WFT11005				0			0	0	0	0
WFT11016				0			0	0	0	0
WFT11032	0.3			0			0	0	0	0
WFT11036		0.1		0			0	0	0	0
WFT11105		0.5		0			0	0	0	0
WFT11130	0.4			0			0	0	0	0
WFT11134		0		0			0	0	0	0
WFT11205	0.1	0		0			0	0	0	0
WFT11234				0			0	0	0	0
WFT11244				0			0	0	0	0
WFT11247		0.3		0			0	0	0	0
WFT11289				0			0	0	0	0
WFT11296	0	0		0			0	0	0	0
WFT11305				0			0	0	0	0
WFT11315				0			0	0	0	0
WFT11339				0			0	0	0	0
WFT11341				0			0	0	0	0
WFT11349		0.5		0			0	0	0	0
WFT11387		0.5		0			0	0	0	0
WFT11505				0			0	0	0	0
WFT11517				0			0	0	0	0
WFT11529				0			0	0	0	0
WFT11549				0			0	0	0	0
WFT11557				0			0	0	0	0
WFT11578				0			0	0	0	0
WFT11582				0			0	0	0	0
WFT11610				0			0	0	0	0
WFT11669				0			0	0	0	0
WFT11708				0			0	0	0	0
WFT11756				0			0	0	0	0
WFT15208	0	0.2		0			0	0	0	0
WFT17889				0			0	0	0	0
WFT17894		0.1		0			0	0	0	0
WFT17912		0.4		0			0	0	0	0
WFT17928				0			0	0	0	0
WFT17940				0			0	0	0	0
WFT17941				0			0	0	0	0
WFT17944		28.3		0			0	0	0	0
WFT17950		0		0			0	0	0	0
WFT17956		0		0			0	0	0	0
WFT17965		0.2		0			0	0	0	0
WFT17966		0.3		0			0	0	0	0

WFT17973		0.3		0			0	0	0	0
WFT17977				0			0	0	0	0
WFT17981				0			0	0	0	0
WFT17982	0	0.2		0			0	0	0	0
WFT17984	0.1	0.1	16.4	0	0	0	0	0	0	0
WFT17997		0.4		0			0	0	0	0
WFT18001				0			0	0	0	0
WFT187614		0		0			0	0	0	0
WFT19904		0		0			0	0	0	0
WFT19906				0			0	0	0	0
WFT19913				0			0	0	0	0
WFT19932				0			0	0	0	0
WFT19937				0			0	0	0	0
WFT19938				0			0	0	0	0
WFT19946		0		0			0	0	0	0
WFT19954		0		0			0	0	0	0
WFT19955				0			0	0	0	0
WFT19964				0			0	0	0	0
WFT19978				0			0	0	0	0
WFT20325	0	0.1		0			0	0	0	0
WFT222479		0		0			0	0	0	0
WFT22945				0			0	0	0	0
WFT246937				0			0	0	0	0
WFT246938		0		0			0	0	0	0
WFT246939				0			0	0	0	0
WFT24694	0.3	0		0			0	0	0	0
WFT256				0			0	0	0	0
WFT57570		0.1		0			0	0	0	0
WFT57571				0			0	0	0	0
WFT57572				0			0	0	0	0
WFT57573				0			0	0	0	0
WFT57574				0			0	0	0	0
WFT57575				0			0	0	0	0
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WFT90260				0			0	0	0	0
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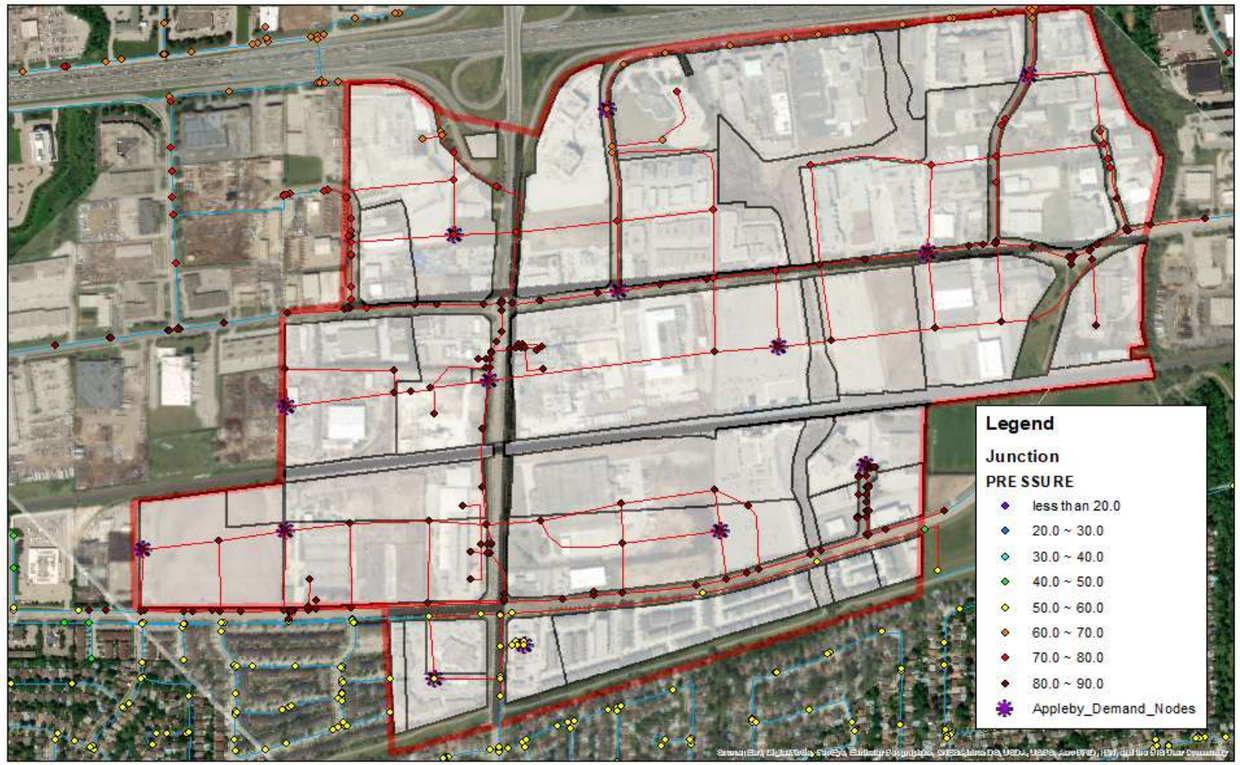
WFT92254		0		0			0	0	0	0
WFT92263		0		0			0	0	0	0
WFT92266				0			0	0	0	0
WFT92406		0		0			0	0	0	0
WFT92636				0			0	0	0	0
WFT92637		1.6		0			0	0	0	0
WPV153				0			0	0	0	0
WSV224180		0		0			0	0	0	0
WSV49340				0			0	0	0	0
WSV49341		0.1		0			0	0	0	0
WSV49342				0			0	0	0	0
WSV49343	23.6	0	0	0	0	0	0	0	0	0
WSV49344				0			0	0	0	0
WSV49345				0			0	0	0	0
WSV49346				0			0	0	0	0
WSV49347				0			0	0	0	0
WSV49348				0			0	0	0	0
WSV49349		0		0			0	0	0	0
WSV49350				0			0	0	0	0
WSV49351				0			0	0	0	0
WSV49352				0			0	0	0	0
WSV49353				0			0	0	0	0
WSV82253				0			0	0	0	0

All junctions in service area

ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (psi)
WFT10699	5.2	116.9	165.4	69
WFT10720	0	116.2	165.4	69.9
WFT10724	0.4	116.1	165.4	70
WFT10777	0.5	115.3	165.4	71.1
WFT10836	10.2	108.7	165.3	80.5
WFT10851	0	114.8	165.5	72.1
WFT10853	0	117.7	165.6	68.1
WFT10858	0	117.1	165.6	69
WFT10860	0	108.4	165.3	80.8
WFT10921	0	108.1	165.2	81.1
WFT10967	0	108.3	165.2	80.9
WFT19932	0	116.1	165.4	70
WFT19946	0	115.2	165.5	71.5
WFT19955	0	108.1	165.2	81.1
WCV12670	0	108.6	165.2	80.5
WCV12679	0	107.1	163.9	80.7
WCV12680	0	107.2	163.9	80.6
WCV12681	0	106.9	163.7	80.6
WCV12684	0	107.2	164.1	80.9
WCV12676	0	108.4	165.1	80.6
WCV12671	0.2	106.3	165	83.3
WCV12682	0	107.4	164.9	81.7
WCV12683	0	107.2	164.9	82
WCV200811	0	108.7	165.2	80.3
WFT92249	0	113.1	165.5	74.5
WFT92406	0	113.9	165.5	73.3
WCV81212	0	113.7	165.5	73.7
WFT10938	0	108.8	165.2	80.1
WFT10944	0	108.7	165.1	80.3
WFT10965	0	107.8	165	81.3
WFT10972	28.3	106.8	163.5	80.6
WFT10981	0	107	163.9	80.8
WFT10990	0.2	107.4	164.9	81.7
WFT11005	0	107.3	164.9	81.8
WFT11016	0	107	164.9	82.2
WFT17928	0	117.5	165.6	68.4
WFT17940	0	106.6	163.5	80.9
WFT17941	0	106.4	163.9	81.7
WFT17944	28.3	106.1	163	81
WFT17950	0	107.6	164.9	81.5
WFT19964	0	107.5	164.9	81.6
WCV200411	0.1	108.2	165.3	81.2
WFT-PROP-1	0	115.8	165.6	70.8
WFT-PROP-2	0	116	165.5	70.4
WFT-PROP-3	6	115.5	165.5	71.1
WFT-PROP-5	0	111.5	165.4	76.7
WFT11036	0.2	108.3	165.4	81.1
WCV12666	0.2	111.2	165.5	77.2
WCV12689	0	109	165.5	80.4
WFT92636	0	109.5	165.5	79.6
WFT92637	1.7	109.5	165.5	79.6
WFT92250	1.7	113	165.5	74.6
WFT92254	0	112.8	165.5	74.9
WFT92263	0	114.8	165.5	72.2
WFT92266	0	114.8	165.5	72.2
WCV81206	0	109.3	165.5	80
WCV81269	0	114.2	165.5	73
WFT187614	0	113.4	165.5	74.2
WFT246938	0.1	108.7	165.5	80.7
WFT246939	0	108.9	165.5	80.5
WFT246937	0	109.2	165.5	80.1
WSV82253	0	114.3	165.5	72.9
WFT10367	0.1	109	165.6	80.5
WFT10375	0	118.2	166.7	69
WFT10388	0.1	115.4	165.5	71.2
WFT10395	0	116.8	165.6	69.4
WFT10421	0.6	107.6	165.6	82.4

Demand junctions/nodes

ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (psi)
WFT10836	10.2	108.7	165.3	80.5
WFT10699	5.2	116.9	165.4	69
WFT-PROP-3	6	115.5	165.5	71.1
WFT-PROP-14	5	106	165.4	84.4
WFT10562	10.2	108.8	165.5	80.5
WFT10333	5.2	116	165.6	70.5
WFT-PROP-16	3.7	105.9	164.9	83.8
WFT-PROP-17	3.7	106.5	164.9	83
WFT-PROP-29	24.7	102	164.2	88.4
WFT-PROP-30	6.3	99	135.9	52.4
WFT-PROP-20	16.7	101	164.3	90
WFT-PROP-18	16.7	102	164.3	88.5
WFT17984	24.7	99.7	135.9	51.4
WSV49343	24.7	102.7	163.9	87
	163			51.40
				77.18
				90.00



PROPOSED PIPES

ID	From Node	To Node	Length (m)	Diameter (mm)	Roughness	Flow (ML/d)	Flow (L/s)	Velocity (m/s)	Velocity (fps)	Headloss (r	HL/1000 (n	Status
WMN-PROP-P48	WFT-PROP-18	WFT-PROP-32	123.2	300	140	-0.4	-4.62963	0.1	0.33	0	0	Open
WMN-PROP-P30	WFT-PROP-18	WFT-PROP-19	147.7	300	140	-1	-11.5741	0.2	0.66	0	0.1	Open
WMN-PROP-P31	WFT-PROP-19	WFT-PROP-20	129.3	300	140	-0.9	-10.4167	0.2	0.66	0	0.1	Open
WMN-PROP-P32	WFT-PROP-20	WFT-PROP-21	126.2	300	140	-2	-23.1481	0.3	0.98	0	0.4	Open
WMN-PROP-P33	WFT-PROP-21	WFT-PROP-22	151.6	300	140	-1.7	-19.6759	0.3	0.98	0	0.3	Open
WMN-PROP-P34	WFT-PROP-22	WFT11134	110.9	300	140	-2.4	-27.7778	0.4	1.31	0.1	0.5	Open
WMN-PROP-P35	WFT-PROP-22	WFT-PROP-23	163	300	140	0.7	8.101852	0.1	0.33	0	0	Open
WMN-PROP-P36	WFT-PROP-21	WFT11505	170.8	300	140	-0.3	-3.47222	0.1	0.33	0	0	Open
WMN-PROP-P50	WFT-PROP-20	WFT-PROP-35	160.5	300	140	-0.4	-4.62963	0.1	0.33	0	0	Open
WMN-PROP-P49	WFT-PROP-19	WFT-F-1069	141.8	300	140	-0.1	-1.15741	0	0.00	0	0	Open
WMN-PROP-P47	WFT-PROP-31	WFT-PROP-30	125.2	300	140	1	11.57407	0.2	0.66	0	0.1	Open
WMN-PROP-P46	WFT-PROP-30	WFT203253	127.3	300	140	0.5	5.787037	0.1	0.33	0	0	Open
WMN-PROP-P37	WFT17956	WFT-PROP-24	158.3	300	140	1.2	13.88889	0.2	0.66	0	0.1	Open
WMN-PROP-P43	WFT-PROP-26	WFT-PROP-29	189.6	300	140	1.6	18.51852	0.3	0.98	0	0.3	Open
WMN-PROP-P38	WFT-PROP-24	WFT-PROP-25	180.3	300	140	1.5	17.36111	0.2	0.66	0	0.2	Open
WMN-PROP-P42	WFT17956	WFT-PROP-26	183.7	300	140	1.1	12.73148	0.2	0.66	0	0.1	Open
WMN-PROP-P44	WFT-PROP-25	WFT-PROP-29	83	250	110	0.5	5.787037	0.1	0.33	0	0.1	Open
WMN-PROP-P45	WFT-PROP-29	WFT-PROP-28	97.1	300	140	0	0	0	0.00	0	0	Open
WMN-PROP-P41	WFT-PROP-26	WFT11130	98.2	300	140	-0.8	-9.25926	0.1	0.33	0	0.1	Open
WMN-PROP-P39	WFT-PROP-25	WFT19954	72.7	300	140	1	11.57407	0.2	0.66	0	0.1	Open
WMN-PROP-P27	WFT-PROP-15	WFT-PROP-16	439.7	300	140	3.4	39.35185	0.6	1.97	0.4	1	Open
WMN-PROP-P20	WFT-PROP-15	WFT-PROP-14	121.7	300	140	-2.2	-25.463	0.4	1.31	0.1	0.4	Open
WMN-PROP-P21	WFT-PROP-14	WFT-PROP-13	104.4	300	140	-2.1	-24.3056	0.3	0.98	0	0.4	Open
WMN-PROP-P22	WFT-PROP-13	WFT-PROP-12	201.5	300	140	-1.7	-19.6759	0.3	0.98	0.1	0.3	Open
WMN-PROP-P23	WFT-PROP-12	WFT-PROP-11	127.7	300	140	-1.7	-19.6759	0.3	0.98	0	0.3	Open
WMN-PROP-P26	WFT-PROP-11	WCV13668	229.4	300	140	-1.3	-15.0463	0.2	0.66	0	0.2	Open
WMN-PROP-P9	WFT10724	WFT-PROP-6	300.5	300	140	0.6	6.944444	0.1	0.33	0	0	Open
WMN-PROP-P10	WFT-PROP-6	WCV12465	136.8	300	140	1.1	12.73148	0.2	0.66	0	0.1	Open
WMN-PROP-P17	WCV12465	WFT-PROP-15	147.8	300	140	1.2	13.88889	0.2	0.66	0	0.2	Open
WMN-PROP-P19	WFT10693	WFT-PROP-14	152.4	300	140	0.5	5.787037	0.1	0.33	0	0	Open

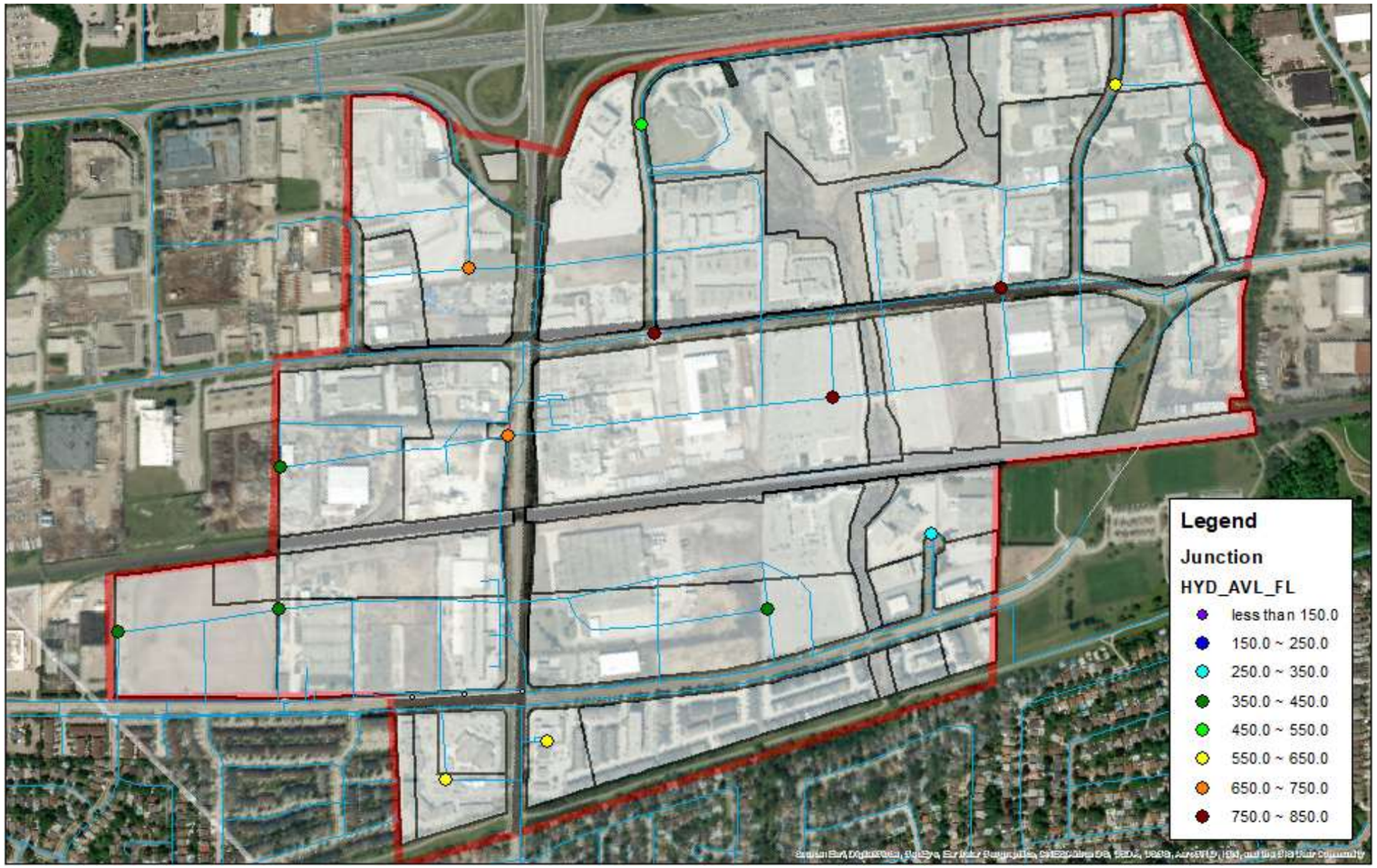
WFT10435	0	107.7	165.6	82.3	WMN-PROP-P18	WFT222479	WFT-PROP-13	153.4	300	140	0.4	4.62963	0.1	0.33	0	0	Open
WFT10444	0.1	119.9	166.7	66.5	WMN-PROP-P11	WFT222479	WFT-PROP-7	200.8	300	140	-1.2	-13.8889	0.2	0.66	0	0.1	Open
WFT10448	0.4	116.9	165.6	69.3	WMN-PROP-P12	WFT-PROP-7	WFT-PROP-8	235.3	300	140	-1.2	-13.8889	0.2	0.66	0	0.1	Open
WFT10449	0	107.3	165.6	82.9	WMN-PROP-P13	WFT-PROP-8	WFT10562	173.1	300	140	0.6	6.944444	0.1	0.33	0	0	Open
WFT10451	0.2	111.3	165.5	77.1	WMN-PROP-P24	WFT10562	WFT-PROP-12	157.6	300	140	-0.1	-1.15741	0	0.00	0	0	Open
WFT10472	0.1	108	165.5	81.8	WMN-PROP-P25	WFT10495	WFT-PROP-11	158.3	300	140	0.5	5.787037	0.1	0.33	0	0	Open
WFT10495	0.1	108.7	165.5	80.8	WMN-PROP-P14	WFT-PROP-8	WFT-PROP-9	127.2	300	140	-1.8	-20.8333	0.3	0.98	0	0.3	Open
WFT10502	0.2	118	165.5	67.5	WMN-PROP-P15	WFT-PROP-9	WFT-PROP-10	209.7	300	140	-1.2	-13.8889	0.2	0.66	0	0.1	Open
WFT10506	0.1	119.7	166.7	66.7	WMN-PROP-P16	WFT10333	WFT19904	238.7	300	140	0.6	6.944444	0.1	0.33	0	0	Open
WFT10511	0.1	108.9	165.5	80.4	WMN-PROP-P28	WFT-PROP-16	WFT11105	111.9	300	140	0.3	3.472222	0	0.00	0	0	Open
WFT10556	0.2	117.4	165.5	68.4	WMN2069	WFT11105	WFT17965	41.3	300	100	0.3	3.472222	0.1	0.33	0	0	Open
WFT10562	10.2	108.8	165.5	80.5	WMN-PROP-P54	WFT-PROP-38	WFT17965	32.4	300	110	-0.3	-3.47222	0.1	0.33	0	0	Open
WFT10619	0	117.4	165.4	68.3	WMN-F-1112	WFT-PROP-38	WFT-PROP-17	208	300	140	0.2	2.314815	0	0.00	0	0	Open
WFT10622	0.2	109.1	165.4	80.1	WMN-PROP-P52	WFT-PROP-37	WFT-PROP-36	208.6	250	110	0.1	1.157407	0	0.00	0	0	Open
WFT10693	0	109.3	165.4	79.7	WMN-PROP-P53	WFT-PROP-37	WFT-PROP-38	43.7	300	110	-0.1	-1.15741	0	0.00	0	0	Open
WFT10750	0.1	108.8	165.3	80.4	WMN-PROP-P51	WFT-PROP-36	WFT-PROP-17	75.3	300	140	0.1	1.157407	0	0.00	0	0	Open
WFT10790	0.1	108.6	165.3	80.6	WMN-PROP-P3	WFT-PROP-2	WFT-PROP-3	109.9	300	120	1.7	19.67593	0.3	0.98	0	0.4	Open
WCV5431	0.4	116.6	165.4	69.3	WMN-PROP-P4	WFT-PROP-3	WFT187614	199.8	300	120	-0.9	-10.4167	0.1	0.33	0	0.1	Open
WFT17889	0	106.6	165.6	83.8	WMN-PROP-P6	WFT-PROP-3	WFT-PROP-5	121.8	300	120	2.1	24.30556	0.3	0.98	0.1	0.5	Open
WFT19913	0	107.9	165.6	82	WMN-PROP-P2	WFT-PROP-2	WFT92263	213.6	300	120	0.3	3.472222	0.1	0.33	0	0	Open
WCV13668	0.1	106.3	165.5	84.2	WMN-PROP-P1	WFT-PROP-2	WFT-PROP-1	54	300	120	-2.1	-24.3056	0.3	0.98	0	0.5	Open
WCV4820	0	115.5	166.7	72.8	WMN-PROP-P7	WFT-PROP-5	WFT10777	196.5	300	140	2.1	24.30556	0.3	0.98	0.1	0.4	Open
WCV4824	0.4	117.6	165.6	68.2	WMN-PROP-P8	WFT10777	WFT-PROP-6	186.2	300	140	0.5	5.787037	0.1	0.33	0	0	Open
WCV4840	0.2	115.5	165.5	71.2	WMN-PROP-P40	WFT-PROP-24	WFT-PROP-26	81.6	300	140	-0.3	-3.47222	0	0.00	0	0	Open
WCV4841	0	108.8	165.5	80.6													
WCV4842	0	108.7	165.5	80.8													
WCV4843	0	107	165.6	83.2													
WCV4844	0	106.9	165.6	83.4													
WCV4845	0	106.8	165.6	83.6													
WCV4847	0	107.2	165.6	83													
WCV12465	0	109.3	165.3	79.7													
WFT90258	0.1	102.6	163.9	87.2													
WSV49342	0	102.7	163.9	87													
WSV49343	24.7	102.7	163.9	87													
WFT222479	0.1	109	165.4	80.1													
WCV117062	0	108.9	165.5	80.4													
WFT17912	0.4	115.8	165.4	70.4													
WFT-PROP-6	0	115	165.4	71.6													
WFT-PROP-7	0	113	165.4	74.5													
WFT-PROP-8	0	115	165.5	71.7													
WFT-PROP-9	0	113.5	165.5	73.9													
WFT-PROP-11	0	107	165.5	83.2													
WFT-PROP-12	0	107	165.5	83.1													
WFT-PROP-13	0	107	165.4	83													
WFT-PROP-14	5	106	165.4	84.4													
WFT-PROP-15	0	106	165.3	84.3													
WFT10339	0.1	110.4	165.6	78.4													
WFT10364	0.1	107.5	165.7	82.8													
WFT10383	0.6	107.3	165.6	82.9													
WFT19904	0.1	113.7	165.6	73.7													
WFT19906	0	111.1	165.6	77.5													
WCV4846	0	107.5	165.6	82.6													
WCV5021	0.1	111.2	165.6	77.3													
WFT-PROP-10	0	112.3	165.5	75.6													
WFT10333	5.2	116	165.6	70.5													
WFT10274	0	119.4	166.7	67.2													
WFT10280	0	117.4	165.7	68.7													
WFT10285	0.1	119	166.7	67.8													
WFT10286	0	117.4	165.7	68.7													
WFT10305	0.2	117.4	165.7	68.7													
WFT10345	0.2	117	165.7	69.2													
WCV4825	0	117.1	165.7	69.1													
WCV4826	0	119.5	166.7	67													
WCV4827	0	119.3	166.7	67.3													
WCV4828	0	119.6	166.7	67													
WCV4837	0	117.3	165.8	68.8													
WCV4838	0	117.4	165.7	68.7													
WCV4839	0	117.4	165.7	68.7													
WFT17894	0.1	106.7	165.5	83.7													

WFT256	0	102.3	163.9	87.7
WFT10743	0	101.1	164	89.5
WFT10804	0	102	164	88.1
WFT10810	0.1	101.1	164	89.5
WFT10833	0.1	101.2	164	89.3
WFT10888	0.1	100	164.1	91
WFT19937	0	102.2	163.9	87.8
WFT19938	0	102.2	163.9	87.8
WFT57570	0.1	102.3	163.9	87.6
WFT57571	0	102.4	164	87.5
WFT57572	0	102.1	164	87.9
WFT57573	0	102.2	164	87.9
WFT57574	0	102.1	164	88
WFT57575	0	102.3	163.9	87.6
WCV12616	0	101.5	164	88.9
WCV12617	0.1	101.6	164	88.8
WCV12746	0	102.1	135.7	47.8
WFT90256	0	102.3	164	87.6
WFT90257	0	101.9	164	88.3
WFT90259	0	102.3	163.9	87.6
WFT90260	0	101.8	164	88.5
WFT90261	0	100.9	164	89.7
WSV49340	0	102.5	163.9	87.3
WSV49341	0.1	102.5	163.9	87.3
WSV49344	0	102.4	163.9	87.6
WSV49345	0	102.3	163.9	87.6
WSV49346	0	102.4	164	87.5
WSV49347	0	102.4	164	87.6
WSV49348	0	101.9	164	88.3
WSV49349	0	101.8	164	88.3
WSV49350	0	101.6	164	88.6
WSV49351	0	101.7	164	88.6
WSV49352	0	101.1	164	89.4
WSV49353	0	101.1	164	89.5
WFT10957	0.2	100.4	164.2	90.7
WFT10978	0.2	100.1	164.2	91.1
WFT11032	0.3	100	164.2	91.3
WFT19954	0	103.2	164.2	86.7
WCV12675	0.1	100.2	164.1	90.8
WCV12744	0	100.4	135.8	50.3
WCV12745	0	99.6	135.8	51.4
WFT-PROP-24	0	101	164.2	89.9
WFT-PROP-25	0	104	164.2	85.6
WFT-PROP-26	0	103	164.2	87
WFT-PROP-28	0	100	164.2	91.2
WFT-PROP-29	24.7	102	164.2	88.4
WFT11130	0.4	100.3	164.2	90.8
WFT11234	0	101.3	164.4	89.7
WFT11244	0	100.9	164.4	90.4
WFT11289	0	100.7	164.4	90.5
WFT11305	0	100.1	135.9	50.9
WFT11315	0	100.4	135.9	50.4
WFT11341	0	100.1	135.9	50.9
WFT11349	0.5	99.7	135.9	51.4
WFT11387	0.5	99	135.9	52.5
WFT11205	0.1	100.1	164.3	91.3
WFT11296	0.1	100.3	164.4	91.1
WFT19978	0	101.4	164.4	89.7
WCV12678	0	101.5	164.4	89.5
WCV12686	0.2	99.8	135.9	51.2
WCV12687	0.1	99.7	135.9	51.4
WFT246946	0.4	100.2	164.2	91
WCV13867	0	101.5	164.4	89.5
WCV12665	0	105.7	164.7	84
WCV13865	0	103.8	164.6	86.4
WCV12740	0	100.4	135.9	50.4
WCV12741	0	100.4	135.9	50.4
WCV12743	0	100.4	164.4	91
WFT152084	0.2	98.5	135.9	53.1

WFT203253	0.2	98.9	135.9	52.5
WSV224180	0	100.9	164.2	90.1
WFT11105	0.5	106.4	164.9	83.2
WFT11134	0	102	164.4	88.7
WFT11247	0.3	101.7	164.4	89.2
WFT11339	0	99.8	135.9	51.3
WFT17956	0	102.6	164.3	87.7
WFT17965	0.2	106.3	164.9	83.3
WFT17966	0.4	105.7	164.9	84.1
WFT17973	0.3	102.4	164.4	88.1
WFT17977	0	102.1	164.4	88.6
WFT17981	0	102.1	164.4	88.7
WFT17982	0.2	99.7	135.9	51.4
WFT17984	24.7	99.7	135.9	51.4
WFT-PROP-16	3.7	105.9	164.9	83.8
WFT-PROP-20	16.7	101	164.3	90
WFT-PROP-21	0	102	164.3	88.6
WFT-PROP-22	0	103	164.4	87.3
WFT-PROP-23	0	101	164.4	90.1
WFT-PROP-30	6.3	99	135.9	52.4
WFT-PROP-31	0	99.9	135.9	51.1
WFT-PROP-37	0	106.5	164.9	83
WFT-PROP-38	0	106.5	164.9	83
WFT-PROP-19	0	102	164.3	88.5
WFT11756	0	100.5	164.3	90.6
WFT-PROP-18	16.7	102	164.3	88.5
WFT-PROP-32	0	100.9	164.3	90.1
WFT11505	0	100.1	164.3	91.3
WFT11517	0	100.1	164.3	91.3
WFT11529	0	99.9	164.3	91.6
WFT11549	0	99.8	164.3	91.7
WCV12685	0.4	101	164.3	90
WFT17997	0.4	101.3	164.3	89.6
WFT18001	0	101.3	164.3	89.6
WFT11557	0	99.9	164.3	91.6
WFT11578	0	99.8	164.3	91.6
WFT11582	0	99.6	164.3	92
WCV12749	0	99.7	164.3	91.8
WCV14084	0	99.8	164.3	91.7
WCV14098	0	99.6	164.3	92
WPV153	0	99.6	164.3	91.9
WFT-PROP-35	0	100.5	164.3	90.7
WFT11669	0	100.2	164.3	91.1
WFT11610	0	100.1	164.3	91.2
WFT-F-1069	0	100.1	164.3	91.2
WFT11708	0	100.4	164.3	90.7
WFT22945	0	100.5	164.3	90.7
WCV15897	0	100.4	164.3	90.7
WFT-PROP-17	3.7	106.5	164.9	83
WFT-PROP-36	0	108.5	164.9	80.1
				47.80
				79.59
				92.00

ID	Total Demand (L/s)	Hydrant Available Flow (L/s)	Critical Node ID for Design Run	Critical Node Pressure at Available Flow (psi)	Critical Node Pressure at Fire Demand (psi)	Critical Pressure for Design Run (psi)	Hydrant Design Flow (L/s)	Hydrant Pressure at Design Flow (psi)
WFT-PROP-14	285	821.4	WFT10699	26.7	59.5	28.4	799.5	30.9
WFT-PROP-16	283.7	730.2	WFT-PROP-17	27.6	68.9	28.4	723.6	29.2
WFT-PROP-17	283.7	392.7	WFT-PROP-17	28.4	51	28.4	392.7	28.5
WFT-PROP-18	296.7	378.2	WFT-PROP-18	28.4	48.1	28.4	378.2	28.5
WFT-PROP-20	296.7	444.2	WFT-PROP-18	27.1	56.2	28.4	438.3	29.8
WFT-PROP-29	304.7	447.6	WFT-PROP-29	28.4	56.1	28.4	447.6	28.4
WFT-PROP-3	286	710.5	WFT-PROP-3	28.4	60.1	28.4	710.5	28.4
WFT-PROP-30	286.3	606.5	WFT-PROP-30	28.4	45.7	28.4	606.5	28.4
WFT10333	285.2	558.3	WFT10333	28.4	55.8	28.4	558.4	28.4
WFT10562	290.2	804.7	WFT10333	27.1	60.8	28.4	789.1	30.1
WFT10699	285.2	527.1	WFT10699	28.4	53.6	28.4	527.1	28.4
WFT10836	290.2	800.4	WFT10699	26.4	59.2	28.4	775.6	31
WFT17984	304.7	647.6	WFT17984	28.4	45.2	28.4	647.6	28.4
WSV49343	304.7	273.4	WSV49343	28.4	16.3	28.4	273.4	28.4

Lowest pressure is just under at available flow psi is 16.3 at 280 L/s



APPLEBY		
MTSA ZONES		
ZONE 1		
	Number of People	ADD (L/s)
Population (Residential)	0	0.00
Employment	3535	7.57
Total	3535	7.57
ZONE 2		
Population (Residential)	0	0.00
Employment	2544	5.45
Total	2544	5.45
ZONE 3		
Population (Residential)	5351	13.01
Employment	6563	14.05
Total	11914	27.06
ZONE 4		
Population (Residential)	670	1.63
Employment	320	0.69
Total	990	2.31
ZONE 5		
Population (Residential)	2449	5.95
Employment	2935	6.28
Total	5384	12.24
ZONE 6		
Population (Residential)	0	0.00
Employment	1254	2.69
Total	1254	2.69
ZONE 7		
Population (Residential)	0	0.00
Employment	1027	2.20
Total	1027	2.20
	26648	**59.5**

Total Residential Population	**8470**
Total Employment	**18178**
Total intensification	**26648**

Flow Calculation

Res Flow= 210 L/cap/day
ICI Flow= 185 L/employee/day

Put into model

			Residential		**ICI**						
ZONE 1	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop					
	SMH8594	0.14	0.00	0.00	1.04	485.30	7.57				
	SMH8592	0.02	0.00	0.00	0.19	88.24					
	PMH3-4	0.14	0.00	0.00	1.04	485.30					
	PMH3-1	0.07	0.00	0.00	0.54	253.68					
	PMH5-1	0.09	0.00	0.00	0.66	308.83					
	SMH7349	0.10	0.00	0.00	0.74	347.43					
	SMH8600	0.26	0.00	0.00	1.96	915.46					
	SMH16352	0.18	0.00	0.00	1.39	650.75					
						3535.00					
ZONE 2	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop					
	PMH4-1	0.33	0.00	0.00	1.80	841.48	5.45				
	PMH3-12	0.47	0.00	0.00	2.58	1203.51					
	SMH19655	0.20	0.00	0.00	1.07	499.02					
ZONE 3	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop					
	SMH19670	0.25	3.25	1337.75	3.51	1640.75	5378.06				
	PMH7-1	0.25	3.25	1337.75	3.51	1640.75					
	PMH6-1	0.25	3.25	1337.75	3.51	1640.75			0	0.19	
	SMH19663	0.25	3.25	1337.75	3.51	1640.75	Move from node:	SMH19661	0	0.54	
									0	0.66	
ZONE 4	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop			1.63	0.69	
	SMH11129	1.00	1.63	670.00	0.69	320.00	672.31		0	0.74	
									0	0.81	
									0	1.04	
									0	1.04	
ZONE 5	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop			0	1.07	
	PMH2-1	1.00	5.95	2449.00	6.28	2935.00	2461.24		0	1.34	
									0	1.34	
									0	1.39	
									0	1.39	
ZONE 6	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop			0	1.39	
	PMH1-1	0.50	0.00	0.00	1.34	627.00	2.69		0	1.8	
	PMH1-4	0.50	0.00	0.00	1.34	627.00			0	1.96	
									0	2.58	
									3.25	3.51	
									3.25	3.51	
ZONE 7	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop			3.25	3.51	
	SMH8586	0.63	0.00	0.00	1.39	650.23	2.20		3.25	3.51	
	SMH10861	0.37	0.00	0.00	0.81	376.77			5.95	6.28	
									59.48	20.58	38.9

ID (Char)	DIAMETER (Num)	RIM_ELEV (Num)	HEADLOSS (Num)	LOAD1 (Num)	TYPE1 (Num)	PATTERN1 (Char)	COVERAGE1 (Num)	LOAD2 (Num)	TYPE2 (Num)	PATTERN2 (Char)	COVERAGE2 (Num)	LOAD3 (Num)	TYPE3 (Num)	PATTERN3 (Char)	COVERAGE3 (Num)	LOAD4 (Num)	TYPE4 (Num)	PATTERN4 (Char)	COVERAGE4 (Num)	LOAD5 (Num)	TYPE5 (Num)	PATTERN5 (Char)	COVERAGE5 (Num)	LOAD6 (Num)	TYPE6 (Num)	PATTERN6 (Char)	COVERAGE6 (Num)	LOAD7 (Num)	TYPE7 (Num)	PATTERN7 (Char)	COVERAGE7 (Num)	LOAD8 (Num)	TYPE8 (Num)	PATTERN8 (Char)	COVERAGE8 (Num)	LOAD9 (Num)	TYPE9 (Num)
PMH1-1	1.2	107.5	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0	0: Unpeakable		0	1.34	2: Peakable Coverage
SMH8602	1.2	102.337			2: Peakable Coverage			0.156269	2: Peakable Coverage		168	0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SMH8601	1.2	108.888			2: Peakable Coverage			0.037332	2: Peakable Coverage		68	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
PMH1-4	1.2	106.5	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0	0: Unpeakable		0	1.34	2: Peakable Coverage
PMH1-5	1.2	106.5	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable
SMH8600	1.2	109.318	0	0	2: Peakable Coverage		0	0.034127	2: Peakable Coverage		70	0.491	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0	0: Unpeakable		0	1.96	2: Peakable Coverage
SMH8599	1.2	108.606	0	0	2: Peakable Coverage		0	0.245363	2: Peakable Coverage		248	0.491	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage
SMH8598	1.2	108.749			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
SMH8597	1.2	108.69			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
SMH8596	1.2	108.328			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
SMH8595	1.2	109.686	0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0.491	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0.002	2: Peakable Coverage		0.91	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable
PMH3-1	1.2	117.5	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0.54	2: Peakable Coverage
SMH8594	1.2	110.956	0	0	2: Peakable Coverage		0	0.203068	2: Peakable Coverage		200	0.491	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0.002	2: Peakable Coverage		0.91	0	0: Unpeakable		0	0	0: Unpeakable		0	1.04	2: Peakable Coverage
SMH8593	1.2	113.742			2: Peakable Coverage			0.064568	2: Peakable Coverage		50	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.002	2: Peakable Coverage		0.91	0	0: Unpeakable		0	0			0	0	
PMH3-12	1.2	106.5	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	2.58	0: Unpeakable
SMH8592	1.2	115.956	0	0	2: Peakable Coverage		0	1.097305	2: Peakable Coverage		696	0.491	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0.002	2: Peakable Coverage		0.91	0	0: Unpeakable		0	0	0: Unpeakable		0	0.19	2: Peakable Coverage
SMH8591	1.2	114.349	0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0.491	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0.002	2: Peakable Coverage		0.91	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable
SMH8590	1.2	116.384			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.002	2: Peakable Coverage		0.91	0	0: Unpeakable		0	0			0	0	
SMH8589	1.2	115.695			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0			0	0	
SMH8588	1.2	116.626			2: Peakable Coverage			0.018183	2: Peakable Coverage		27	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0			0	0	
SMH8587	1.2	117.156			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0			0	0	
SMH8586	1.2	117.598	0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0.491	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0	0: Unpeakable		0	1.39	2: Peakable Coverage
PMH3-4	1.2	117.5	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	1.04	2: Peakable Coverage
SMH8585	1.2	117.788			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0			0	0	
SMH8584	1.2	117.892			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0			0	0	
SMH8583	1.2	118.291			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0			0	0	
SMH8581	1.2	118.676			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0			0	0	
SMH7353	1.2	109.229			2: Peakable Coverage			0.682356	2: Peakable Coverage		91	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.25	0	0: Unpeakable		0	0			0	0	
PMH4-1	1.2	106.5	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	1.8	0: Unpeakable
SMH7352	1.2	107.774			2: Peakable Coverage			0.102154	2: Peakable Coverage		150	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.25	0	0: Unpeakable		0	0			0	0	
PMH5-1	1.2	116.25	0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0.66	2: Peakable Coverage
SMH7351	1.2	110.444			2: Peakable Coverage			0.036494	2: Peakable Coverage		24	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.25	0	0: Unpeakable		0	0			0	0	
SMH7350	1.2	108.579			2: Peakable Coverage			0.026126	2: Peakable Coverage		61	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.002	2: Peakable Coverage		0.91	0	0: Unpeakable		0	0			0	0	
SMH7349	1.2	113.284	0	0	2: Peakable Coverage		0	0.055089	2: Peakable Coverage		119	0.491	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.25	0	0: Unpeakable		0	0	0: Unpeakable		0	0.74	2: Peakable Coverage
SMH7348	1.2	108.64			2: Peakable Coverage			0.104421	2: Peakable Coverage		275	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
SMH7347	1.2	110.272			2: Peakable Coverage			0.020101	2: Peakable Coverage		26	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.25	0	0: Unpeakable		0	0			0	0	
SMH7346	1.2	108.842			2: Peakable Coverage			0.06921	2: Peakable Coverage		77	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
SMH7345	1.2	113.869			2: Peakable Coverage			0.106408	2: Peakable Coverage		92	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.25	0	0: Unpeakable		0	0			0	0	
SMH7344	1.2	109.094			2: Peakable Coverage			0.043236	2: Peakable Coverage		67	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
SMH7342	1.2	114.934			2: Peakable Coverage			0.479888	2: Peakable Coverage		327	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.002	2: Peakable Coverage		0.91	0	0: Unpeakable		0	0			0	0	
SFT256750	1.2	101.092			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SFT327	1.2	104.302			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
SMH10660	1.2	118.431			2: Peakable Coverage			0.064553	2: Peakable Coverage		34	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0			0	0	
SMH10716	1.2	114.589			2: Peakable Coverage			0.05308	2: Peakable Coverage		204	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0			0	0	
SMH10743	1.2	115.063			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0			0	0	
SMH10777	1.2	114.707			2: Peakable Coverage			1.687306	2: Peakable Coverage		39	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0			0	0	
SMH10795	1.2	108.74			2: Peakable Coverage			0.193494	2: Peakable Coverage		448	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.51	0	0: Unpeakable		0	0			0	0	
SMH10799	1.2	113.904			2: Peakable Coverage			0.045793	2: Peakable Coverage		91	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0			0	0	
SMH10821	1.2	111.327			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0			0	0	
SMH10826	1.2	108.668			2: Peakable Coverage			0.043026	2: Peakable Coverage		88	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.51	0	0: Unpeakable		0	0			0	0	
SMH10843	1.2	108.72			2: Peakable Coverage			0.072811	2: Peakable Coverage		60	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.51	0	0: Unpeakable		0	0			0	0	
SMH10861	1.2	108.546	0	0	2: Peakable Coverage		0	0.168929	2: Peakable Coverage		23	0.491	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0	0: Unpeakable		0	0.81	2: Peakable Coverage
SMH10879	1.2	108.439			2: Peakable Coverage			0.038318	2: Peakable Coverage		98	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0			0	0	
SMH10899	1.2	108.203			2: Peakable Coverage			0.199224	2: Peakable Coverage		37	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.27	0	0: Unpeakable		0	0			0	0	
SMH10906	1.2	111.35			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.002	2: Peakable Coverage		0.91	0	0: Unpeakable		0	0			0	0	
SMH10935	1.2	108.61			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.51	0	0: Unpeakable		0	0			0	0	
SMH10955	1.2	107.793			2: Peakable Coverage			0.007126	2: Peakable Coverage		42	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
SMH10965	1.2	108.079			2: Peakable Coverage			0.178309	2: Peakable Coverage		49	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
SMH10988	1.2	105.506			2: Peakable Coverage			0.356238	2: Peakable Coverage		111	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.51	0	0: Unpeakable		0	0			0	0	
SMH10990	1.2	104.34			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
SMH11003	1.2	104.645			2: Peakable Coverage			29.621903	2: Peakable Coverage		296	0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
SMH11007	1.2	104.125			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.51	0	0: Unpeakable		0	0			0	0	
SMH11018	1.2	104.858			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
SMH11028	1.2	104.624			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.002	2: Peakable Coverage		0.86	0	0: Unpeakable		0	0			0	0	
SMH11046	1.2	101.871			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.002	2: Peakable Coverage		0.86	0	0: Unpeakable		0	0			0	0	
SMH11061	1.2	101.265			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SMH11064	1.2	101.444			2: Peakable Coverage			0.248919	2: Peakable Coverage		151	0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SMH11086	1.2	101.074			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SMH11102	1.2	100.83			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SMH11116	1.2	100.673			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SMH7341	1.2	115.545			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.002	2: Peakable Coverage		0.91	0	0: Unpeakable		0	0			0	0	
SMH11161	1.2	98.944	0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0.491	0: Unpeakable		0	0	0: Unpeakable		0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable
SMH16352	1.2	115.825	0	0	2: Peakable Coverage		0	0.381771	2: Peakable Coverage		256	0.491	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.25	0	0: Unpeakable		0	0	0: Unpeakable		0	1.39	2: Peakable Coverage
SMH16594	1.2	103.674			2: Peakable Coverage			0.016059	2: Peakable Coverage		230	0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SMH16595	1.2	101.565			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SMH17975	1.2	98.758			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SMH17976	1.2	100.275		0.130891	2: Peakable Coverage		86		2: Peakable Coverage			0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SMH19651	1.2	98.7	0		2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0.001	2: Peakable Coverage		0.55	0	2: Peakable Coverage		0.05	0	0: Unpeakable		0	0			0	0	
SMH19652	1.2	100.155		0.021952	2: Peakable Coverage		16	0.379981	2: Peakable Coverage		90	0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SMH19653	1.2	100.417		0.199551	2: Peakable Coverage		147	0.020853	2: Peakable Coverage		22	0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SMH19654	1.2	107.088			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.25	0	0: Unpeakable		0	0			0	0	
SMH19655	1.2	107.626	0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0.491	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.25	0	0: Unpeakable		0	0	0: Unpeakable		0	1.07	2: Peakable Coverage
SMH19656	1.2	107.373			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
SMH19659	1.2	106.843			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
SMH19660	1.2	105.258			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.11	0	0: Unpeakable		0	0			0	0	
SMH19661	1.2	104.251	0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0	0.491	0: Unpeakable		0	0	0: Unpeakable		0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.13	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable
SMH19662	1.2	100.777			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0.009	2: Peakable Coverage		3.78	0.001	2: Peakable Coverage		0.29	0	0: Unpeakable		0	0			0	0	
SMH7324	1.2	122.883			2: Peakable Coverage			0.040401	2: Peakable Coverage		83	0.548	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0.001	2: Peakable Coverage		0.24	0	0: Unpeakable		0	0			0	0	
SMH19664	1.2	102.867			2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0	2: Peakable Coverage		0	0	2: Peakable Coverage		0.13	0	0: Un

PATTERN9 (Char)	COVERAGE9 (Num)	LOAD10 (Num)	TYPE10 (Num)	PATTERN10 (Char)	COVERAGE10 (Num)	SWS_AREA (Num)	SWS_RUNOFF (Num)	SWS_SLOPE (Num)	SWS_LEN (Num)	HYETOGRAPH (Char)	HYDROGRAPH (Char)	SWS_PERIMP (Num)	SWS_PERV (Num)	SWS_IMPERV (Num)	SWS_INFIL1 (Num)	SWS_INFIL2 (Num)	SWS_DECAY (Num)	SWS_REGEN (Num)	SWS_TOC (Num)
	627	0			0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
	0	0			0														
	0	0			0														
	627	0			0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
	0	0			0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
	915.46	0			0	0	0	0	0			0	0	0	0	0	0	0	0
	0	0			0	0	0	0	0			0	0	0	0	0	0	0	0
	0	0			0														
	0	0			0														
	0	0			0														
	0	0			0	0	0	0	0			0	0	0	0	0	0	0	0
	253.68	0			0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
	485.3	0			0	0	0	0	0			0	0	0	0	0	0	0	0
	0	0			0														
	1,203.51	0			0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
	88.24	0			0	0	0	0	0			0	0	0	0	0	0	0	0
	0	0			0	0	0	0	0			0	0	0	0	0	0	0	0
	0	0			0														
	0	0			0														
	0	0			0														
	0	0			0														
	650.23	0			0	0	0	0	0			0	0	0	0	0	0	0	0
	485.3	0			0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
	0	0			0														
	0	0			0														
	0	0			0														
	0	0			0														
	0	0			0														
	841.48	0			0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
	0	0			0														
	308.83	0			0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
	0	0			0														
	0	0			0														
	347.43	0			0	0	0	0	0			0	0	0	0	0	0	0	0
	0	0			0													

Below is table for all manholes in the domain (aka service area)

ID	Rim Elevation (m)	Base Flow (L/s)	Total Flow (L/s)	Storm Flow (L/s)	Grade (m)	Status	Hydraulic Jump	Surcharge Depth (m)	Unfilled Depth (m)
SMH16352	115.825	2.263767	7.275262	0	112.656812	Not Full	No	-0.199188	3.168188
SMH25559	108.884	0.490999	0.490999	0	105.518967	Not Full	No	-0.231033	3.365033
SMH7321	122.709	0.64222	0.943762	0	120.444765	Not Full	No	-0.264235	2.264235
SMH7324	122.883	0.5894	0.724555	0	120.608335	Not Full	No	-0.274665	2.274665
SMH7341	115.545	0.492999	0.499947	0	111.923485	Not Full	No	-0.194515	3.621515
SMH7342	114.934	0.972886	2.448277	0	110.713935	Not Full	No	-0.188065	4.220065
SMH7344	109.094	0.534235	0.676364	0	104.167956	Not Full	No	-0.228044	4.926044
SMH7345	113.869	0.598407	0.947804	0	109.033668	Not Full	No	-0.188332	4.835332
SMH7346	108.842	0.560209	0.786729	0	103.661717	Not Full	No	-0.234283	5.180283
SMH7347	110.272	0.5121	0.583079	0	106.284869	Not Full	No	-0.164131	3.987131
SMH7348	108.64	0.59542	0.918533	0	102.637152	Not Full	Yes	-0.453848	6.002848
SMH7349	113.284	1.287087	3.666949	0	109.306211	Not Full	No	-0.217789	3.977789
SMH7350	108.579	0.519125	0.611801	0	102.115826	Not Full	Yes	-0.417174	6.463174
SMH7351	110.444	0.528493	0.654804	0	107.337309	Not Full	No	-0.214691	3.106691
SMH8592	115.956	1.780302	5.474514	0	111.717875	Not Full	No	-0.274125	4.238125
SMH8593	113.742	0.557567	0.778114	0	100.56768	Not Full	Yes	-0.23232	13.17432
SMH8594	110.956	1.736065	5.346164	0	100.44743	Not Full	No	-0.19357	10.50857
SMH8595	109.686	0.492999	0.499947	0	100.31941	Not Full	No	-0.19259	9.36659
SMH8598	108.749	0.490999	0.490999	0	100.339772	Not Full	No	-0.217228	8.409228
SMH8599	108.606	0.736362	1.500052	0	100.588564	Not Full	No	-0.213436	8.017436
SMH8600	109.318	2.485123	8.076829	0	105.929535	Not Full	No	-0.226465	3.388465
SMH8601	108.888	0.528331	0.650996	0	104.761053	Not Full	No	-0.234947	4.126947
PMH3-11	109	0	0	0	104.460469	Not Full	No	-0.247531	4.539531
PMH3-2	118	0	0	0	113.946133	Not Full	No	-0.253867	4.053867
PMH3-3	117	0	0	0	113.655804	Not Full	No	-0.254196	3.344196
PMH3-4	117.5	1.039998	4.140085	0	113.377126	Not Full	No	-0.223874	4.122874
PMH3-5	117	0	0	0	113.260227	Not Full	No	-0.223773	3.739773
PMH3-6	116	0	0	0	112.969213	Not Full	No	-0.223787	3.030787
PMH3-7	116	0	0	0	112.669401	Not Full	No	-0.223599	3.330599
PMH3-8	116	0	0	0	112.616254	Not Full	No	-0.223746	3.383746
PMH3-9	116	0	0	0	112.555218	Not Full	No	-0.223782	3.444782
PMH3-12	106.5	2.579996	2.579996	0	103.159597	Not Full	Yes	-0.225403	3.340403
PMH3-13	106	0	0	0	102.665286	Not Full	No	-0.290714	3.334714
PMH3-14	106.75	0	0	0	102.407286	Not Full	No	-0.290714	4.342714
PMH3-15	107	0	0	0	102.107091	Not Full	No	-0.290909	4.892909
PMH3-16	106.75	0	0	0	102.023297	Not Full	No	-0.290703	4.726703
PMH5-1	116.25	0.659999	2.688213	0	113.600652	Not Full	No	-0.249348	2.649348
PMH5-2	118	0	0	0	113.300629	Not Full	No	-0.249371	4.699371
PMH3-1	117.5	0.539999	2.218629	0	114.539024	Not Full	No	-0.260976	2.960976
PMH3-10	113.5	0	0	0	108.806141	Not Full	No	-0.248859	4.693859
SMH19655	107.626	1.561997	4.747738	0	100.062167	Not Full	Yes	-0.662833	7.563833
SMH7353	109.229	1.174354	3.398157	0	105.97773	Not Full	No	-0.19627	3.25127
SMH19654	107.088	0.491999	0.495485	0	99.598117	Not Full	No	-0.660883	7.489883
SMH19656	107.373	0.490999	0.490999	0	99.225431	Not Full	No	-0.661569	8.147569
SMH7352	107.774	0.594153	0.923296	0	101.725434	Not Full	No	-0.417566	6.048566
SMH19659	106.843	0.490999	0.490999	0	98.908638	Not Full	No	-0.655362	7.934362
PMH3-17	107	0	0	0	101.74728	Not Full	No	-0.29072	5.25272
SMH19660	105.258	0.490999	0.490999	0	98.259978	Not Full	No	-0.673022	6.998022
SMH19661	104.251	0.490999	0.490999	0	97.792281	Not Full	No	-0.655719	6.458719
SMH19665	103.462	0.490999	0.490999	0	97.352578	Not Full	No	-0.657422	6.109422
SMH19663	101.816	7.250988	23.77956	0	96.572872	Not Full	No	-0.644128	5.243128
SMH19664	102.867	0.490999	0.490999	0	96.95772	Not Full	No	-0.65528	5.90928
SMH19653	100.417	0.721403	1.451846	0	95.931521	Not Full	No	-0.647479	4.485479
SMH19662	100.777	0.500999	0.53545	0	96.117541	Not Full	Yes	-0.639459	4.659459
SMH8602	102.337	0.657268	1.18453	0	98.600967	Not Full	No	-0.274033	3.736033
SMH8603	101.658	0.515983	0.59957	0	97.706499	Not Full	No	-0.268501	3.951501
SMH19666	100.076	0.500999	0.53545	0	95.653558	Not Full	No	-0.643442	4.422442
SMH11061	101.265	0.500999	0.53545	0	95.937469	Not Full	No	0.793469	5.327531
SMH11064	101.444	0.749918	1.574914	0	95.937416	Not Full	Yes	0.802416	5.506584
SMH16594	103.674	0.517058	0.598423	0	96.077364	Not Full	No	-0.278636	7.596636
SMH16595	101.565	0.500999	0.53545	0	95.780176	Not Full	No	-0.269824	5.784824
SMH17976	100.275	0.63189	1.090592	0	94.752663	Not Full	No	-0.623337	5.522337
SMH19668	100.399	0.935993	2.305598	0	93.75077	Not Full	Yes	-0.73623	6.64823
SMH19669	100.354	0.964233	2.369415	0	94.29357	Not Full	No	-0.62243	6.06043
SMH19670	100.514	7.622822	24.870238	0	95.213432	Not Full	No	-0.622568	5.300568
PMH7-1	101	6.759989	23.28856	0	98.064755	Not Full	No	-0.235245	2.935245
PMH4-1	106.5	1.799997	1.799997	0	103.533465	Not Full	No	-0.266535	2.966535
PMH7-2	102	0	0	0	97.765133	Not Full	No	-0.234867	4.234867
PMH7-3	102.75	0	0	0	97.448413	Not Full	No	-0.251587	5.301587
PMH6-1	105	6.759989	23.28856	0	102.100214	Not Full	No	-0.199786	2.899786

Below is table for loading manholes

Proposed Manhole

ID	Rim Elevation (m)	Base Flow (L/s)	Total Flow (L/s)	Storm Flow (L/s)	Grade (m)	Status	Hydraulic Jump	Surcharge Depth (m)	Unfilled Depth (m)
SMH11129	100.15	2.820995	9.348861	0	97.098956	Not Full	No	-0.228044	3.051044
PMH7-1	101	6.759989	23.28856	0	98.064755	Not Full	No	-0.235245	2.935245
PMH6-1	105	6.759989	23.28856	0	102.100214	Not Full	No	-0.199786	2.899786
SMH19670	100.514	7.622822	24.870238	0	95.213432	Not Full	No	-0.622568	5.300568
SMH19663	101.816	7.250988	23.77956	0	96.572872	Not Full	No	-0.644128	5.243128
SMH19655	107.626	1.561997	4.747738	0	100.062167	Not Full	Yes	-0.662833	7.563833
SMH7349	113.284	1.287087	3.666949	0	109.306211	Not Full	No	-0.217789	3.977789
SMH16352	115.825	2.263767	7.275262	0	112.656812	Not Full	No	-0.199188	3.168188
PMH5-1	116.25	0.659999	2.688213	0	113.600652	Not Full	No	-0.249348	2.649348
PMH3-1	117.5	0.539999	2.218629	0	114.539024	Not Full	No	-0.260976	2.960976
PMH3-4	117.5	1.039998	4.140085	0	113.377126	Not Full	No	-0.223874	4.122874
SMH8600	109.318	2.485123	8.076829	0	105.929535	Not Full	No	-0.226465	3.388465
PMH3-12	106.5	2.579996	2.579996	0	103.159597	Not Full	Yes	-0.225403	3.340403
PMH4-1	106.5	1.799997	1.799997	0	103.533465	Not Full	No	-0.266535	2.966535
SMH8594	110.956	1.736065	5.346164	0	100.44743	Not Full	No	-0.19357	10.50857
SMH8592	115.956	1.780302	5.474514	0	111.717875	Not Full	No	-0.274125	4.238125
SMH8586	117.598	1.881997	5.933557	0	108.104429	Not Full	No	-0.243571	9.493571
SMH10861	108.546	1.470927	4.432399	0	100.033563	Not Full	No	-0.173437	8.512438
PMH1-4	106.5	1.339998	5.254986	0	103.016374	Not Full	No	-0.284626	3.483626
PMH1-1	107.5	1.339998	5.254986	0	103.783897	Not Full	No	-0.316103	3.716103
PMH2-1	101.75	12.22998	39.320229	0	98.862523	Not Full	No	-0.187477	2.887477

PMH6-2	104	0	0	0	99.79925	Not Full	No	-0.19975	4.20075
PMH6-3	101	0	0	0	98.301269	Not Full	No	-0.199731	2.698731
SFT327	104.302	0.490999	0.490999	0	98.076506	Not Full	No	-0.280494	6.225494
SMH10899	108.203	0.691223	1.359741	0	99.683902	Not Full	No	-0.178098	8.519098
SMH10906	111.35	0.492999	0.499947	0	101.402213	Not Full	No	-0.243787	9.947787
SMH10935	108.61	0.491999	0.49548	0	99.485133	Not Full	Yes	-0.125867	9.124867
SMH10955	107.793	0.498125	0.521851	0	99.154428	Not Full	No	-0.183572	8.638572
SMH10965	108.079	0.669308	1.260663	0	99.702943	Not Full	No	-0.132057	8.376057
SMH10988	105.506	0.848237	2.002229	0	97.725768	Not Full	No	-0.078232	7.780232
SMH10990	104.34	0.490999	0.490999	0	97.814893	Not Full	Yes	-0.222107	6.525107
SMH11003	104.645	30.112853	121.376186	0	98.07648	Not Full	No	0.04448	6.56852
SMH11007	104.125	0.491999	0.49548	0	97.080218	Not Full	No	-0.104782	7.044782
SMH11018	104.858	0.490999	0.490999	0	98.076499	Not Full	No	-0.198501	6.781501
SMH8596	108.328	0.490999	0.490999	0	99.957691	Not Full	No	-0.132309	8.370309
SMH8597	108.69	0.490999	0.490999	0	100.180296	Not Full	Yes	-0.149704	8.509704
PMH1-6	106.25	0	0	0	102.7135	Not Full	No	-0.2845	3.5365
PMH4-2	105.75	0	0	0	102.792693	Not Full	No	-0.258307	2.957307
SMH11028	104.624	0.492999	0.499948	0	97.034865	Not Full	No	0.676865	7.589135
SMH11046	101.871	0.492999	0.499948	0	96.447281	Not Full	Yes	0.870281	5.423719
PMH5-4	116.5	0	0	0	112.859638	Not Full	No	-0.249362	3.640362
PMH5-3	117	0	0	0	113.00072	Not Full	No	-0.24928	3.99928
SMH8587	117.156	0.491999	0.495485	0	107.551525	Not Full	No	-0.230475	9.604475
SMH8588	116.626	0.510182	0.574661	0	107.13237	Not Full	No	-0.23063	9.49363
SMH8589	115.695	0.491999	0.495485	0	106.700489	Not Full	Yes	-0.111511	8.994511
SMH8590	116.384	0.492999	0.499947	0	106.463663	Not Full	No	-0.248337	9.920337
SMH8591	114.349	0.492999	0.499947	0	104.712658	Not Full	No	-0.250342	9.636342
SMH8584	117.892	0.491999	0.495485	0	108.437461	Not Full	No	-0.161539	9.454539
SMH8585	117.788	0.491999	0.495485	0	108.227873	Not Full	Yes	-0.143127	9.560127
SMH8586	117.598	1.881997	5.933557	0	108.104429	Not Full	No	-0.243571	9.493571
SMH10660	118.431	0.556552	0.775839	0	116.123282	Not Full	No	-0.173718	2.307718
SMH8581	118.676	0.491999	0.495485	0	115.733927	Not Full	No	-0.184073	2.942073
SMH8583	118.291	0.491999	0.495485	0	108.840351	Not Full	No	-0.165649	9.450649
SMH10861	108.546	1.470927	4.432399	0	100.033563	Not Full	No	-0.173437	8.512438
SMH10879	108.439	0.530317	0.657929	0	99.88937	Not Full	No	-0.18663	8.54963
SMH10826	108.668	0.535025	0.678449	0	100.575477	Not Full	No	-0.214523	8.092523
SMH10843	108.72	0.56481	0.808182	0	100.284147	Not Full	Yes	-0.202853	8.435853
SMH10795	108.74	0.685493	1.268594	0	100.889413	Not Full	No	-0.217587	7.850587
SMH10799	113.904	0.537792	0.690066	0	102.677196	Not Full	No	-0.189804	11.226804
SMH10821	111.327	0.491999	0.495485	0	101.364407	Not Full	No	-0.185593	9.962593
SMH10743	115.063	0.491999	0.495485	0	103.643214	Not Full	No	-0.225786	11.419786
SMH10777	114.707	2.179302	7.809437	0	103.123805	Not Full	No	-0.173195	11.583195
SMH22952	114.829	0.491999	0.495485	0	103.381878	Not Full	No	-0.222122	11.447122
SMH22954	114.708	0.491999	0.495485	0	103.213144	Not Full	No	-0.216856	11.494856
SMH10716	114.589	0.545079	0.715143	0	111.989038	Not Full	No	-0.238962	2.599962
PMH1-4	106.5	1.339998	5.254986	0	103.016374	Not Full	No	-0.284626	3.483626
PMH1-5	106.5	0	0	0	102.972317	Not Full	No	-0.284683	3.527683
PMH1-3	106.5	0	0	0	103.291678	Not Full	No	-0.309322	3.208322
PMH1-1	107.5	1.339998	5.254986	0	103.783897	Not Full	No	-0.316103	3.716103
PMH1-2	106.5	0	0	0	103.579418	Not Full	No	-0.321582	2.920582
PMH2-4	101.5	0	0	0	98.047454	Not Full	No	-0.187546	3.452546
PMH2-5	102.5	0	0	0	97.750637	Not Full	No	-0.187363	4.749363
PMH2-3	102.5	0	0	0	98.300592	Not Full	No	-0.187408	4.199408
PMH2-2	101.75	0	0	0	98.562454	Not Full	No	-0.187546	3.187546
PMH2-1	101.75	12.22998	39.320229	0	98.862523	Not Full	No	-0.187477	2.887477
SFT256750	101.092	0.500999	0.53545	0	94.924021	Not Full	No	0.751021	6.167979
SMH11086	101.074	0.500999	0.53545	0	98.446103	Not Full	No	-0.627897	2.627897
SMH11102	100.83	0.500999	0.53545	0	94.71031	Not Full	Yes	0.84131	6.11969
SMH11116	100.673	0.500999	0.53545	0	97.809463	Not Full	No	-0.285537	2.863537
SMH11129	100.15	2.820995	9.348861	0	97.098956	Not Full	No	-0.228044	3.051044
SMH19652	100.155	0.902932	2.234271	0	93.667333	Not Full	No	-0.304667	6.487667
SMH19667	100.068	0.556906	0.776987	0	93.675246	Not Full	No	-0.573754	6.392754
SMH11161	98.944	0.500999	0.53545	0	96.525295	Not Full	No	0.057295	2.418705
SMH17975	98.758	0.500999	0.53545	0	96.519537	Not Full	No	-0.238463	2.238463
SMH19651	98.7	0.491999	0.495479	0	93.629703	Not Full	Yes	0.071703	5.070297

Gravity main results for all pipes in domain

ID	From ID	To ID	Diameter (mm)	Length (m)	Slope	Total Flow (L/s)	Unpeakable Flow (L/s)	Peakable Flow (L/s)	Coverage Flow (L/s)	Infiltration Flow (L/s)	Storm Flow (L/s)	Flow Type	Velocity (m/s)	d/D	q/Q	Water Depth (m)	Critical Depth (m)	Froude Number	Full Flow (L/s)	Coverage Count	Backwater Adjustment	Adjusted Depth (m)	Adjusted Velocity (m/s)
SMN6972	SMH7321	SMH7319	300	63.65098	0.003205	1.656126	1.095998	0	0.135622	0	0	Free Surface	0.347993	0.119217	0.03017	0.035765	0.030081	0.709987	54.89237	223.48	Yes	0.037241	0.328034
SMN6976	SMH7341	SMH7342	250	48.270074	0.02457	10.096432	0.981998	0	2.434767	0	0	Free Surface	1.245272	0.221939	0.108023	0.055485	0.079499	2.01221	93.465252	1,216.74	No	0.055485	1.245272
SMN6977	SMH7342	SMH7345	250	71.554175	0.023045	12.178019	1.472998	0	2.916654	0	0	Free Surface	1.285314	0.247742	0.134536	0.061935	0.087599	1.958241	90.518981	1,544.65	No	0.061935	1.285314
SMN6978	SMH7344	SMH7346	300	78.209187	0.006393	9.780624	1.963997	0	2.074692	0	0	Free Surface	0.750397	0.239853	0.126157	0.071956	0.074218	1.061949	77.527461	1,120.46	No	0.071956	0.750397
SMN6979	SMH7345	SMH7347	250	102.552426	0.026747	13.007295	1.963997	0	3.024062	0	0	Free Surface	1.381235	0.246674	0.133383	0.061668	0.090644	2.109277	97.518442	1,636.90	No	0.061668	1.381235
SMN6980	SMH7346	SMH7348	300	76.61658	0.010572	10.490719	2.454996	0	2.143901	0	0	Free Surface	0.915417	0.219055	0.105226	0.065717	0.076936	1.359751	99.696652	1,197.46	No	0.065717	0.915417
SMN6981	SMH7347	SMH7350	250	102.473251	0.008031	13.559752	2.454996	0	3.045163	0	0	Free Surface	0.908629	0.343475	0.253752	0.085869	0.092623	1.156885	53.436927	1,663.15	No	0.085869	0.908629
SMN6982	SMH7348	SMH7350	525	120.16152	0.004369	11.231877	2.945995	0	2.248322	0	0	Free Surface	0.639198	0.135529	0.039405	0.071152	0.068319	0.922744	285.040096	1,472.46	Yes	0.072989	0.615932
SMN7911	SMH8593	SMH8594	300	48.446647	0.003282	6.200463	0.981998	0	1.355871	0	0	Free Surface	0.518868	0.225601	0.111624	0.06768	0.05878	0.758734	55.547708	836.06	Yes	0.087055	0.3641
SMN7912	SMH8594	SMH8595	300	72.505739	0.001779	11.03123	1.472998	0	2.600937	0	0	Free Surface	0.491185	0.354767	0.269722	0.10643	0.078948	0.560545	40.898569	1,522.27	Yes	0.10692	0.488127
SMN7913	SMH8595	SMH8597	300	70.296181	0.001878	11.529088	1.963997	0	2.602937	0	0	Free Surface	0.506998	0.358032	0.274394	0.10741	0.08076	0.575587	42.016565	1,523.18	No	0.10741	0.506998
SMN7915	SMH8598	SMH8597	250	27.524727	0.008247	1.991051	0.981998	0	0.245363	0	0	Free Surface	0.52453	0.131088	0.036769	0.032772	0.034657	1.116344	54.149972	248	Yes	0.066534	0.189998
SMN11713	SMH8601	SMH7344	300	71.412101	0.008402	9.162674	1.472998	0	2.031456	0	0	Free Surface	0.811171	0.216843	0.103094	0.065053	0.071774	1.211422	88.876955	1,053.46	Yes	0.068504	0.753691
SMN14481	SMH7350	SMH7352	525	87.597682	0.003653	24.085143	5.89199	0	5.321611	0	0	Free Surface	0.752308	0.205383	0.092408	0.107826	0.10068	0.874095	260.637975	3,197.52	No	0.107826	0.752308
SMN14482	SMH7351	SMH7353	250	47.010637	0.028206	4.298238	0.981998	0	0.833582	0	0	Free Surface	1.015926	0.141235	0.042921	0.035309	0.05127	2.080422	100.14298	490.93	No	0.035309	1.015926
SMN18475	SMH7324	SMH7321	300	66.637815	0.002611	0.724555	0.547999	0	0.041401	0	0	Free Surface	0.252521	0.08445	0.014624	0.025335	0.019828	0.614641	49.546582	83.24	Yes	0.03055	0.191768
SMN18703	SMH8592	SMH8593	300	82.0608	0.136387	5.474514	0.490999	0	1.289303	0	0	Free Surface	1.849601	0.08625	0.015288	0.025875	0.055163	4.453805	358.084419	785.15	Yes	0.046778	0.778424
SMN18704	SMH8599	SMH8598	250	82.397813	0.002973	1.500052	0.490999	0	0.245363	0	0	Free Surface	0.337014	0.146255	0.046135	0.036564	0.030024	0.677763	32.514121	248	No	0.036564	0.337014
SMN20195	SMH16352	SMH7341	250	22.36068	0.031663	9.598486	0.490999	0	2.432767	0	0	Free Surface	1.342076	0.203247	0.090465	0.050812	0.077448	2.27222	106.101358	1,215.83	No	0.050812	1.342076
SMN20236	SMH7349	SMH7351	250	64.884513	0.030053	3.666949	0.490999	0	0.796088	0	0	Free Surface	0.99064	0.128845	0.035474	0.032211	0.047278	2.127216	103.369782	466.68	No	0.032211	0.99064
SMN27357	SMH8600	SMH25559	300	101.542784	0.003998	8.076829	0.490999	0	1.994124	0	0	Free Surface	0.600952	0.245117	0.131736	0.073535	0.067283	0.840606	61.310934	985.46	No	0.073535	0.600952
SMN27358	SMH25559	SMH8601	300	29.946555	0.00581	8.567829	0.981998	0	1.994124	0	0	Free Surface	0.698067	0.229889	0.115923	0.068967	0.069347	1.010573	73.909563	985.46	No	0.068967	0.698067
PSP5-2	PMH5-2	PMH5-3	300	149.792054	0.002003	2.688213	0	0	0.659999	0	0	Free Surface	0.340936	0.168762	0.061951	0.050629	0.038434	0.580988	43.392601	308.83	Yes	0.050674	0.340492
PSP5-4	PMH5-4	SMH16352	300	82.953652	0.002001	2.688213	0	0	0.659999	0	0	Free Surface	0.340847	0.168793	0.061977	0.050638	0.038434	0.580782	43.374625	308.83	No	0.050638	0.340847
PSP5-1_	PMH5-1	PMH5-2	300	150.078699	0.001999	2.688213	0	0	0.659999	0	0	Free Surface	0.340714	0.168839	0.06201	0.050652	0.038434	0.580472	43.351142	308.83	No	0.050652	0.340714
PSP3-1	PMH3-1	PMH3-2	300	150	0.004	2.218629	0	0	0.539999	0	0	Free Surface	0.410478	0.130081	0.036179	0.039024	0.034874	0.800674	61.323854	253.68	Yes	0.042579	0.361576
PSP3-2	PMH3-2	PMH3-3	300	149.537803	0.001999	2.218629	0	0	0.539999	0	0	Free Surface	0.321869	0.153778	0.051171	0.046133	0.034874	0.575719	43.357032	253.68	Yes	0.050469	0.282669
PSP3-3	PMH3-3	PMH3-4	300	150	0.00206	2.218629	0	0	0.539999	0	0	Free Surface	0.32523	0.152679	0.050414	0.045804	0.034874	0.583902	44.008144	253.68	Yes	0.060965	0.215471
PSP3-4	PMH3-4	PMH3-5	300	58.237661	0.002009	6.131768	0	0	1.579997	0	0	Free Surface	0.434486	0.253754	0.14109	0.076126	0.058447	0.596533	43.460069	738.98	Yes	0.076176	0.434082
PSP3-5	PMH3-5	PMH3-6	300	145.606777	0.001999	6.131768	0	0	1.579997	0	0	Free Surface	0.433678	0.254089	0.141459	0.076227	0.058447	0.595	43.346611	738.98	No	0.076227	0.433678
PSP3-6	PMH3-6	PMH3-7	300	150	0.002	6.131768	0	0	1.579997	0	0	Free Surface	0.433788	0.254044	0.141407	0.076213	0.058447	0.595208	43.362513	738.98	Yes	0.076307	0.433037
PSP3-7	PMH3-7	PMH3-8	300	26.753934	0.001981	6.131768	0	0	1.579997	0	0	Free Surface	0.432288	0.254669	0.142083	0.076401	0.058447	0.592364	43.156236	738.98	No	0.076401	0.432288
PSP3-8	PMH3-8	PMH3-9	300	30.56517	0.001996	6.131768	0	0	1.579997	0	0	Free Surface	0.433458	0.254181	0.141558	0.076254	0.058447	0.594582	43.31626	738.98	No	0.076254	0.433458
PSP3-9	PMH3-9	PMH3-10	300	112.036663	0.001999	6.131768	0	0	1.579997	0	0	Free Surface	0.433752	0.254059	0.14143	0.076218	0.058447	0.595139	43.355418	738.98	No	0.076218	0.433752
PSP3-10	PMH3-10	PMH3-11	300	134.686823	0.010001	6.131768	0	0	1.579997	0	0	Free Surface	0.766447	0.170471	0.063236	0.051141	0.058447	1.299244	96.96627	738.98	No	0.051141	0.766447
PSP3-11	PMH3-11	PMH3-12	300	146.957997	0.009003	6.131768	0	0	1.579997	0	0	Free Surface	0.738651	0.174896	0.06665	0.052469	0.058447	1.235457	91.998926	738.98	Yes	0.063533	0.561443
PSP3-12	PMH3-12	PMH3-13	300	97.61709	0.004395	8.711764	2.579996	0	1.579997	0	0	Free Surface	0.635208	0.248657	0.135532	0.074597	0.069942	0.8817	64.278416	738.98	No	0.074597	0.635208
PSP3-13	PMH3-13	PMH3-14	375	128.989313	0.002	8.711764	2.579996	0	1.579997	0	0	Free Surface	0.469049	0.224762	0.110801	0.084286	0.065753	0.614693	78.625309	738.98	No	0.084286	0.469049
PSP3-14	PMH3-14	PMH3-15	375	150	0.002	8.711764	2.579996	0	1.579997	0	0	Free Surface	0.469049	0.224762	0.110806	0.084286	0.065753	0.614693	78.622052	738.98	No	0.084286	0.469049
PSP3-15	PMH3-15	PMH3-16	375	41.608021	0.002019	8.711764	2.579996	0	1.579997	0	0	Free Surface	0.470591	0.224243	0.110287	0.084091	0.065753	0.617475	78.991524	738.98	Yes	0.084194	0.469774
PSP3-16	PMH3-16	PMH3-17	375	138.057634	0.001999	8.711764	2.579996	0	1.579997	0	0	Free Surface	0.468958	0.224792	0.110829	0.084297	0.065753	0.61453	78.60564	738.98	No	0.084297	0.468958
SMN14488	SMH7353	SMH19655	250	90.092659	0.015218	7.448695	1.472998	0	1.516936	0	0	Free Surface	0.961705	0.21492	0.101265	0.05373	0.06796	1.580773	73.556464	582.18	No	0.05373	0.961705
SMN14490	SMH19655	SMH19654	900	103.29944	0.003272	157.838919	66.068887	0	33.615612	0	0	Free Surface	1.178417	0.263519	0.152008	0.237167	0.226647	0.915241	1,038.36	16,749.11	No	0.237167	1.178417
SMN14493	SMH19657	SMH19655	900	74.784874	0.003423	149.715932	64.10489	0	31.027677	0	0	Free Surface	1.179533	0.253632	0.140967	0.228268	0.220584	0.935236	1,062.07	15,667.66	No	0.228268	1.179533
SMN14486	SMH7352	SMH19654	525	84.481977	0.003942	24.835324	6.382989	0	5.424765	0	0	Free Surface	0.779793	0.204636	0.091732	0.107434	0.102268	0.907779	270.737923	3,347.77	No	0.107434	0.779793
SMN14491	SMH19654	SMH19656	900	86.152836	0.003958	176.416697	72.942875	0	39.041377	0	0	Free Surface	1.302065	0.265686	0.154475	0.239117	0.23998	1.006798	1,142.04	20,097.13	No	0.239117	1.302065
SMN16879	SMH19656	SMH19659	900	65.102922	0.004024	176.907697	73.433875	0	39.041377	0	0	Free Surface	1.310969	0.264923	0.153623	0.238431	0.240324	1.015264	1,151.57	20,097.13	No	0.238431	1.310969
SMN16880	SMH19659	SMH19660	900	122.055417	0.003916	183.526934	76.50487	0	40.621374	0	0	Free Surface	1.31189	0.27182	0.161557	0.244638	0.244907	1.001905	1,135.99	20,836.11	No	0.244638	1.31189
PSP3-17	PMH3-17	SMH19659	375	45.981699	0.002001	8.711764	2.579996	0	1.579997	0	0	Free Surface	0.469094	0.224747	0.110784	0.08428	0.065753	0.614775	78.637697	738.98	No	0.08428	0.469094
SMN14500	SMH19660	SMH19661	900	77.13122	0.00529	184.017933	76.995869	0	40.621374	0	0	Free Surface	1.46141	0.252197	0.139382	0.226978	0.245244	1.162279	1,320.24	20,836.11	No	0.226978	1.46141
SMN14501	SMH19661	SMH19665	900	90.96424	0.00398	184.508932	77.486868	0	40.621374	0	0	Free Surface	1.32161	0.271423	0.161124	0.244281	0.24558	1.01013	1,145.14	20,836.11	No	0.244281	1.32161
SMN14502	SMH19665	SMH19664	900	81.700557	0.004113	184.999931	77.977867	0	40.621374	0	0	Free Surface	1.338178	0.269531	0.158919	0.242578	0.245916	1.026687	1,164.11	20,836.11	No	0.242578	1.338178
SMN14503	SMH19664	SMH19663	900	83.879484	0.003994	185.49093	78.468866	0	40.621374	0	0	Free Surface	1.325303	0.271912	0.161692	0.24472	0.246252	1.011964	1,147.18	20,836.11	No	0.24472	1.325303
SMN14504	SMH19663	SMH19662	900	111.380173	0.003941	201.041396	78.959865	0	47.381363	0	0	Free Surface	1.349684	0.284302	0.176408	0.255872	0.256672	1.00585	1,139.64	23,814.61	No	0.255872	1.349684
SMN14499	SMH8603	SMH19653	300	78.25034	0.006262	1.774401	0.981998	0	0.191253	0	0	Free Surface	0.449031	0.104996	0.023126	0.031499	0.031148	0.977862	76.728087	206.14	No	0.031499	0.449031
SMN14505	SMH19662	SMH19653	900	48.21375	0.003692	201.554653	79.450865	0	47.391363	0	0	Free Surface	1.319456	0.28949	0.182738	0.260541	0.25701	0.973638	1,102.97	23,818.68	No	0.260541	1.319456
SMN16881	SMH19653	SMH19666	900	61.207329	0.004264	203.787016	80.923862	0	47.813019	0	0	Free Surface	1.393519	0.280579	0.171917	0.252521	0.258472	1.046023	1,185.38	24,197.89	No	0.252521	1.393519
SMN20551	SMH8602	SMH8603	300	57.245047	0.006289	1.18453	0.490999	0	0.166269	0	0	Free Surface	0.398125	0.086555	0.015405	0.025967	0.0254	0.956953	76.892103	172.07	No	0.025967	0.398125
SMN16882	SMH19666	SMH19670	900	108.995968	0.004028	204.30023	81.414861	0	47.823019	0	0	Free Surface	1.366446	0.285065	0.177339	0.256558	0.258807	1.016851	1,152.04	24,201.96	No	0.256558	1.366446
SMN14509	SMH19670	SMH17976	900	111.286368	0.003945	235.320679	82.887859	0	61.75089	0	0	Free Surface	1.411871	0.308258	0.2064	0.277432	0.278383	1.006416	1,140.12	30,619.17	No	0.277432	1.411871
SMN14510	SMH19669	SMH19668	900	109.622151	0.004005	237.302301	83.869857	0	62.365015	0	0	Free Surface	1.422786	0.308411	0.206576	0.27757	0.279592	1.013919	1,148.74	31,220.31	No	0.27757	1.422786
SMN9682	SMH11046	SMH11064	375	67.224556	0.006575	152.67396	23.403961	0	40.51153	0	0	Pressurized	1.382335	1	1.070997	0.375	0.27837	0.720547	142.553059	5,711.82	Yes	0.375	1.382335
SMN14507	SMH16595	SMH19670	300	67.024822	0.003044	1.130541	0.981998	0	0.036059	0	0	Free Surface	0.304681	0.100586	0.021134	0.030176	0.024809	0.678249	53.492968	238.14	No	0.030176	0.304681
SMN14508	SMH17976	SMH19669	900	109.354284	0.004014	236.082001	83.378858	0	61.891781	0	0	Free Surface	1.42189	0.307404	0.205263	0.276663	0.278848	1.015115	1,150.15	30,709.24	No	0.276663	1.42189
SMN16883	SMH19668	SMH19667	1,050.00	109.417271	0.002011	238.631698	84.360857	0	62.810009	0	0	Free Surface	1.098166	0.298828	0.194354	0.31377	0.268246	0.737265	1,227.82	31,521.38	Yes	0.386008	0.826471
SMN19144	SMH11061	SMH11064	200	19.906886	0.009243	0.53545	0.490999	0	0.01	0	0	Pressurized	0.379032	0.09053	0.016935	0.018106	0.018918	1.090546	31.617253	4.07	Yes	0.2	0.017044
SMN20237	SMH11064	SFT256750	375	84.649655	0.011364	191.813054	24.38596	0	59.770417	0	0	Pressurized	1.736707	1	1.023467	0.375	0.315879	0.905264	187.414987	14,233.46	Yes	0.375	1.736707
SMN20240	SMH16594	SMH16595	300	83.486526	0.003665	0.598423	0.490999	0	0.026059	0	0	Free Surface	0.268211	0.071213	0.010194	0.021364	0.018008	0.711983	58.701874	234.07	Yes	0.02577	0.203399
PSP4-1	PMH4-1	PMH4-2	300	149.834127	0.004999	1.799997	1.799997	0	0	0	0	Free Surface	0.416844	0.111549	0.026256	0.033465	0.031374	0.880012	68.554345	0	Yes	0.037579	0.351866
PSP2-5	PMH2-5	SMH11064	375	149.792771	0.001996	39.320229	0	0	12.22998	0	0	Free Surface	0.711353	0.500366	0.500607	0.187637	0.142664	0.591425	78.545181	5,384.00	No	0.187637	0.711353
PSP7-1	PMH7-1	PMH7-2	375	149.523635	0.002006	23.28856	0	0	6.759989	0	0	Free Surface	0.620782	0.372681	0.295738	0.139755	0.108788	0.616082	78.747193	2,978.50	Yes	0.139944	0.619651
PSP7-2	PMH7-2	PMH7-3	375	151.063486	0.001986	23.28856	0	0	6.759989	0	0	Free Surface	0.618524	0.373688	0.297257	0.140133	0.108788	0.612891	78.344814	2,978.50	No	0.140133	0.618524
PSP7-3	PMH7-3	SMH11064	375	93.283137	0.003205	23.28856	0	0	6.759989	0	0	Free Surface	0.735406	0.329102	0.23398	0.123413	0.108788	0.783089	99.532154	2,978.50	No	0.123413	0.735406
PSP6-1	PMH6-1	PMH6-2	300	150.732543	0.009958	23.28856	0	0	6.759989	0	0	Free Surface	1.125801	0.334045	0.240689	0.100214	0.116172	1.329148	96.757866	2,978.50	No	0.100214	1.125801
PSP6-2	PMH6-2	PMH6-3	300	150.636342	0.009944	23.28856	0	0	6.759989	0	0	Free Surface	1.125237	0.334167	0.240853	0.10025	0.116172	1.32821	96.691984	2,978.50	Yes	0.100259	1.125096
PSP6-3	PMH6-3	SMH19670	300	30.088359	0.009937	23.28856	0	0	6.759989	0	0	Free Surface	1.124955	0.334229	0.240939	0.100269	0.116172	1.327742	96.657552	2,978.50	No	0.100269	1.124955
SMN7914	SMH8597	SMH8596	250	51.689041	0.004643	13.765553	3.436994	0	2.848299	0	0	Free Surface	0.747789	0.401184	0.338798	0.100296	0.093351	0.870925	40.630597	1,771.18	Yes	0.108994	0.669751
SMN9560	SMH10879	SMH10899	300	60.959003	0.003511	17.435122	5.89199	0	3.124752	0	0	Free Surface	0.712675	0.377899	0.303485	0.11337	0.09997	0.784466	57.449652	1,431.73	Yes	0.117636	0.678148
SMN9575	SMH10899	SMH10935	300	81.691088	0.003073	18.639172	6.382989	0	3.324975	0	0	Free Surface	0.691274	0.406342	0.346799	0.121902	0.103488	0.729473	53.746349	1,469.00	Yes	0.148018	0.536401
SMN9577	SMH10906	SMH10935	300	82.562604	0.024648	11.677404	5.89199	0	1.487734	0	0	Free Surface	1.273917	0.187378	0.076711	0.056213	0.081293	2.055087	152.226395	716.39	Yes	0.115173	0.467286

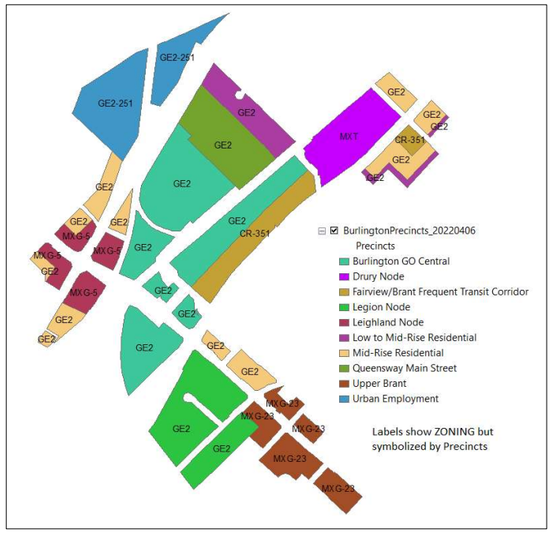
SMN9599	SMH10935	SMH10955	300	55.731992	0.004898	43.31473	17.184971	0	7.840317	0	0	Free Surface	1.017929	0.580444	0.638274	0.174133	0.160654	0.857109	67.862286	4,006.08	No	0.174133	1.017929
SMN9602	SMH10965	SMH10935	250	84.468282	0.003244	15.366969	4.418993	0	3.026608	0	0	Free Surface	0.674566	0.471771	0.452494	0.117943	0.098849	0.712739	33.960593	1,820.18	Yes	0.146038	0.516043
SMN9620	SMH10955	SMH10990	300	68.539339	0.020076	43.797614	17.675971	0	7.847443	0	0	Free Surface	1.727294	0.388092	0.318795	0.116428	0.16159	1.872273	137.384807	4,048.08	Yes	0.13466	1.424344
SMN9633	SMH10990	SMH10988	375	44.709405	0.005211	44.288613	18.16697	0	7.847443	0	0	Free Surface	1.046512	0.407715	0.348967	0.152893	0.151776	0.985796	126.913521	4,048.08	Yes	0.224831	0.64066
SMN9637	SMH11003	SMH10988	375	54.323386	0.004197	124.158181	3.272995	0	29.621854	0	0	Pressurized	1.124148	1	1.090114	0.375	0.248501	0.585966	113.894666	296	No	0.375	1.124148
SMN9639	SMH10988	SMH11007	375	78.257534	0.00791	151.191488	21.930964	0	40.50653	0	0	Free Surface	1.612807	0.791382	0.966976	0.296768	0.286481	0.928195	156.354946	5,709.59	No	0.296768	1.612807
SMN9650	SMH11018	SMH11003	375	61.218617	0.003969	0.981998	0.981998	0	0	0	0	Free Surface	0.310438	0.066681	0.008866	0.025005	0.021813	0.762095	110.761992	0	Yes	0.29799	0.010434
SMN9654	SMH11007	SMH11028	375	83.859942	0.009862	151.684196	22.421963	0	40.50753	0	0	Free Surface	1.780227	0.720581	0.868831	0.270218	0.286932	1.129334	174.584167	5,710.10	Yes	0.375	1.373373
SMN10043	SMH8591	SMH10906	300	88.45903	0.037498	11.179103	5.400991	0	1.485734	0	0	Free Surface	1.457976	0.165527	0.05954	0.049658	0.07949	2.50976	187.759144	715.48	Yes	0.052936	1.329592
SMN10044	SMH8596	SMH10965	250	90.664904	0.002813	14.256552	3.927993	0	2.848299	0	0	Free Surface	0.627553	0.470764	0.450835	0.117691	0.095067	0.663943	31.62258	1,771.18	Yes	0.117817	0.626686
SMN19135	SFT327	SMH11018	300	24.578236	0.006388	0.490999	0.490999	0	0	0	0	Free Surface	0.306434	0.056938	0.006336	0.017081	0.016303	0.911151	77.495042	0	Yes	0.098003	0.024474
PSP4-2	PMH4-2	SMH11003	300	150	0.002	1.799997	1.799997	0	0	0	0	Free Surface	0.302452	0.138977	0.04151	0.041693	0.031374	0.570137	43.362513	0	No	0.041693	0.302452
PSP1-5	PMH1-5	PMH1-6	375	129.277343	0.002003	10.008364	0	0	2.679996	0	0	Free Surface	0.488577	0.240845	0.127188	0.090317	0.07057	0.617063	78.689729	1,254.00	Yes	0.090408	0.487878
PSP1-6	PMH1-6	SMH10988	375	41.274689	0.001987	10.008364	0	0	2.679996	0	0	Free Surface	0.48718	0.241333	0.127723	0.0905	0.07057	0.614631	78.359995	1,254.00	No	0.0905	0.48718
SMN9671	SMH11028	SMH11046	375	77.976368	0.010016	152.179078	22.912962	0	40.50953	0	0	Pressurized	1.792852	0.718018	0.864931	0.269257	0.287382	1.141099	175.943568	5,710.96	Yes	0.375	1.377854
PSP5-3	PMH5-3	PMH5-4	300	70.923977	0.001988	2.688213	0	0	0.659999	0	0	Free Surface	0.340048	0.169067	0.06218	0.05072	0.038434	0.578929	43.23271	308.83	No	0.05072	0.340048
SMN7906	SMH8586	SMH8587	300	42.588057	0.01329	8.641638	2.945995	0	1.460551	0	0	Free Surface	0.937582	0.188095	0.077309	0.056429	0.069653	1.509476	111.779908	685.85	Yes	0.062977	0.801241
SMN7907	SMH8587	SMH8588	300	65.488782	0.006398	9.136394	3.436994	0	1.461551	0	0	Free Surface	0.735925	0.23175	0.117802	0.069525	0.071669	1.0608	77.557357	686.12	No	0.069525	0.735925
SMN7908	SMH8588	SMH8589	300	62.127743	0.007259	9.687752	3.927993	0	1.480734	0	0	Free Surface	0.78282	0.231232	0.117268	0.06937	0.073855	1.129749	82.612341	713.39	Yes	0.078929	0.652421
SMN7909	SMH8589	SMH8590	200	34.089079	0.005867	10.1825	4.418993	0	1.481734	0	0	Free Surface	0.759268	0.442444	0.404232	0.088489	0.085344	0.932818	25.189773	713.66	No	0.088489	0.759268
SMN7910	SMH8590	SMH8591	300	60.108236	0.029098	10.680802	4.909992	0	1.483734	0	0	Free Surface	1.315656	0.172211	0.064577	0.051663	0.077649	2.218433	165.396898	714.57	No	0.051663	1.315656
SMN7903	SMH8583	SMH8584	200	58.180753	0.006995	1.766449	1.472998	0	0.067553	0	0	Free Surface	0.49146	0.171753	0.064221	0.034351	0.034639	1.016348	27.505809	34.81	Yes	0.036406	0.45201
SMN7904	SMH8584	SMH8585	200	31.530282	0.007231	2.261753	1.963997	0	0.068553	0	0	Free Surface	0.534865	0.192307	0.080877	0.038461	0.03929	1.042432	27.965358	35.08	Yes	0.047667	0.393961
SMN7905	SMH8585	SMH8586	200	54.501901	0.002257	2.757055	2.454996	0	0.069553	0	0	Free Surface	0.374703	0.284363	0.176474	0.056873	0.043473	0.592303	15.622971	35.35	No	0.056873	0.374703
SMN7902	SMH8581	SMH8583	200	77.182009	0.089555	1.271144	0.981998	0	0.066553	0	0	Free Surface	1.086869	0.079636	0.012916	0.015927	0.029304	3.338333	98.414867	34.54	Yes	0.025139	0.556297
SMN19221	SMH10660	SMH8581	200	88.086987	0.004076	0.775839	0.490999	0	0.065553	0	0	Free Surface	0.318225	0.131409	0.036954	0.026282	0.022818	0.756258	20.99463	34.27	No	0.026282	0.318225
SMN9536	SMH10843	SMH10861	300	80.7572	0.003467	12.951117	4.909992	0	2.105507	0	0	Free Surface	0.653382	0.323822	0.22684	0.097147	0.085743	0.784927	57.093654	933.42	Yes	0.111855	0.539088
SMN9546	SMH10861	SMH10879	300	59.665736	0.002196	16.866274	5.400991	0	3.085434	0	0	Free Surface	0.595126	0.421875	0.371233	0.126562	0.098269	0.61425	45.433123	1,333.46	No	0.126562	0.595126
SMN9521	SMH10821	SMH10843	250	72.876784	0.015272	10.712021	3.436994	0	1.793176	0	0	Free Surface	1.069937	0.257629	0.145369	0.064407	0.081969	1.596081	73.688514	335.89	Yes	0.080777	0.780573
SMN9523	SMH10826	SMH10843	250	63.565013	0.005553	1.926076	0.981998	0	0.23852	0	0	Free Surface	0.452118	0.141907	0.043346	0.035477	0.034079	0.923581	44.434991	537.02	Yes	0.066312	0.184663
SMN19097	SMH10795	SMH10826	250	90.426766	0.003506	1.268594	0.490999	0	0.194494	0	0	Free Surface	0.339604	0.129654	0.035933	0.032413	0.027584	0.726886	35.304328	448.51	Yes	0.033945	0.31752
SMN9482	SMH10777	SMH10799	250	69.215009	0.006213	9.637325	2.454996	0	1.745383	0	0	Free Surface	0.752875	0.30722	0.205057	0.076805	0.07761	1.020155	46.998165	244.35	No	0.076805	0.752875
SMN9500	SMH10799	SMH10821	250	72.50382	0.018165	10.217243	2.945995	0	1.792176	0	0	Free Surface	1.122643	0.240784	0.127138	0.060196	0.079989	1.736773	80.363577	335.62	Yes	0.062302	1.069435
SMN24157	SMH10743	SMH22952	250	24.514771	0.01081	1.210275	0.981998	0	0.05508	0	0	Free Surface	0.496487	0.096855	0.019522	0.024214	0.026935	1.23435	61.994882	204.54	Yes	0.026046	0.446086
SMN24159	SMH22952	SMH22954	250	14.642238	0.011883	1.705407	1.472998	0	0.05608	0	0	Free Surface	0.568996	0.111511	0.026237	0.027878	0.03204	1.316109	65.000652	204.81	Yes	0.030511	0.498657
SMN24160	SMH22954	SMH10777	250	13.834735	0.009613	2.200539	1.963997	0	0.05708	0	0	Free Surface	0.570266	0.132576	0.037639	0.033144	0.036462	1.206632	58.463824	205.08	Yes	0.054975	0.274999
SMN19086	SMH10716	SMH10743	250	78.75462	0.10614	0.715143	0.490999	0	0.05408	0	0	Free Surface	0.937508	0.044151	0.003681	0.011038	0.020652	3.472551	194.261152	204.27	Yes	0.017626	0.468436
PSP1-3	PMH1-3	PMH1-4	375	150	0.002	5.254986	0	0	1.339998	0	0	Free Surface	0.404326	0.17514	0.066839	0.065678	0.05086	0.604434	78.622052	627	Yes	0.078026	0.315803
PSP1-4	PMH1-4	PMH1-5	375	22.019972	0.001998	10.008364	0	0	2.679996	0	0	Free Surface	0.48814	0.240997	0.127355	0.090374	0.07057	0.616302	78.586389	1,254.00	No	0.090374	0.48814
PSP1-2	PMH1-2	PMH1-3	375	64.079516	0.004682	5.254986	0	0	1.339998	0	0	Free Surface	0.54521	0.142448	0.043686	0.053418	0.05086	0.907578	120.290241	627	Yes	0.059548	0.465762
PSP1-1	PMH1-1	PMH1-2	375	63.624022	0.003128	5.254986	0	0	1.339998	0	0	Free Surface	0.473228	0.157059	0.053447	0.058897	0.05086	0.748824	98.320789	627	No	0.058897	0.473228
PSP2-3	PMH2-3	PMH2-4	375	126.67252	0.001997	39.320229	0	0	12.22998	0	0	Free Surface	0.711574	0.500244	0.500458	0.187592	0.142664	0.591701	78.568495	5,384.00	No	0.187592	0.711574
PSP2-4	PMH2-4	PMH2-5	375	148.316506	0.002002	39.320229	0	0	12.22998	0	0	Free Surface	0.712238	0.499878	0.499808	0.187454	0.142664	0.592529	78.670672	5,384.00	Yes	0.187546	0.711796
PSP2-2	PMH2-2	PMH2-3	375	130.824226	0.002003	39.320229	0	0	12.22998	0	0	Free Surface	0.712238	0.499878	0.499781	0.187454	0.142664	0.592529	78.674852	5,384.00	Yes	0.187523	0.711906
PSP2-1	PMH2-1	PMH2-2	375	150	0.002	39.320229	0	0	12.22998	0	0	Free Surface	0.711906	0.500061	0.500117	0.187523	0.142664	0.592115	78.622052	5,384.00	No	0.187523	0.711906
SMN14511	SMH11116	SMH11129	300	47.507894	0.01545	0.53545	0.490999	0	0.01	0	0	Free Surface	0.427752	0.04821	0.004443	0.014463	0.017029	1.383531	120.521516	4.07	Yes	0.026209	0.177517
SMN14512	SMH11129	SMH11161	300	87	0.006517	9.875203	0.981998	0	2.339996	0	0	Free Surface	0.757653	0.239853	0.126158	0.071956	0.074585	1.072218	78.276491	998.14	No	0.071956	0.757653
SMN14514	SMH11102	SMH19652	375	85.743212	0.00842	193.347672	25.858958	0	59.800417	0	0	Pressurized	1.750601	1	1.198508	0.375	0.295465	0.912507	161.323674	14,245.67	Yes	0.375	1.750601
SMN14506	SMH11086	SMH11116	300	78.492038	0.01181	0	0	0	0	0	0	Free Surface	0	0	0	0	0	0	105.372312	0	No	0	0
SMN16884	SMH19667	SMH19652	1,050.00	102.710413	0.002376	239.253156	84.851856	0	62.875916	0	0	Free Surface	1.166613	0.286652	0.179269	0.300984	0.268604	0.801307	1,334.61	31,558.45	Yes	0.59429	0.473304
SMN16885	SMH19652	SMH19651	1,050.00	179.903971	0.002273	394.204292	111.201813	0	123.088265	0	0	Free Surface	1.320412	0.376831	0.301936	0.395673	0.347454	0.778154	1,305.59	45,914.19	Yes	0.931018	0.485608
SMN20238	SFT256750	SMH11102	375	17.662462	0.017212	192.836133	25.367959	0	59.790417	0	0	Pressurized	2.33801	0.699219	0.83608	0.262207	0.319613	1.524004	230.643144	14,241.60	Yes	0.375	1.74597
SMN20239	SMH11086	SFT256750	200	16.420754	0.282569	0.53545	0.491	0	0.01	0	0	Free Surface	1.246265	0.040516	0.003063	0.008103	0.018918	5.389716	174.815255	4.070006	Yes	0.2	0.017044
SMN14513	SMH11161	SMH17975	300	49.790952	0.007652	10.40153	1.472998	0	2.349996	0	0	Pressurized	0.81426	0.236465	0.122634	0.07094	0.0766	1.161141	84.817745	1,002.21	Yes	0.3	0.147152
SMN14517	SMH17975	SMH19651	300	18.993188	0.014953	10.927841	1.963997	0	2.359996	0	0	Free Surface	1.047228	0.205124	0.092167	0.061537	0.078567	1.610695	118.565867	1,006.28	No	0.061537	1.047228
SMN16886	SMH19651	SFT31368	1,200.00	12.756044	0.002352	400.977698	113.656809	0	125.449261	0	0	Pressurized	1.329712	0.312195	0.211497	0.374634	0.337189	0.815115	1,895.90	46,921.02	Yes	1.2	0.354543

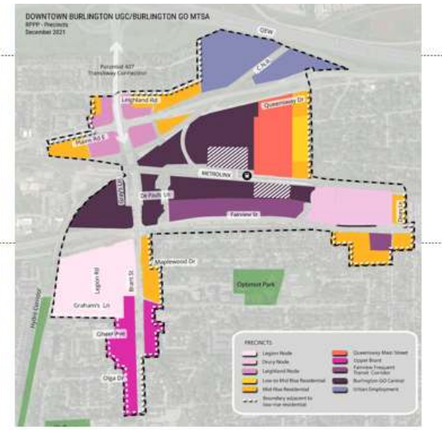
esults for proposed pipe

ID	From ID	To ID	Diameter (mm)	Length (m)	Slope	Total Flow (L/s)	Unpeakable Flow (L/s)	Peakable Flow (L/s)	Coverage Flow (L/s)	Infiltration Flow (L/s)	Storm Flow (L/s)	Flow Type	Velocity (m/s)	d/D	q/Q	Water Depth (m)	Critical Depth (m)	Froude Number	Full Flow (L/s)	Coverage Count	Backwater Adjustment	Adjusted Depth (m)	Adjusted Velocity (m/s)
PSP2-4	PMH2-4	PMH2-5	375	148.316506	0.002002	39.320229	0	0	12.22998	0	0	Free Surface	0.712238	0.499878	0.499808	0.187454	0.142664	0.592529	78.670672	5,384.00	Yes	0.187546	0.711796
PSP2-5	PMH2-5	SMH11064	375	149.792771	0.001996	39.320229	0	0	12.22998	0	0	Free Surface	0.711353	0.500366	0.500607	0.187637	0.142664	0.591425	78.545181	5,384.00	No	0.187637	0.711353
PSP2-3	PMH2-3	PMH2-4	375	126.67252	0.001997	39.320229	0	0	12.22998	0	0	Free Surface	0.711574	0.500244	0.500458	0.187592	0.142664	0.591701	78.568495	5,384.00	No	0.187592	0.711574
PSP2-1	PMH2-1	PMH2-2	375	150	0.002	39.320229	0	0	12.22998	0	0	Free Surface	0.711906	0.500061	0.500117	0.187523	0.142664	0.592115	78.622052	5,384.00	No	0.187523	0.711906
PSP2-2	PMH2-2	PMH2-3	375	130.824226	0.002003	39.320229	0	0	12.22998	0	0	Free Surface	0.712238	0.499878	0.499781	0.187454	0.142664	0.592529	78.674852	5,384.00	Yes	0.187523	0.711906
PSP7-1	PMH7-1	PMH7-2	375	149.523635	0.002006	23.28856	0	0	6.759989	0	0	Free Surface	0.620782	0.372681	0.295738	0.139755	0.108788	0.616082	78.747193	2,978.50	Yes	0.139944	0.619651
PSP7-2	PMH7-2	PMH7-3	375	151.063486	0.001986	23.28856	0	0	6.759989	0	0	Free Surface	0.618524	0.373688	0.297257	0.140133	0.108788	0.612891	78.344814	2,978.50	No	0.140133	0.618524
PSP7-3	PMH7-3	SMH11064	375	93.283137	0.003205	23.28856	0	0	6.759989	0	0	Free Surface	0.735406	0.329102	0.23398	0.123413	0.108788	0.783089	99.532154	2,978.50	No	0.123413	0.735406
PSP1-5	PMH1-5	PMH1-6	375	129.277343	0.002003	10.008364	0	0	2.679996	0	0	Free Surface	0.488577	0.240845	0.127188	0.090317	0.07057	0.617063	78.689729	1,254.00	Yes	0.090408	0.487878
PSP1-6	PMH1-6	SMH10988	375	41.274689	0.001987	10.008364	0	0	2.679996	0	0	Free Surface	0.48718	0.241333	0.127723	0.0905	0.07057	0.614631	78.359995	1,254.00	No	0.0905	0.48718
PSP1-3	PMH1-3	PMH1-4	375	150	0.002	5.254986	0	0	1.339998	0	0	Free Surface	0.404326	0.17514	0.066839	0.065678	0.05086	0.604434	78.622052	627	Yes	0.078026	0.315803
PSP1-4	PMH1-4	PMH1-5	375	22.019972	0.001998	10.008364	0	0	2.679996	0	0	Free Surface	0.48814	0.240997	0.127355	0.090374	0.07057	0.616302	78.586389	1,254.00	No	0.090374	0.48814
SMN19097	SMH10795	SMH10826	250	90.426766	0.003506	1.268594	0.490999	0	0.194494	0	0	Free Surface	0.339604	0.129654	0.035933	0.032413	0.027584	0.726886	35.304328	448.51	Yes	0.033945	0.31752
PSP1-1	PMH1-1	PMH1-2	375	63.624022	0.003128	5.254986	0	0	1.339998	0	0	Free Surface	0.473228	0.157059	0.053447	0.058897	0.05086	0.748824	98.320789	627	No	0.058897	0.473228
PSP1-2	PMH1-2	PMH1-3	375	64.079516	0.004682	5.254986	0	0	1.339998	0	0	Free Surface	0.54521	0.142448	0.043686	0.053418	0.05086	0.907578	120.290241	627	Yes	0.059548	0.465762
PSP4-1	PMH4-1	PMH4-2	300	149.834127	0.004999	1.799997	1.799997	0	0	0	0	Free Surface	0.416844	0.111549	0.026256	0.033465	0.031374	0.880012	68.554345	0	Yes	0.037579	0.351866
PSP4-2	PMH4-2	SMH11003	300	150	0.002	1.799997	1.799997	0	0	0	0	Free Surface	0.302452	0.138977	0.04151	0.041693	0.031374	0.570137	43.362513	0	No	0.041693	0.302452
PSP3-16	PMH3-16	PMH3-17	375	138.057634	0.001999	8.711764	2.579996	0	1.579997	0	0	Free Surface	0.468958	0.224792	0.110829	0.084297	0.065753	0.61453	78.60564	738.98	No	0.084297	0.468958
PSP3-17	PMH3-17	SMH19659	375	45.981699	0.002001	8.711764	2.579996	0	1.579997	0	0	Free Surface	0.469094	0.224747	0.110784	0.08428	0.065753	0.614775	78.637697	738.98	No	0.08428	0.469094
PSP3-14	PMH3-14	PMH3-15	375	150	0.002	8.711764	2.579996	0	1.579997	0	0	Free Surface	0.469049	0.224762	0.110806	0.084286	0.065753	0.614693	78.622052	738.98	No	0.084286	0.469049
PSP3-15	PMH3-15	PMH3-16	375	41.608021	0.002019	8.711764	2.579996	0	1.579997	0	0	Free Surface	0.470591	0.224243	0.110287	0.084091	0.065753	0.617475	78.991524	738.98	Yes	0.084194	0.469774
PSP3-12	PMH3-12	PMH3-13	300	97.61709	0.004395	8.711764	2.579996	0	1.579997	0	0	Free Surface	0.635208	0.248657	0.135532	0.074597	0.069942	0.8817	64.278416	738.98	No	0.074597	0.635208

PSP3-13	PMH3-13	PMH3-14	375	128.989313	0.002	8.711764	2.579996	0	1.579997	0	0	Free Surface	0.469049	0.224762	0.110801	0.084286	0.065753	0.614693	78.625309	738.98	No	0.084286	0.469049
PSP3-11	PMH3-11	PMH3-12	300	146.957997	0.009003	6.131768	0	0	1.579997	0	0	Free Surface	0.738651	0.174896	0.06665	0.052469	0.058447	1.235457	91.998926	738.98	Yes	0.063533	0.561443
PSP3-10	PMH3-10	PMH3-11	300	134.686823	0.010001	6.131768	0	0	1.579997	0	0	Free Surface	0.766447	0.170471	0.063236	0.051141	0.058447	1.299244	96.96627	738.98	No	0.051141	0.766447
PSP3-6	PMH3-6	PMH3-7	300	150	0.002	6.131768	0	0	1.579997	0	0	Free Surface	0.433788	0.254044	0.141407	0.076213	0.058447	0.595208	43.362513	738.98	Yes	0.076307	0.433037
PSP3-7	PMH3-7	PMH3-8	300	26.753934	0.001981	6.131768	0	0	1.579997	0	0	Free Surface	0.432288	0.254669	0.142083	0.076401	0.058447	0.592364	43.156236	738.98	No	0.076401	0.432288
PSP3-8	PMH3-8	PMH3-9	300	30.56517	0.001996	6.131768	0	0	1.579997	0	0	Free Surface	0.433458	0.254181	0.141558	0.076254	0.058447	0.594582	43.31626	738.98	No	0.076254	0.433458
PSP3-9	PMH3-9	PMH3-10	300	112.036663	0.001999	6.131768	0	0	1.579997	0	0	Free Surface	0.433752	0.254059	0.14143	0.076218	0.058447	0.595139	43.355418	738.98	No	0.076218	0.433752
PSP3-5	PMH3-5	PMH3-6	300	145.606777	0.001999	6.131768	0	0	1.579997	0	0	Free Surface	0.433678	0.254089	0.141459	0.076227	0.058447	0.595	43.346611	738.98	No	0.076227	0.433678
PSP3-3	PMH3-3	PMH3-4	300	150	0.00206	2.218629	0	0	0.539999	0	0	Free Surface	0.32523	0.152679	0.050414	0.045804	0.034874	0.583902	44.008144	253.68	Yes	0.060965	0.215471
PSP3-4	PMH3-4	PMH3-5	300	58.237661	0.002009	6.131768	0	0	1.579997	0	0	Free Surface	0.434486	0.253754	0.14109	0.076126	0.058447	0.596533	43.460069	738.98	Yes	0.076176	0.434082
PSP3-1	PMH3-1	PMH3-2	300	150	0.004	2.218629	0	0	0.539999	0	0	Free Surface	0.410478	0.130081	0.036179	0.039024	0.034874	0.800674	61.323854	253.68	Yes	0.042579	0.361576
PSP3-2	PMH3-2	PMH3-3	300	149.537803	0.001999	2.218629	0	0	0.539999	0	0	Free Surface	0.321869	0.153778	0.051171	0.046133	0.034874	0.575719	43.357032	253.68	Yes	0.050469	0.282669
PSP5-2	PMH5-2	PMH5-3	300	149.792054	0.002003	2.688213	0	0	0.659999	0	0	Free Surface	0.340936	0.168762	0.061951	0.050629	0.038434	0.580988	43.392601	308.83	Yes	0.050674	0.340492
PSP5-1_	PMH5-1	PMH5-2	300	150.078699	0.001999	2.688213	0	0	0.659999	0	0	Free Surface	0.340714	0.168839	0.06201	0.050652	0.038434	0.580472	43.351142	308.83	No	0.050652	0.340714
PSP5-3	PMH5-3	PMH5-4	300	70.923977	0.001988	2.688213	0	0	0.659999	0	0	Free Surface	0.340048	0.169067	0.06218	0.05072	0.038434	0.578929	43.23271	308.83	No	0.05072	0.340048
PSP5-4	PMH5-4	SMH16352	300	82.953652	0.002001	2.688213	0	0	0.659999	0	0	Free Surface	0.340847	0.168793	0.061977	0.050638	0.038434	0.580782	43.374625	308.83	No	0.050638	0.340847

RSN	GISID	PROPTYPE	HOUSENUM	STREET	STRTYPE	STRDIR	UNITTYPE	UNIT	ADDRESS	ROLL	ZONING	LEGALDESC	FRONTAGE	DEPTH	Shape_Leng	Shape_Area	Precincts	TotalAreaH	
32097	8461		10 2011	Plains	Rd.	E			2011 Plains Rd. E	2402050501042000000	MXG-5	PLAN 342 PT LOT A RP 20R16949 PART 1	61.94		1678.86553255000	36549.16975400000	Leighland Node	3.65491697540	1188
33165	7880		10 2170	Queensway	Dr.				2170 Queensway Dr.	2402050503101000000	GE2	PLAN 99 PT LOT 17			1001.56244016000	53851.01167060000	Queensway Main Street	5.38510116706	1751
32135	3970		10 760	Brant	St.				760 Brant St.	2402050502007000000	MXG-23	PLAN M59 BLK A	106.74		2270.21314356000	52534.26575750000	Upper Brant	5.25342657575	1708
34295	7890		10 2243	Fairview	St.				2243 Fairview St.	2402050507041000000	MXT	PLAN 203 LOT 7 PT LOTS 6,8 RP 20R8796 PART 3 RP 20R14862 PART 1	146.6		989.83043660700	50787.96084390000	Drury Node	5.07879608439	1651
32115	7691		10 1055	Truman	St.				1055 Truman St.	2402050501047000000	GE2-251	PLAN 99 PT LOT 17			1911.76383357000	80340.43466330000	Urban Employment	8.03404346633	2612
33154	8313		10 2078	Queensway	Dr.				2078 Queensway Dr.	2402050503094000000	GE2	PLAN 99 PT LOT 17 RP 20R9730 PARTS 5,6,7			1961.11988806000	38134.57698230000	Low to Mid-Rise Residential	20.04126962460	6514
33154	8313		10 2078	Queensway	Dr.				2078 Queensway Dr.	2402050503094000000	GE2	PLAN 99 PT LOT 17 RP 20R9730 PARTS 5,6,7			2153.89645271000	84480.24231670000	Legion Node	20.04126962460	6514
33154	8313		10 2078	Queensway	Dr.				2078 Queensway Dr.	2402050503094000000	GE2	PLAN 99 PT LOT 17 RP 20R9730 PARTS 5,6,7			4606.77140052000	182492.29448800000	Burlington GO Central	20.04126962460	6514
97132	95537		10 2065	Fairview	St.				2065 Fairview St.	2402050503022060000	CR-351	PLAN 99 PT LOTS 79,81,82 RP 20R17748 PARTS 9,10,11,12,13,22,24,25,27,28			1578.05829088000	43965.19330420000	Fairview/Brant Frequent Transit Corridor	4.26841917013	1388
33154	8313		10 2078	Queensway	Dr.				2078 Queensway Dr.	2402050503094000000	GE2	PLAN 99 PT LOT 17 RP 20R9730 PARTS 5,6,7			4244.84264228000	79963.96480220000	Mid-Rise Residential	20.04126962460	6514
																			36354





Traffic Zone	Population	Employment
1	847	244
2	4,514	2,821
3	2,612	2,395
4	456	224
5	440	172
6	753	505
7	1,538	914
8	982	901
9	370	130
10	370	130
Sub-Total (Build Out)	**12,882**	**8,435**

The following information was received from Zhongwei Shi (Brook McIlroy), on Nov 29/2017

APPLEBY			
MTSA ZONES			
ZONE 1			
	Number of People	ADD (L/s)	MDD (L/s)
Population (Residential)	847	2.50	5.62
Employment	244	0.64	1.43
Total	1091	3.14	7.05
ZONE 2			
Population (Residential)	4514	13.32	29.98
Employment	2821	7.35	16.53
Total	7335	20.67	46.51
ZONE 3			
Population (Residential)	2612	7.71	17.35
Employment	2395	6.24	14.03
Total	5007	13.95	31.38
ZONE 4			
Population (Residential)	456	1.35	3.03
Employment	244	0.64	1.43
Total	700	1.98	4.46
ZONE 5			
Population (Residential)	440	1.30	2.92
Employment	172	0.45	1.01
Total	612	1.75	3.93
ZONE 6			
Population (Residential)	753	2.22	5.00
Employment	505	1.32	2.96
Total	1258	3.54	7.96
ZONE 7			
Population (Residential)	1538	4.54	10.21
Employment	914	2.38	5.36
Total	2452	6.92	15.57
ZONE 8			
Population (Residential)	982	2.90	6.52
Employment	901	2.35	5.28
Total	1883	5.24	11.80
ZONE 9			
Population (Residential)	370	1.09	2.46
Employment	130	0.34	0.76
Total	500	1.43	3.22
ZONE 10			
Population (Residential)	370	1.09	2.46
Employment	130	0.34	0.76
Total	500	1.43	3.22
	21338	**60**	**135**

Total Residential Population	**12882**	85.5
Total Employment	**8456**	49.5
Total intensification	**21338**	

Flow Calculation

Res Flow= 255 L/cap/day

ICI Flow= 225 L/employee/day

MDD Peaking Factor = 2.25

		Contributing Zones	Junction ID from Model	ADD	MDD	New or Relocated	
Node #1	BurlGO Dem Node 1	1	BUR_GO_33	1.05 L/s	2.35 L/s		
Node #2	BurlGO Dem Node 2	1, 2	WFT513420	5.18 L/s	11.65 L/s		
Node #3	BurlGO Dem Node 3	9, 10	WFT16785	2.86 L/s	6.44 L/s		
Node #4	BurlGO Dem Node 4	1, 2	WFT224048	5.18 L/s	11.65 L/s		
Node #5	BurlGO Dem Node 5	2	BUR_GO_25	4.13 L/s	9.30 L/s		
Node #6	BurlGO Dem Node 6	2	BUR_GO_27	4.13 L/s	9.30 L/s		
Node #7	BurlGO Dem Node 7	2	BUR_GO_38	4.13 L/s	9.30 L/s		
Node #8	BurlGO Dem Node 8	8	BUR_GO_17	5.24 L/s	11.80 L/s		
Node #9	BurlGO Dem Node 9	3	BUR_GO_12	6.97 L/s	15.69 L/s		
Node #10	BurlGO Dem Node 10	3	BUR_GO_9	6.97 L/s	15.69 L/s		
Node #11	BurlGO Dem Node 11	4	BUR_GO_5	1.98 L/s	4.46 L/s		
Node #12	BurlGO Dem Node 12	5	WFT16765	1.75 L/s	3.93 L/s		
Node #13	BurlGO Dem Node 13	7	WFT148792	3.46 L/s	7.78 L/s		
Node #14	New	6	WFT14627	3.54 L/s	7.96 L/s	WFT14627	
Node #15	New	7	WFT144482	3.46 L/s	7.78 L/s	WFT144482	New to solit flow with zone 7
			subtotal	**60.0 L/s**	**135.1 L/s**		

The following table is for presentation in the map

New Demand Nodes	Residential Population	Employment Population	Total Population
Node #1	282	81	364
Node #2	1185	646	1831
Node #3	740	260	1000
Node #4	1185	646	1831
Node #5	903	564	1467
Node #6	903	564	1467
Node #7	903	564	1467
Node #8	982	901	1883
Node #9	1306	1198	2504
Node #10	1306	1198	2504
Node #11	456	244	700
Node #12	440	172	612
Node #13	769	457	1226
Node #14	753	505	1258
Node #15	769	457	1226
	12882	8456	

	ID (Char)	Demand 7	Demand 9
Node #9	BUR_GO_12	7.9	3.8
Node #8	BUR_GO_17	4.9	1.5
Node #5	BUR_GO_25	7.9	3.8
Node #6	BUR_GO_27	6.0	3.3
Node #1	BUR_GO_33	1.9	0.5
Node #7	BUR_GO_38	6.0	3.3
Node #11	BUR_GO_5	6.0	3.3
Node #10	BUR_GO_9	6.5	5.3
Node #15	WFT144482	8.7	7.0
Node #14	WFT14627	8.7	7.0
Node #13	WFT148792	3.0	1.4
Node #12	WFT16765	2.9	1.0
Node #3	WFT16785	5.1	2.7
Node #4	WFT224048	5.0	3.0
Node #2	WFT513420	5.1	2.7
		85.5	49.5

Flow Calculation

Res Flow =	255 L/cap/day
Commercial Flow =	135 L/employee/day
Industrial Flow =	170 L/employee/day
MDD Peaking Factor =	1.9

(Note - The design criteria above is confirmed by Dave Huk, Halton region.)

Res Pop	Commercial Pop	Res Flow	Commercial Flow	total ADD	total MDD
22000	9500	64.9	14.8	79.8	151.6

Total Burlington GO intensification is = 31,500

****Total MDD is evenly distributed into 13 nodes**

	Description	Junction ID from Model	MDD
	BurlGO Dem Node 1	BUR_GO_33	11.7 L/s
Node #2	BurlGO Dem Node 2	WFT513420	11.7 L/s
Node #3	BurlGO Dem Node 3	WFT16785	11.7 L/s
Node #4	BurlGO Dem Node 4	WFT224048	11.7 L/s
Node #5	BurlGO Dem Node 5	BUR_GO_25	11.7 L/s
Node #6	BurlGO Dem Node 6	BUR_GO_27	11.7 L/s
Node #7	BurlGO Dem Node 7	BUR_GO_38	11.7 L/s
Node #8	BurlGO Dem Node 8	BUR_GO_17	11.7 L/s
Node #9	BurlGO Dem Node 9	BUR_GO_12	11.7 L/s
Node #10	BurlGO Dem Node 10	BUR_GO_9	11.7 L/s
Node #11	BurlGO Dem Node 11	BUR_GO_5	11.7 L/s
Node #12	BurlGO Dem Node 12	WFT16765	11.7 L/s
Node #13	BurlGO Dem Node 13	WFT148792	11.7 L/s

Pattern 3 (Chai Demand 4 (lps	Pattern 4 (Chai Demand 5 (lps	Pattern 5 (Chai Demand 6 (lps	Pattern 6 (Chai Demand 7 (lps	Pattern 7 (Chai Demand 8 (lps	Pattern 8 (Chai Demand 9 (lps	Pattern 9 (Chai Demand 10 (lps)
0	11.7	0	0	0	0	0
0	11.7	0	0	0	0	0
0	11.7	0	0	0	0	0
0	11.7	0	0	0	0	0
0	11.7	0	0	0	0	0
0	11.7	0	0	0	0	0
0	11.7	0	0	0	0	0
0	11.7	0	0	0	0	0
0		0	0	0	0	0
0			0	0	0	0
0			0	0	0	0
0	

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

0	0	0	0	0
0	0	0	0	0
0	0	0	0	0

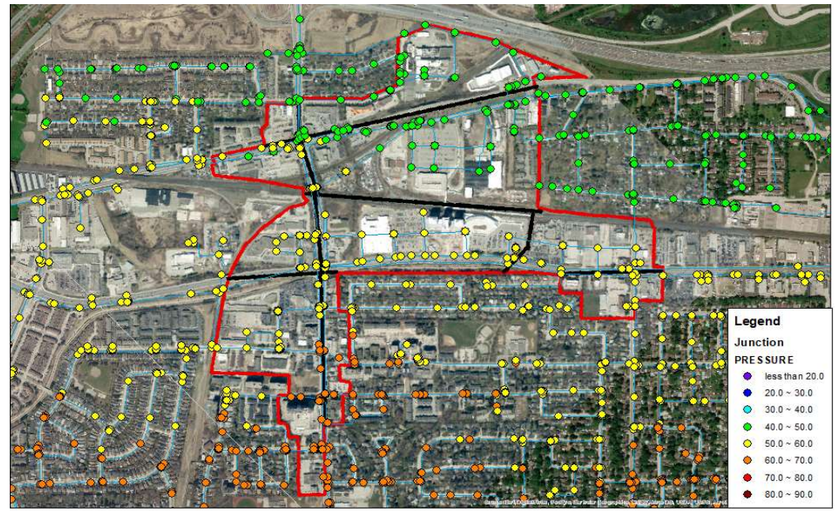
0	11.7	0	0	0	0	0
0			0	0	0	0
0			0	0	0	0
0			0	0	0	0
0			0	0	0	0
0			0	0	0	0
0	11.7	0	0	0	0	0
0			0	0	0	0
0	11.7	0	0	0	0	0
0			0	0	0	0
0			0	0	0	0
0			0	0	0	0
0			0	0	0	0
0	

0	11.7	0	0	0	0	0
0			0	0	0	0
0			0	0	0	0
0			0	0	0	0
0			0	0	0	0
0			0	0	0	0
0			0	0	0	0
0			0	0	0	0
0			0	0	0	0
0			0	0	0	0
0			0	0	0	0
0			0.1	0	0	0
0			0	0	0	0
0			0.2	0	0	0
0			0	0	0	0
0			0	0	0	0
0			0.1	0	0	0
0			0.1	0	0	0
0			0.1	0	0	0
0			0.1	0	0	0
0			0.1	0	0	0
0			0	0	0	0
0			0	0	0	0
0			0	0	0	0
0			0.1	0	0	0
0			0.1	0	0	0

ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (psi)
BUR_GO_1	0	93.5	134.9	58.9
BUR_GO_10	0	99	134.9	51.1
BUR_GO_11	0	96.3	134.9	54.9
BUR_GO_12	11.7	99	134.9	51.1
BUR_GO_13	0	99	134.9	51.1
BUR_GO_14	0	96	134.9	55.3
BUR_GO_15	0	99	134.9	51.1
BUR_GO_16	0	97	135	54
BUR_GO_17	6.4	97	134.9	53.9
BUR_GO_18	0	96.6	134.9	54.5
BUR_GO_19	0	97	134.9	53.9
BUR_GO_2	0	93.4	134.9	59
BUR_GO_20	0	96	134.9	55.4
BUR_GO_21	0	96.5	134.9	54.6
BUR_GO_22	0	100.6	135	48.8
BUR_GO_23	0	100.5	135	49
BUR_GO_24	0	100	135	49.7
BUR_GO_25	11.7	100.5	134.9	49
BUR_GO_26	0	100	134.9	49.7
BUR_GO_27	9.3	100.5	134.9	49
BUR_GO_28	0	100.5	134.9	49
BUR_GO_29	0	100.6	135	48.8
BUR_GO_3	0	99	135	51.2
BUR_GO_31	0	104.5	135	43.3
BUR_GO_32	0	103	135	45.4
BUR_GO_33	2.4	103	135	45.4
BUR_GO_34	0	104	135	44
BUR_GO_35	0	103	135	45.4
BUR_GO_36	0	103	135	45.4
BUR_GO_37	0	100.5	135	49
BUR_GO_38	9.3	99.3	135	50.7
BUR_GO_4	0	97.5	135	53.3
BUR_GO_5	9.3	97	135	54
BUR_GO_6	0	97.5	135	53.2
BUR_GO_7	0	98.5	135	51.8
BUR_GO_8	0	97	134.9	53.9
BUR_GO_9	11.8	98.5	134.9	51.8
WAP172	0	93.6	135	58.7
WCV10062	0.2	92.4	134.9	60.4
WCV114872	0	100.7	135	48.7
WCV115280	0	100.5	135	49
WCV115282	0	100.5	135	49.1
WCV115601	0	97.5	135	53.3
WCV115602	0	97.6	135	53.2
WCV115603	0.1	97.4	135	53.4
WCV117404	0.3	99.3	134.9	50.6
WCV119848	0	95.9	135	55.5
WCV173605	0	96	135	55.4
WCV173606	0	95.9	135	55.5
WCV20301	0	102.4	135	46.2
WCV223614	0	101.9	135	47
WCV223615	0	101.9	135	47
WCV223619	0	103.6	135	44.6
WCV35378	0	100.8	135	48.6
WCV56290	0.2	92.5	134.9	60.3
WCV6086	0	92.2	134.9	60.8
WCV6092	0	92.1	134.9	60.8
WCV6093	0.2	91.5	134.9	61.7
WCV6094	0.2	91.6	134.9	61.7
WCV6095	0.2	91.3	134.9	62
WCV6096	0.2	91.6	134.9	61.6
WCV6104	0.8	92	134.9	61.1
WCV6116	0.1	94	134.9	58.3
WCV6117	0	93.8	134.9	58.5
WCV6118	0	96	135	55.4
WCV6119	0	95.9	135	55.5
WCV6120	0	96.2	135	55.1
WCV6121	0	96	135	55.4
WCV6122	0	96	135	55.4
WCV6123	0.4	96	135	55.4
WCV6124	0	96.4	134.9	54.8
WCV6125	0.2	97.1	135	53.7
WCV6126	0	97.3	135.1	53.8
WCV6127	0.1	97.5	135	53.4
WCV6165	0	101.9	135	47
WCV6170	0	101.6	135	47.5
WCV6171	0	102.3	135	46.5
WCV6174	0	99.9	135	49.9
WCV6175	0	100.1	135	49.5
WCV6176	0	100.6	135	48.9
WCV6177	0	100	135	49.7
WCV6178	0	99.3	135	50.6
WCV6179	0	99.1	135	50.9
WCV6180	0	99.2	135	50.8
WCV6181	0.1	101.5	135	47.5
WCV6191	0	99.6	134.9	50.1
WCV6192	0	99.5	135	50.4
WCV6193	0	94	135	58.3
WCV6194	0	96.3	135	55
WCV6195	0.1	97.2	135	53.6

ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (psi)
BUR_GO_33	2.4	103	135	45.4
WFT513420	7.8	103.6	135	44.5
BUR_GO_25	11.7	100.5	134.9	49
BUR_GO_27	9.3	100.5	134.9	49
BUR_GO_9	11.8	98.5	134.9	51.8
BUR_GO_12	11.7	99	134.9	51.1
BUR_GO_5	9.3	97	135	54
WFT16765	3.9	97.5	135	53.3
WFT144482	15.8	91.3	134.4	61.2
WFT14627	15.7	92	134.8	61
BUR_GO_17	6.4	97	134.9	53.9
WFT16785	8	99.7	134.9	50
BUR_GO_38	9.3	99.3	135	50.7
WFT148792	4.5	94.4	134.9	57.6
WFT224048	8	100.5	135	49.1

ID	From Node	To Node	Length (m)	Diameter (mm)	Roughness	Flow (ML/d)	Velocity (m/s)	Headloss (m)	HL/1000 (m/k-m)	Status
WMN_BUR_GO_1	WFT14667	BUR_GO_1	56.3	300	110	-0.7	0.1	0	0.1	Open
WMN_BUR_GO_2	BUR_GO_1	WFT148795	108.1	300	110	-0.7	0.1	0	0.1	Open
WMN_BUR_GO_3	WFT148792	BUR_GO_2	138.2	300	110	-1	0.2	0	0.2	Open
WMN_BUR_GO_23	BUR_GO_20	BUR_GO_18	78.9	300	110	0.3	0	0	0	Open
WMN_BUR_GO_21	BUR_GO_18	WFT657123	56.2	300	110	0.7	0.1	0	0.1	Open
WMN_BUR_GO_20	BUR_GO_17	BUR_GO_18	57.1	300	110	0.5	0.1	0	0	Open
WMN_BUR_GO_22	BUR_GO_17	BUR_GO_19	53.6	300	110	0.3	0	0	0	Open
WMN_BUR_GO_24	BUR_GO_19	BUR_GO_21	32.6	300	110	0.3	0	0	0	Open
WMN_BUR_GO_25	BUR_GO_20	BUR_GO_21	31.2	300	110	-0.3	0	0	0	Open
WMN_BUR_GO_18	BUR_GO_13	BUR_GO_16	120.8	300	110	-0.8	0.1	0	0.1	Open
WMN_BUR_GO_16	BUR_GO_13	BUR_GO_14	93.1	300	110	-0.1	0	0	0	Open
WMN_BUR_GO_15	BUR_GO_12	BUR_GO_13	108.2	300	110	-0.9	0.1	0	0.1	Open
WMN_BUR_GO_14	BUR_GO_12	WFT14372	83.8	300	110	-0.3	0.1	0	0	Open
WMN_BUR_GO_13	BUR_GO_10	BUR_GO_12	101.8	300	110	-0.2	0	0	0	Open
WMN_BUR_GO_12	BUR_GO_10	BUR_GO_11	79.9	300	110	-0.2	0	0	0	Open
WMN_BUR_GO_11	BUR_GO_9	BUR_GO_10	139.1	300	110	-0.4	0.1	0	0	Open
WMN_BUR_GO_10	BUR_GO_8	BUR_GO_9	84.2	300	110	0.6	0.1	0	0.1	Open
WMN_BUR_GO_8	BUR_GO_6	BUR_GO_7	75.6	300	110	-0.4	0.1	0	0	Open
WMN_BUR_GO_9	BUR_GO_7	BUR_GO_5	183.9	300	110	-0.4	0.1	0	0	Open
WMN_BUR_GO_5	BUR_GO_4	WFT14116	93.3	300	110	-0.1	0	0	0	Open
WMN_BUR_GO_7	BUR_GO_5	WFT14166	84.9	300	110	-0.2	0	0	0	Open
WMN_BUR_GO_6	BUR_GO_4	BUR_GO_5	118.1	300	110	1	0.2	0	0.2	Open
WMN_BUR_GO_4	BUR_GO_3	BUR_GO_4	129.2	300	110	0.9	0.1	0	0.1	Open
WMN_BUR_GO_45	BUR_GO_38	WFT14399	110.7	300	110	-0.6	0.1	0	0.1	Open
WMN_BUR_GO_44	BUR_GO_37	BUR_GO_38	139	300	110	0.2	0	0	0	Open
WMN_BUR_GO_43	WFT14175	BUR_GO_37	126.3	300	110	0.2	0	0	0	Open
WMN_BUR_GO_26	BUR_GO_22	BUR_GO_23	69.2	300	110	0.7	0.1	0	0.1	Open
WMN_BUR_GO_27	BUR_GO_23	BUR_GO_24	79.2	300	110	0.3	0	0	0	Open
WMN_BUR_GO_28	BUR_GO_23	BUR_GO_25	76.1	300	110	0.4	0.1	0	0	Open
WMN_BUR_GO_35	BUR_GO_29	BUR_GO_25	84.3	300	110	0.6	0.1	0	0.1	Open
WMN_BUR_GO_30	BUR_GO_25	BUR_GO_26	77.9	300	110	-0.1	0	0	0	Open
WMN_BUR_GO_29	BUR_GO_24	BUR_GO_26	76.2	300	110	0.3	0	0	0	Open
WMN_BUR_GO_31	BUR_GO_26	BUR_GO_28	190	300	110	0.1	0	0	0	Open
WMN_BUR_GO_32	BUR_GO_28	BUR_GO_27	81	300	110	0.1	0	0	0	Open
WMN_BUR_GO_33	BUR_GO_25	BUR_GO_27	189.8	300	110	0.1	0	0	0	Open
WMN_BUR_GO_34	BUR_GO_27	WCV6247	121.1	300	110	-0.5	0.1	0	0	Open
WMN_BUR_GO_36	WFT14122	BUR_GO_33	87.4	300	110	0	0	0	0	Open
WMN_BUR_GO_37	BUR_GO_33	BUR_GO_32	101.5	300	110	-0.2	0	0	0	Open
WMN_BUR_GO_38	BUR_GO_31	BUR_GO_32	158.3	300	110	0.2	0	0	0	Open
WMN_BUR_GO_39	WFT18352	BUR_GO_31	101.8	300	110	0.2	0	0	0	Open
WMN_BUR_GO_40	BUR_GO_31	BUR_GO_34	143.4	300	110	0	0	0	0	Open
WMN_BUR_GO_41	BUR_GO_34	BUR_GO_35	66.8	300	110	0	0	0	0	Open
WMN_BUR_GO_42	BUR_GO_35	BUR_GO_36	112.2	300	110	0	0	0	0	Open



WCV6243	0.1	98	135	52.6
WCV6244	0	97.9	135	52.6
WCV6247	0.1	101.4	135	47.7
WCV6270	0	96.3	135	55
WCV6271	0.1	96.3	135	55.1
WCV6346	0.1	94.8	134.9	56.9
WCV6347	0	94.8	134.9	57
WCV6393	0	96.4	134.9	54.7
WCV6976	0	101.8	134.9	47.2
WCV6977	0	101	135	48.2
WCV6978	0	100.6	135	48.8
WCV6979	0	100.9	135	48.5
WCV6980	0.2	101.6	135	47.4
WCV7045	0.2	101.4	135	47.7
WCV76926	0	102	135	46.8
WCV76932	0	100.6	135	48.9
WCV81935	0.2	91.3	134.9	62.1
WCV81936	0.2	91.3	134.9	62.1
WCV81938	0.1	91.9	134.9	61.1
WCV81939	0	92.2	134.9	60.7
WCV82137	0.2	91.5	134.9	61.7
WCV82138	0.1	92.2	134.9	60.8
WCV82139	0	92	134.9	61
WCV82140	0.1	92.1	134.9	61
WCV82141	0	93.9	134.9	58.3
WCV82142	0	93.8	134.9	58.5
WCV83221	0	94.3	134.9	57.7
WCV83222	0.1	94.2	134.9	57.9
WCV83223	0.2	93.8	134.9	58.5
WCV83226	0.1	94.8	134.9	57.1
WCV83303	0	101.9	135	47
WCV83411	0.2	91.9	134.4	60.4
WCV83412	0.2	91.4	134.4	61.1
WCV91737	0	93.4	134.9	59
WCV9458	0.5	93.4	135	59.1
WCV9459	0.3	92.1	134.9	60.9
WCV9461	0.1	95.3	135	56.4
WCV9466	0	93.5	135	59
WCV9467	0	93.2	135	59.4
WCV9468	0	92.6	135	60.2
WCV9469	0	93.4	135	59.1
WCV9470	0	93.1	135	59.4
WCV9471	0.4	93.2	135	59.4
WCV9477	0.1	91.8	134.9	61.2
WDV13960	0	93.7	135	58.7
WDV13961	0	93.9	135	58.4
WDV13977	0.1	101	135	48.3
WDV88713	0	100.4	135	49.1
WFT112656	0	95.2	134.9	56.5
WFT112657	0.1	94.3	134.9	57.8
WFT112658	0	94	134.9	58.2
WFT112659	0.1	94.8	134.9	57.1
WFT113163	0.2	94.4	134.9	57.6
WFT113164	0.1	94.8	134.9	57.1
WFT113165	0.1	95.3	134.9	56.4
WFT114257	0.1	94.7	134.9	57.3
WFT114258	0.1	94.5	134.9	57.4
WFT114259	0.1	94.6	134.9	57.3
WFT13917	0.1	102.4	135	46.3
WFT14021	0.1	97.7	135	53.1
WFT14031	0.2	102	135	46.9
WFT14036	0.1	101.5	135	47.6
WFT14039	0.3	98.1	135	52.5
WFT14042	0.1	103.4	135	44.8
WFT14050	0	101.6	135	47.4
WFT14060	0	97.4	135.1	53.7
WFT14104	0.1	96.5	135	54.8
WFT14110	0.1	96.5	135	54.8
WFT14115	0	100.8	135	48.6
WFT14116	0.4	97.1	135	53.8
WFT14122	0	100.7	135	48.7
WFT14128	0	100.6	135	48.8
WFT14140	0.1	100.9	135	48.4
WFT14166	0	96.5	135	54.7
WFT14172	0.5	96.9	135	54.2
WFT14175	0	100.6	135	48.8
WFT14179	0	97.3	135	53.6
WFT14181	0.1	100.9	135	48.4
WFT14193	0	101.9	135	47.1
WFT14202	0	97.7	135	53
WFT14210	0	97.7	135	52.9
WFT14211	0	97	135.1	54.1
WFT14229	0	100.6	135	48.9
WFT14245	0	97.2	134.9	53.6
WFT14250	0.2	96.7	135	54.3
WFT14252	0.3	100.9	135	48.5
WFT14279	0.1	95.1	135	56.6
WFT14291	0	96.2	134.9	55
WFT14294	0.1	96.4	135	54.8
WFT14298	0.1	95.1	135	56.7
WFT14308	0	101.6	135	47.4

WFT14310	0	101.6	135	47.4
WFT14316	0	101.5	134.9	47.6
WFT14331	0	99.2	135	50.8
WFT14335	0	101	135	48.3
WFT14339	0	100.5	135	48.9
WFT14341	0.1	95.4	135	56.3
WFT14344	0	100	135	49.7
WFT14346	0	100.5	135	49
WFT14347	0	100.4	135	49.2
WFT14348	0	100.3	135	49.3
WFT14355	0	100	135	49.7
WFT14372	0	96.6	134.9	54.5
WFT14375	0	98.2	135	52.2
WFT14387	0	99.5	135	50.4
WFT14389	0	96.5	134.9	54.6
WFT14390	0	99.4	135	50.5
WFT14394	0	99.6	134.9	50.3
WFT14399	0	94.2	135	57.9
WFT14406	0	99.7	134.9	50.1
WFT14410	0	93.6	135	58.7
WFT14412	0	93.5	135	59
WFT14443	0	96.1	134.9	55.2
WFT144482	15.8	91.3	134.4	61.2
WFT14457	0	96.3	135	54.9
WFT14482	0	95.9	135	55.5
WFT14484	0	93.4	135	59
WFT14487	0.1	92.8	135	59.9
WFT14493	0	96	135	55.4
WFT14495	0	95.9	135	55.5
WFT14500	0	95.9	135	55.5
WFT14513	0.1	92.9	135	59.7
WFT14527	0.1	92.4	134.9	60.4
WFT14529	0.4	92.5	135	60.4
WFT14538	0.2	93.8	134.9	58.4
WFT14565	0.6	92.1	134.9	60.9
WFT14585	0.4	92.1	134.9	61
WFT14587	0	92.2	134.9	60.7
WFT14595	0	92.2	134.9	60.8
WFT14627	15.7	92	134.8	61
WFT14639	0.2	93.6	134.9	58.8
WFT14642	0.1	95.9	134.9	55.4
WFT14645	0.2	91.6	134.9	61.6
WFT14664	0.2	91.8	134.9	61.4
WFT14667	0.2	94.4	134.9	57.6
WFT14684	0.1	91.5	134.9	61.8
WFT14692	0.2	91.3	134.9	62
WFT14702	0	94.8	134.9	56.9
WFT148789	0	93.3	134.9	59.2
WFT148791	0	93.6	134.9	58.8
WFT148792	4.5	94.4	134.9	57.6
WFT148793	0.1	94.4	134.9	57.6
WFT148794	0.1	94.3	134.9	57.7
WFT148795	0.1	93.8	134.9	58.5
WFT150345	0	93.4	134.9	59
WFT16762	0.1	101.9	135	47
WFT16765	3.9	97.5	135	53.3
WFT16783	0	99.4	135	50.6
WFT16785	8	99.7	134.9	50
WFT16790	0	96	135	55.4
WFT16795	0.2	92.1	134.9	61
WFT18352	0	104.6	135	43.2
WFT18358	0.1	98	135	52.6
WFT18359	0	102	135	46.9
WFT18364	1.2	102.3	134.9	46.5
WFT18374	0.1	96.6	135	54.6
WFT18377	0.1	100.7	135	48.8
WFT18385	0	98.1	135	52.5
WFT18386	0	97.7	135	52.9
WFT18408	0.1	95.2	135	56.6
WFT18409	0.1	96.4	135	54.8
WFT18416	0	100.2	135	49.3
WFT18420	0	99.5	135	50.4
WFT18431	0.4	93.7	135	58.6
WFT18432	0	93.6	135	58.8
WFT18433	0	93.6	135	58.8
WFT20311	1.2	101.8	134.9	47.1
WFT20316	0	100.6	135	48.8
WFT20348	0.1	96.4	135	54.8
WFT20353	0.1	101.3	134.9	47.8
WFT20355	0	100	135	49.6
WFT20376	0	97	135	54
WFT20382	0.5	96.5	134.9	54.6
WFT20400	0.2	91.3	134.9	62.1
WFT204002	0.2	93.2	134.9	59.3
WFT204003	0	93.4	134.9	59
WFT204004	0	93.5	134.9	58.8
WFT215459	0	94.7	134.9	57.3
WFT217187	0	96	135	55.3
WFT217188	0	96.4	134.9	54.8
WFT217189	0	96.2	134.9	55
WFT220800	0.2	97.3	135	53.6

WFT224035	0	100.4	135	49.2
WFT224038	0	100.5	135	49
WFT224043	0	100.5	135	49
WFT224048	8	100.5	135	49.1
WFT224050	0	100.3	135	49.3
WFT224055	0	101.1	135	48.2
WFT224058	0	100.7	135	48.7
WFT224059	0	100.7	135	48.7
WFT224062	0	100.8	135	48.7
WFT224063	0	100.7	135	48.7
WFT224064	0	100.7	135	48.8
WFT225396	0	101.5	135	47.6
WFT225397	0	101.2	135	48.1
WFT227131	0	100.8	135	48.6
WFT227132	0	100.4	135	49.1
WFT239360	0	99.7	135	50.1
WFT257958	0.3	99.5	134.9	50.3
WFT257959	0.3	99.8	134.9	49.9
WFT27197	0	102.1	135	46.7
WFT27198	0	102	135	46.8
WFT27201	0	102.9	135	45.5
WFT407	0.2	92.4	134.9	60.4
WFT412	0.1	91.8	134.9	61.2
WFT43516	0	100.7	135	48.7
WFT43521	0.1	100.5	135	49
WFT43553	0.2	100.2	135	49.4
WFT44686	0.4	96.5	135	54.6
WFT513409	0	101.9	135	47
WFT513410	0	101.9	135	47
WFT513411	0	101.9	135	47
WFT513419	0	103.6	135	44.6
WFT513420	7.8	103.6	135	44.5
WFT513427	0	101.9	135	47.1
WFT65680	0.2	92.3	134.9	60.7
WFT65681	0.1	94	134.9	58.2
WFT657122	0.1	97.3	134.9	53.5
WFT657123	0.5	96.5	134.9	54.6
WFT86347	0	102.1	135	46.8
WFT86348	0	100.6	135	48.8
WFT86350	0	101.2	135	48.1
WFT86352	0	100.7	135	48.6
WFT86584	0.1	91.8	134.9	61.2
WFT90150	0	93.3	135	59.3
WFT92397	1.8	91.4	134.9	61.8
WFT92399	0.4	93.2	134.9	59.3
WFT93748	0.4	92	134.9	61
WFT93757	0	93.9	134.9	58.4
WFT93758	0.2	94.7	134.9	57.3
WFT94577	0.2	91.5	134.9	61.8
WFT94582	1.7	91.6	134.9	61.7
WPV2650	0	102	135	46.9
WPV73	0	96.2	134.9	55.1
WSV35396	0.1	100.3	135	49.4
WSV76934	0	100.8	135	48.6
WSV83033	0.2	92.2	134.9	60.7
				43.20
				53.59
				62.10

ID	Total Demand (L/s)	Hydrant Available Flow (L/s)	Critical Node ID for Design Run	Critical Node Pressure at Available Flow (psi)	Critical Node Pressure at Fire Demand (psi)	Critical Pressure for Design Run (psi)	Hydrant Design Flow (L/s)	Hydrant Pressure at Design Flow (psi)
BUR_GO_12	291.7	464.1	BUR_GO_12	28.4	39	28.4	464.1	28.4
BUR_GO_17	286.4	844.4	BUR_GO_17	28.4	46.7	28.4	844.4	28.4
BUR_GO_25	291.7	535.6	BUR_GO_25	28.4	39.5	28.4	535.6	28.4
BUR_GO_27	289.3	472.4	BUR_GO_27	28.4	38.2	28.4	472.4	28.4
BUR_GO_33	282.4	346.4	BUR_GO_33	28.4	32.5	28.4	346.5	28.4
BUR_GO_38	289.3	556.7	BUR_GO_38	28.4	41.1	28.4	556.7	28.4
BUR_GO_5	289.3	419.6	BUR_GO_5	28.4	39	28.4	419.7	28.4
BUR_GO_9	291.8	381.7	BUR_GO_9	28.4	35.9	28.4	381.8	28.4
WFT144482	295.8	115.9	WFT144482	28.4	-111.4	28.4	115.9	28.4
WFT14627	295.7	287.5	WFT14627	28.4	26.9	28.4	287.5	28.4
WFT148792	284.5	712.7	WFT148792	28.4	48.7	28.4	712.7	28.4
WFT16765	283.9	487.7	WFT16765	28.4	41.4	28.4	487.7	28.4
WFT16785	288	156	WFT16785	28.4	-9.5	28.4	156	28.4
WFT224048	288	643.5	WFT224048	28.4	41.2	28.4	643.5	28.4
WFT513420	287.8	392.3	WFT513420	28.4	33.7	28.4	392.3	28.4

The following information was received from Zhongwei Shi (Brook McIlroy), on Nov 29/2017

APPLEBY		
MTSA ZONES		
ZONE 1		
	Number of People	ADD (L/s)
Population (Residential)	847	2.06
Employment	244	0.52
Total	1091	2.58
ZONE 2		
Population (Residential)	4514	10.97
Employment	2821	6.04
Total	7335	17.01
ZONE 3		
Population (Residential)	2612	6.35
Employment	2395	5.13
Total	5007	11.48
ZONE 4		
Population (Residential)	456	1.11
Employment	244	0.52
Total	700	1.63
ZONE 5		
Population (Residential)	440	1.07
Employment	172	0.37
Total	612	1.44
ZONE 6		
Population (Residential)	753	1.83
Employment	505	1.08
Total	1258	2.91
ZONE 7		
Population (Residential)	1538	3.74
Employment	914	1.96
Total	2452	5.70
ZONE 8		
Population (Residential)	982	2.39
Employment	901	1.93

Flow Calculation

Res Flow= 210 L/cap/day

ICI Flow= 185 L/employee/day

			Residential		**ICI**			
ZONE 1	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop		Area
5	PMH1-1	0.23	0.48	195.46	0.12	56.31	849.58	3.30
6	PMH2-1	0.29	0.59	242.85	0.15	69.96		4.10
4	PMH3-1	0.24	0.50	207.31	0.13	59.72		3.50
27	SMH9028	0.13	0.27	112.54	0.07	32.42		1.90
3	SMH8986	0.10	0.22	88.85	0.05	25.59		1.50
								14.30
ZONE 2	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop		Area
8,25	PMH4-1	0.27	2.94	1207.97	1.62	754.92	4531.01	5.70
9,31,24,26	PMH5/6-1	0.55	6.03	2479.52	3.32	1549.56		11.70
7	SMH11522	0.18	2.01	826.51	1.11	516.52		3.90
								21.30
ZONE 3	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop		Area
18	SMH9498	0.36	2.26	930.53	1.83	853.22	2377.53	5.70
17	PSP8-1	0.44	2.82	1159.08	2.28	1062.78		7.10
15	SMH35548	0.11	0.67	277.53	0.54	254.47		1.70
16	SMH9276	0.09	0.60	244.88	0.48	224.53		1.50
								16.00
ZONE 4	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop		Area
19	PMH7-1	0.77	0.86	352.00	0.40	188.35	457.63	4.40
20	SMH57382	0.23	0.25	104.00	0.12	55.65		1.30
								5.70
ZONE 5	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop		Area
21	SMH9635	0.44	0.47	191.79	0.16	74.97	441.44	1.70
23	SMH19383	0.28	0.30	124.10	0.10	48.51		1.10
22	SMH19384	0.28	0.30	124.10	0.10	48.51		1.10
								3.90
ZONE 6	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop		
13,14	SMH9320	0.50	0.92	376.50	0.54	252.50	755.91	
	SMH9450	0.50	0.92	376.50	0.54	252.50		
ZONE 7	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop		
12,11	SMH9378	0.50	1.87	769.00	0.98	457.00	1543.70	
	SMH9489	0.50	1.87	769.00	0.98	457.00		
ZONE 8	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop		Area
10	PSP10-1	0.72	1.71	704.08	1.38	646.00	986.32	3.80
28	PSP9-1	0.28	0.68	277.92	0.55	255.00		1.50

Total	1883	4.32
ZONE 9		
Population (Residential)	370	0.90
Employment	130	0.28
Total	500	1.18
ZONE 10		
Population (Residential)	370	0.90
Employment	130	0.28
Total	500	1.18
	21338	**49.42**

Total Residential Population	**12882**
Total Employment	**8456**
Total intensification	**21338**

								5.30
ZONE 9	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop		Area
	SMH11525	0.65	0.58	240.00	0.18	84.32	371.18	2.40
	SMH9035	0.35	0.32	130.00	0.10	45.68		1.30
								3.70
ZONE 10	Loading MH in Model	Area Split (%)	Avg Flow (L/s)	Pop	Avg Flow (L/s)	Pop		
	SMH8968	1.00	0.90	370.00	0.28	130.00	371.18	

HEADLOSS (Num)	LOAD1 (Num)	TYPE1 (Num)	PATTERN1 (Char)	COVERAGE1 (Num)	LOAD2 (Num)	TYPE2 (Num)	PATTERN2 (Char)	COVERAGE2 (Num)	LOAD3 (Num)	TYPE3 (Num)	PATTERN3 (Char)	COVERAGE3 (Num)	LOAD4 (Num)	TYPE4 (Num)	PATTERN4 (Char)	COVERAGE4 (Num)	LOAD5 (Num)	TYPE5 (Num)	PATTERN5 (Char)	COVERAGE5 (Num)	LOAD6 (Num)	TYPE6 (Num)	PATTERN6 (Char)	COVERAGE6 (Num)	LOAD7 (Num)	TYPE7 (Num)	PATTERN7 (Char)	COVERAGE7 (Num)	LOAD8 (Num)	TYPE8 (Num)	PATTERN8 (Char)	COVERAGE8 (Num)	LOAD9 (Num)	TYPE9 (Num)	PATTERN9 (Char)	COVERAGE9 (Num)
		2: Peakable Coverage				2: Peakable Coverage			0.491	0: Unpeakable		0				0	0.003	2: Peakable Coverage		1.14	0.001	2: Peakable Coverage		0.34	0	0: Unpeakable		0	0			0	0			0
0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0
0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0
		2: Peakable Coverage				2: Peakable Coverage			0	0: Unpeakable		0				0	0.007	2: Peakable Coverage		2.75	0.001	2: Peakable Coverage		0.3	0	0: Unpeakable		0	0			0	0			0
0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable		0	0	0: Unpeakable

LOAD10 (Num)	TYPE10 (Num)	PATTERN10 (Char)	COVERAGE10 (Num)	SWS AREA (Num)	SWS RUNOFF (Num)	SWS SLOPE (Num)	SWS LEN (Num)	HYETOGRAPH (Char)	HYDROGRAPH (Char)	SWS PERIMP (Num)	SWS PERV (Num)	SWS IMPERV (Num)	SWS INFIL1 (Num)	SWS INFIL2 (Num)	SWS DECAY (Num)	SWS REGEN (Num)	SWS TOC (Num)
0			0														
0	0: Unpeakable		0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0	0: Unpeakable		0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0			0														
0	0: Unpeakable		0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0	0: Unpeakable		0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0	0: Unpeakable		0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0			0														
0			0														
0	0: Unpeakable		0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0			0														
0	0: Unpeakable		0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0	0: Unpeakable		0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0
0			0														
0	0: Unpeakable		0	0	0	0	0			0.75	0.01	0.01	3	0.1	0.001	0.0001	0

Results for all pipes in domain

ID	From ID	To ID	Diameter (mm)	Length (m)	Slope	Total Flow (L/s)	Unpeakable Flow (L/s)	Peakable Flow (L/s)	Coverage Flow (L/s)	Infiltration Flow (L/s)	Storm Flow (L/s)	Flow Type	Velocity (m/s)	d/D	q/Q	Water Depth (m)	Critical Depth (m)	Froude Number	Full Flow (L/s)	Coverage Count	Backwater Adjustment	Adjusted Depth (m)	Adjusted Velocity (m/s)
SMN8587	SMH9450	SMH9483	450	88.31914	0.004235	132.954444	13.389978	0	45.246521	0	0	Pressurized	1.271168	0.625122	0.714681	0.281305	0.254978	0.828137	186.033173	20,462.33	Yes	0.45	0.835966
SMN8594	SMH9456	SMH9489	300	94.739243	0.003694	30.192902	4.531992	0	7.296827	0	0	Pressurized	0.838765	0.507263	0.512314	0.152179	0.133008	0.772876	58.934352	2,442.32	Yes	0.3	0.427143
SMN8615	SMH9489	SMH9511	300	54.585035	0.004214	39.215811	4.737992	0	10.254822	0	0	Pressurized	0.938851	0.571655	0.623067	0.171497	0.152504	0.798981	62.939975	3,712.98	Yes	0.3	0.554791
SMN10104	SMH11576	SMH22951	200	43.176491	0.004748	3.53379	1.853997	0	0.407154	0	0	Free Surface	0.524598	0.266968	0.155945	0.053394	0.049368	0.858241	22.660534	229.45	No	0.053394	0.524598
SMN24155	SMH9483	SMH22951	450	7.982218	0.003633	133.344629	13.595977	0	45.328521	0	0	Pressurized	1.19634	0.660522	0.773849	0.297235	0.255369	0.746714	172.313464	20,496.02	Yes	0.45	0.838419
SMN24156	SMH22951	SMH9517	450	75.92476	0.00436	136.453285	15.655974	0	45.82298	0	0	Pressurized	1.292803	0.630005	0.722902	0.283502	0.258466	0.837293	188.757532	20,762.16	Yes	0.45	0.857965
SMN8561	SMH9423	SMH9442	300	67.430833	0.003871	17.893637	3.089995	0	4.075165	0	0	Pressurized	0.743709	0.37326	0.296625	0.111978	0.101322	0.824461	60.324043	1,736.70	Yes	0.3	0.253144
SMN8562	SMH9432	SMH9434	200	7.071068	0.004384	12.251241	0.823999	0	2.897662	0	0	Pressurized	0.713459	0.536621	0.562633	0.107324	0.094002	0.776173	21.774853	571.64	Yes	0.2	0.38997
SMN8564	SMH9419	SMH9450	450	74.033469	0.005295	123.647949	9.681984	0	42.584667	0	0	Pressurized	1.364046	0.555054	0.594396	0.249774	0.245475	0.967155	208.022825	18,940.97	Yes	0.45	0.77745
SMN8566	SMH9434	SMH9442	250	33.493549	0.002538	12.829568	1.029998	0	3.005662	0	0	Pressurized	0.587875	0.456421	0.427107	0.114105	0.089999	0.63391	30.038324	616.3	Yes	0.25	0.261362
SMN8575	SMH9442	SMH9456	300	21.93996	0.009754	29.653903	4.325993	0	7.188827	0	0	Pressurized	1.194553	0.382019	0.309666	0.114606	0.131763	1.306688	95.760944	2,397.66	Yes	0.3	0.419518
SMN25210	SMH9481	SMH23878	250	76.902676	0.002874	7.29415	3.295995	0	1.037856	0	0	Free Surface	0.527645	0.324829	0.228193	0.081207	0.067231	0.693174	31.964817	824.98	No	0.081207	0.527645
SMN25211	SMH23878	SMH9450	250	16.046131	0.2514	7.804135	3.501994	0	1.119856	0	0	Free Surface	2.613208	0.111237	0.026103	0.027809	0.06961	6.052101	298.971368	858.67	Yes	0.25	0.158985
SMN38200	SMH9406	SMH35131	200	36.091412	0.00532	11.053795	0.411999	0	2.671407	0	0	Pressurized	0.747978	0.476746	0.460835	0.095349	0.089082	0.877852	23.986427	479.32	Yes	0.2	0.351854
SMN38201	SMH35131	SMH9432	200	30.436777	0.00529	11.634663	0.617999	0	2.779406	0	0	Pressurized	0.756073	0.492004	0.486433	0.098401	0.091498	0.870002	23.91831	523.98	Yes	0.2	0.370343
SMN18861	SMH9369	SMH9406	200	83.486526	0.005198	3.335584	0.206	0	0.770374	0	0	Pressurized	0.532879	0.253387	0.140675	0.050677	0.047927	0.896749	23.711201	326.66	Yes	0.2	0.106175
SMN8506	SMH9348	SMH9378	300	75.126837	0.004898	2.068483	0.411999	0	0.395156	0	0	Pressurized	0.431529	0.119804	0.030481	0.035941	0.033659	0.878197	67.861867	149	Yes	0.3	0.029263
SMN8507	SMH9353	SMH9384	375	76.507927	0.007999	117.422493	8.239986	0	40.502464	0	0	Pressurized	1.561042	0.644226	0.746792	0.241585	0.252427	1.088665	157.235958	18,115.03	Yes	0.375	1.063162
SMN8532	SMH9378	SMH9423	300	88.852961	0.004479	17.333515	2.883995	0	3.968297	0	0	Pressurized	0.77726	0.352936	0.267105	0.105881	0.099668	0.889624	64.894073	1,691.41	Yes	0.3	0.245219
SMN8533	SMH9384	SMH9419	450	80.23568	0.003141	123.197814	9.475984	0	42.476676	0	0	Pressurized	1.110911	0.657593	0.768961	0.295917	0.245007	0.695869	160.213279	18,895.21	Yes	0.45	0.77462
SMN18855	SFT256339	SMH9378	250	69.477697	0.002922	4.894064	2.265996	0	0.644417	0	0	Pressurized	0.473928	0.263367	0.151844	0.065842	0.054788	0.698613	32.230878	300.41	Yes	0.25	0.099701
SMN31943	SMH30066	SMH30067	250	89.157876	0.005047	8.370002	0.823999	0	1.949316	0	0	Free Surface	0.671455	0.301392	0.197584	0.075348	0.072166	0.919504	42.361684	767.68	No	0.075348	0.671455
SMN31944	SMH30067	SMH9384	250	18.432244	0.007053	8.583252	1.029998	0	1.951316	0	0	Free Surface	0.762286	0.280151	0.171405	0.070038	0.073107	1.086571	50.075972	768.43	No	0.070038	0.762286
SMN8449	SMH9263	SMH9314	200	93.622389	0.002115	0.79364	0.411999	0	0.088941	0	0	Free Surface	0.254512	0.15567	0.052476	0.031134	0.023081	0.554019	15.123755	64.56	No	0.031134	0.254512
SMN8455	SMH9291	SMH9314	250	42.503921	0.006235	2.278516	1.029998	0	0.300022	0	0	Free Surface	0.495038	0.149673	0.048392	0.037418	0.037112	0.983702	47.08417	183.51	Yes	0.099127	0.125732
SMN8477	SMH9314	SMH9339	250	47.337198	0.092042	3.26355	1.647997	0	0.392962	0	0	Free Surface	1.414601	0.093292	0.018041	0.023323	0.044551	3.58495	180.900315	249.85	Yes	0.25	0.066485
SMN8483	SMH9313	SMH9353	375	74.412683	0.004703	117.202465	8.033986	0	40.494088	0	0	Pressurized	1.243965	0.795532	0.972068	0.298325	0.252185	0.711474	120.570183	18,106.28	Yes	0.375	1.06117
SMN18830	SMH9231	SMH9263	200	52.497619	0.00501	0.522244	0.206	0	0.073197	0	0	Free Surface	0.303745	0.103485	0.022436	0.020697	0.018681	0.81617	23.27689	46.78	Yes	0.025916	0.218633
SMN18841	SMH9236	SMH35132	250	85.575739	0.003307	0.891379	0.411999	0	0.113574	0	0	Free Surface	0.299319	0.111023	0.025995	0.027756	0.023079	0.693896	34.289781	120.17	Yes	0.076888	0.069532
SMN18842	SMH35132	SMH9291	250	14.873253	0.003295	1.455937	0.823999	0	0.150604	0	0	Free Surface	0.346269	0.140633	0.04254	0.035158	0.029574	0.710664	34.224875	144.73	Yes	0.150475	0.047166
SMN18843	SMH9277	SMH35132	250	10.918624	0.002839	0.350431	0.206	0	0.03303	0	0	Free Surface	0.214085	0.07391	0.01103	0.018477	0.01442	0.610896	31.771938	22.78	Yes	0.110521	0.016741
SMN18852	SMH9311	SMH9348	300	73.552702	0.00639	1.646872	0.206	0	0.34253	0	0	Pressurized	0.442207	0.100838	0.021248	0.030251	0.029996	0.983137	77.508451	134	Yes	0.3	0.023299
SMN18854	SMH9339	SFT256339	250	32.450992	0.003297	3.505325	1.853997	0	0.402318	0	0	Pressurized	0.449073	0.216095	0.102377	0.054024	0.046204	0.736017	34.239287	259.63	Yes	0.25	0.07141
SMN18856	SMH9361	SFT256339	250	12.089278	0.002812	0.965321	0.206	0	0.173755	0	0	Pressurized	0.2897	0.119888	0.030527	0.029972	0.024027	0.645601	31.621764	23.78	Yes	0.25	0.019665
SMN16731	SMH9189	SMH9236	250	94.04786	0.0089	0.235833	0.206	0	0.006904	0	0	Free Surface	0.28244	0.046921	0.004192	0.01173	0.011817	1.014521	56.251627	46.39	Yes	0.019743	0.130656
SMN8452	SMH9271	SMH9313	375	80.986415	0.010002	108.355831	4.325993	0	38.221938	0	0	Pressurized	1.674181	0.567749	0.616292	0.212906	0.242189	1.2804	175.818998	17,068.06	Yes	0.375	0.981071
SMN8471	SMH9320	SMH9313	200	7.231686	0.009956	12.058112	3.501994	0	2.255315	0	0	Pressurized	0.964507	0.419495	0.367465	0.083899	0.093224	1.223336	32.814316	1,022.47	Yes	0.2	0.383822
SMN8383	SMH9177	SMH9233	300	111.776112	0.010065	76.581254	3.295995	0	25.156357	0	0	Pressurized	1.52452	0.668701	0.787266	0.20061	0.215771	1.153829	97.274993	11,006.60	Yes	0.3	1.083405
SMN8414	SMH9233	SMH9244	300	10.489302	0.003337	107.421504	3.707994	0	38.061025	0	0	Pressurized	1.519706	1	1.917923	0.3	0.183754	0.885653	56.009304	16,943.81	Yes	0.3	1.519706
SMN8426	SMH9276	SMH9233	525	94.31569	0.001802	40.938579	0	0	12.892668	0	0	Free Surface	0.681461	0.321381	0.22361	0.168725	0.132074	0.621464	183.080251	5,933.03	No	0.168725	0.681461
SMN8428	SMH9244	SMH9271	300	61.089244	0.008103	107.891652	4.119993	0	38.089397	0	0	Pressurized	1.526357	1	1.236141	0.3	0.23012	0.889529	87.280991	16,963.31	Yes	0.3	1.526357
SMN18824	SFT368	SMH9233	600	34.979747	0.0008	0.232762	0.206	0	0.006	0	0	Pressurized	0.107071	0.027525	0.001336	0.016515	0.009402	0.324795	174.191444	2.09	Yes	0.6	0.000823
SMN18829	SFT367	SMH9244	300	19.846889	0.002217	0.214952	0.206	0	0.002	0	0	Pressurized	0.164911	0.049541	0.004708	0.014862	0.010766	0.5261	45.654077	0.75	Yes	0.3	0.003041
PSPB9-1	PMHB9-1	PMHB10-4	300	97.291511	0.009281	4.870573	0	0	1.229998	0	0	Free Surface	0.697362	0.155182	0.05214	0.046555	0.051974	1.241475	93.412683	532.92	Yes	0.06963	0.391478
SMN8261	SMH9035	SMH9079	300	66.189123	0.010002	19.940687	2.059997	0	5.056799	0	0	Pressurized	1.079565	0.307678	0.205639	0.092303	0.107173	1.334272	96.969494	2,312.13	Yes	0.3	0.282103
SMN8305	SMH9079	SMH9138	300	100.37878	0.010749	59.823891	2.265996	0	18.968776	0	0	Pressurized	1.4837	0.55542	0.595094	0.166626	0.190156	1.287848	100.528502	8,304.81	Yes	0.3	0.846336
SMN8338	SMH9138	SMH9177	300	67.038349	0.008368	61.308147	2.471996	0	19.453615	0	0	Pressurized	1.354	0.611328	0.691192	0.183398	0.192587	1.098432	88.699102	8,500.24	Yes	0.3	0.867334
SMN10053	SMH11520	SMH9035	300	92.78917	0.010001	18.390418	1.853997	0	4.633438	0	0	Free Surface	1.055097	0.295074	0.189656	0.088522	0.10277	1.334447	96.967185	2,101.74	Yes	0.3	0.260172
SMN18817	SMH9156	SMH9177	250	34.631269	0.028096	15.80461	0.206	0	4.328934	0	0	Pressurized	1.486788	0.26886	0.15813	0.067215	0.100305	2.167268	99.946832	1,898.09	Yes	0.25	0.321969
SMN38803	SMH35548	SMH9177	200	23.564461	0.044134	5.24919	0.411999	0	1.221998	0	0	Free Surface	1.297246	0.186493	0.075978	0.037299	0.060515	2.569433	69.088347	536.18	No	0.037299	1.297246
SMN38804	SMH35547	SMH35548	200	54.549087	0.027498	0.232762	0.206	0	0.006	0	0	Free Surface	0.430154	0.047318	0.004268	0.009464	0.012432	1.720148	54.534178	2.09	No	0.009464	0.430154
PSPB10-1	PMHB10-1	PMHB10-2	300	31.009432	0.010029	11.470568	0	0	3.089995	0	0	Free Surface	0.922046	0.232086	0.118128	0.069626	0.080549	1.328056	97.10302	1,350.08	Yes	0.074448	0.838722
PSPB10-2	PMHB10-2	PMHB10-3	300	31.207923	0.005992	11.470568	0	0	3.089995	0	0	Free Surface	0.767813	0.264236	0.152826	0.079271	0.080549	1.031366	75.056415	1,350.08	No	0.079271	0.767813
PSPB10-3	PMHB10-3	PMHB10-4	300	51.124613	0.00401	11.470568	0	0	3.089995	0	0	Free Surface	0.665254	0.292786	0.18682	0.087836	0.080549	0.844995	61.399009	1,350.08	Yes	0.090271	0.640458
PSPB10-4	PMHB10-4	SMH9156	300	39.153811	0.006002	15.57788	0	0	4.319993	0	0	Free Surface	0.838302	0.309021	0.207378	0.092706	0.094313	1.033594	75.118405	1,883.00	No	0.092706	0.838302
PSPB5-6-8	PMHB5-6-8	SMH9079	300	69.886019	0.00807	44.112242	0	0	13.909977	0	0	Free Surface	1.236199	0.503784	0.506425	0.151135	0.162196	1.144121	87.105153	5,991.97	No	0.151135	1.236199
SMN10054	SMH16408	SMH11520	250	96.695971	0.003009	6.15226	1.029998	0	1.312293	0	0	Free Surface	0.511285	0.293823	0.188081	0.073456	0.061602	0.71003	32.710646	675.87	Yes	0.080989	0.446693
SMN10055	SMH11519	SMH11520	300	27.021028	0.00222	12.883972	0.617999	0	3.319145	0	0	Free Surface	0.555497	0.363281	0.281985	0.108984	0.085514	0.625439	45.690314	1,425.16	No	0.108984	0.555497
SMN19232	SMH11521	SMH11519	300	93.371032	0.002196	12.671093	0.411999	0	3.317145	0	0	Free Surface	0.550707	0.361145	0.278897	0.108344	0.084783	0.622135	45.432883	1,424.45	Yes	0.108664	0.548505
SMN19233	SMH11522	SMH11521	200	11.188032	0.004022	11.79984	0.206	0	3.121995	0	0	Free Surface	0.684358	0.538391	0.565757	0.107678	0.092175	0.742889	20.856734	1,343.74	Yes	0.108011	0.681735
PSPB5-6-6	PMHB5-6-6	PMHB5-6-7	300	150	0.002	44.112242	0	0	13.909977	0	0	Pressurized	0.624062	1	1.01729	0.3	0.160747	0.36369	43.362513	5,991.97	Yes	0.3	0.624062
PSPB5-6-7	PMHB5-6-7	PMHB5-6-8	300	150	0.002	44.112242	0	0	13.909977	0	0	Pressurized	0.624062	1	1.01729	0.3	0.160747	0.36369	43.362513	5,991.97	No	0.3	0.624062
SMN8352	SMH9148	SMH9190	300	93.949707	0.002214	1.848712	1.803997	0	0.010843	0	0	Free Surface	0.315921	0.137375	0.040522	0.041212	0.031801	0.599108	45.622954	232	Yes	0.04335	0.293535
SMN8386	SMH9190	SMH9226	300	107.940354	0.00326	2.757464	2.705996	0	0.012496	0	0	Free Surface	0.407697	0.151779	0.049807	0.045534	0.038933	0.734212	55.363316	239	Yes	0.195054	0.056676
SMN10146	SMH9260	SMH11621	250	79.077848	0.002302	12.543782	9.019985	0	0.926412	0	0	Pressurized	0.563633	0.463348	0.438504	0.115837	0.088954	0.602185	28.605865	986.84	Yes	0.25	0.25554
SMN10147	SMH11621	SMH57390	300	56.750532	0.004458	13.465896	9.921984	0	0.9341	0	0	Pressurized	0.723068	0.309509	0.207999	0.092853	0.087482	0.890736	64.740305	1,021.84	Yes	0.3	0.190504
PSPB4-1	PMHB4-1	PMHB4-2	300	150	0.002	16.379937	0	0	4.559992	0	0	Free Surface	0.570642	0.425964	0.377744	0.127789	0.096793	0.585608	43.362513	1,962.89	No	0.127789	0.570642
PSPB4-2	PMHB4-2	PMHB4-3	300	33.539763	0.001998	16.379937	0	0	4.559992	0	0	Free Surface	0.570318	0.426147	0.377968	0.127844	0.096793	0.585126	43.336801	1,962.89	No	0.127844	0.570318
PSPB4-3	PMHB4-3	PMHB5-6-4	300	80.06974	0.001998	16.379937	0	0	4.559992	0	0	Free Surface	0.570426	0.426086	0.377909	0.127826	0.096793	0.585287	43.343625	1,962.89	No	0.127826	0.570426
PSPB5-6-1.	PMHB5-6-1	PMHB5-6-2	300	150	0.002	31.14026	0	0	9.349984	0	0	Free Surface	0.667298	0.627197	0.718138	0.188159	0.135172	0.531104	43.362513	4,029.08	No	0.188159	0.667298
PSPB5-6-2.	PMHB5-6-2	PMHB5-6-3	300	118.013805	0.008999	31.14026	0	0	9.349984	0	0	Free Surface	1.175466	0.401001	0.338553	0.1203	0.135172	1.250077	91.980401	4,029.08	Yes	0.153827	0.853365
PSPB5-6-3.	PMHB5-6-3	PMHB5-6-4	300	80.002938	0.002025	31.14026	0	0	9.349984	0	0	Free Surface	0.67066	0.624512	0.713704	0.187354	0.135172	0.535508	43.631886	4,029.08	Yes	0.259085	0.479852
SMN20725	SFT362	SMH9148	150	57.311918	0.005967	0.901999	0.901999	0	0	0	0	Free Surface	0.394527	0.187073	0.076467	0.028061	0.02661	0.900851	11.795961	0	Yes	0.034637	0.292118
PSPB5-6-4	PMHB5-6-4	PMHB5-6-5	300	61.904276	0.001987	44.112242	0	0	13.909977	0	0	Pressurized	0.624062	1	1.020628	0.3	0.160471	0.36369	43.220688	5,991.97	Yes	0.3	0.624062
PSPB5-6-5	PMHB5-6-5	PMHB5-6-6	300	26.965107	0.00204	44.112242	0	0	13.909977	0	0	Pressurized	0.624062	1	1.007348	0.3	0.161576	0.36369	43.790481	5,991.97	Yes	0.3	0.624062
SMN8453	SMH9324	SMH9276	525	91.452626	0.002734	22.889383	0	0	6.704678	0	0	Free Surface	0.668976	0.215179	0.10152	0.112969	0.098099	0.758317	225.46593	3,238.71	Yes	0.140847	0.489751
SMN8491	SMH9358	SMH9324	525	78.714865	0.001524	22.864434	0	0	6.696678	0	0	Free Surface	0.543617	0.248901	0.135797	0.130673	0.098045	0.570098	168.372537	3,235.66	No	0.130673	0.543617
SMN8510	SMH9388	SMH9358	450	73.899869	0.002977	22.839482	0	0	6.688678	0	0	Free Surface	0.700469	0.258575	0.146425	0.116359	0.102268	0.777302	155.980933	3,232.61	No	0.116359	0.700469
SMN8534	SMH9417	SMH59188	450	43.932091	0.004552	22.789565	0	0	6.672678	0	0	Free Surface	0.814181	0.232086	0.118149	0.104439	0.102154	0.957502	192.888381	3,226.51	Yes	0.104459	0.813954
SMN8557	SMH9441	SMH9417	450	89.249008	0.003361	22.70938	0	0	6.618317	0	0	Free Surface	0.730229	0.250031	0.137014	0.112514	0.10197	0.825146	165.745191	3,091.46	No	0.112514	0.730229

SMN8576	SMH9460	SMH9441	450	77.592531	0.002835	22.684351	0	0	6.610317	0	0	Free Surface	0.687146	0.260864	0.149019	0.117389	0.101912	0.758893	152.224091	3,088.41	No	0.117389	0.687146
SMN61933	SMH59188	SMH9388	450	43.89032	0.004557	22.814526	0	0	6.680678	0	0	Free Surface	0.814617	0.232178	0.118222	0.10448	0.102211	0.957813	192.980146	3,229.56	Yes	0.110419	0.75332
PSPB8-1	PMHB8-1	PMHB8-2	300	110.5964	0.005986	18.104036	0	0	5.099992	0	0	Free Surface	0.873532	0.334503	0.241333	0.100351	0.101938	1.030522	75.016698	2,221.86	No	0.100351	0.873532
PSPB8-2	PMHB8-2	PMHB8-3	300	102.926191	0.005995	18.104036	0	0	5.099992	0	0	Free Surface	0.87397	0.334381	0.241155	0.100314	0.101938	1.031249	75.072189	2,221.86	Yes	0.105968	0.810904
PSPB8-3	PMHB8-3	PMHB8-4	300	108.222899	0.00401	18.104036	0	0	5.099992	0	0	Free Surface	0.755708	0.37207	0.294843	0.111621	0.101938	0.839299	61.402313	2,221.86	No	0.111621	0.755708
PSPB8-4	PMHB8-4	SMH9276	300	106.991119	0.005944	18.104036	0	0	5.099992	0	0	Free Surface	0.871353	0.335114	0.242171	0.100534	0.101938	1.026899	74.757392	2,221.86	No	0.100534	0.871353
SMN8660	SMH9593	SMH9557	300	75.316465	0.003452	4.043464	0	0	1.015104	0	0	Free Surface	0.465992	0.180359	0.070976	0.054108	0.04728	0.766956	56.969336	479.96	Yes	0.062518	0.378833
SMN18889	SMH9635	SMH9593	250	61.665605	0.007427	4.020538	0	0	1.009104	0	0	Free Surface	0.622916	0.189194	0.07824	0.047298	0.049551	1.095235	51.387567	477.86	Yes	0.097703	0.2262
PSPB7-1	PMHB7-1	PMHB7-2	300	78.48694	0.010014	4.985374	0	0	1.259998	0	0	Free Surface	0.721181	0.154083	0.051379	0.046225	0.052595	1.288631	97.031338	540.35	Yes	0.054185	0.573356
PSPB7-2	PMHB7-2	PMHB7-3	300	117.367474	0.002991	4.985374	0	0	1.259998	0	0	Free Surface	0.471083	0.207153	0.09402	0.062146	0.052595	0.720788	53.024811	540.35	Yes	0.065339	0.438606
SMN15173	SMH19381	SMH19382	600	41.553067	0.011912	421.381167	358.687652	0	22.349671	0	0	Pressurized	2.509624	0.573975	0.627073	0.344385	0.425573	1.505956	671.981309	14,105.40	Yes	0.6	1.490333
SMN15174	SMH19382	SMH19383	600	94.260256	0.001347	422.395295	359.58965	0	22.421426	0	0	Pressurized	1.49392	1	1.869069	0.6	0.307985	0.615625	225.992324	14,234.30	No	0.6	1.49392
SMN15175	SMH19383	SMH19384	600	107.549266	0.011883	431.44847	364.008643	0	24.254725	0	0	Free Surface	2.520717	0.58313	0.642852	0.349878	0.43066	1.495954	671.147285	14,923.07	No	0.349878	2.520717
SMN15176	SMH9693	SMH19383	600	92.183624	0.003504	9.554834	3.927993	0	1.4173	0	0	Free Surface	0.553732	0.111473	0.026218	0.066884	0.060764	0.826899	364.443751	509.26	Yes	0.33849	0.058118
SMN15177	SMH19380	SMH57382	600	35.939766	0.003506	418.103174	356.883655	0	21.773117	0	0	Pressurized	1.47874	1	1.146911	0.6	0.395227	0.60937	364.547216	13,894.55	Yes	0.6	1.47874
SMN61668	SMH57382	SMH19381	600	22.566302	0.003501	419.960551	357.785653	0	22.154226	0	0	Pressurized	1.485309	1	1.15284	0.6	0.39508	0.612077	364.283486	14,062.30	Yes	0.6	1.485309
SMN8738	SMH9705	SMH9693	600	56.727418	0.002785	9.048879	3.436994	0	1.4133	0	0	Free Surface	0.502765	0.114731	0.027849	0.068839	0.059117	0.739765	324.928773	507.78	Yes	0.12297	0.217054
SMN15172	SMH19384	SMH19385	600	108.928554	0.012449	433.511833	364.499642	0	24.903937	0	0	Free Surface	2.56924	0.576294	0.631082	0.345776	0.431692	1.537406	686.934157	15,245.37	No	0.345776	2.56924
SMN8640	SMH9557	SMH9540	300	74.052661	0.002701	9.225853	0	0	2.451897	0	0	Free Surface	0.542847	0.289764	0.183089	0.086929	0.072028	0.69345	50.389971	1,139.41	Yes	0.088812	0.52691
PSPB7-3	PMHB7-3	SMH9557	300	74.828904	0.002018	4.985374	0	0	1.259998	0	0	Free Surface	0.409847	0.228439	0.114458	0.068532	0.052595	0.595332	43.556525	540.35	No	0.068532	0.409847
SMN8597	SMH9498	SMH9460	450	81.077258	0.00259	22.659319	0	0	6.602317	0	0	Free Surface	0.665098	0.266785	0.155742	0.120053	0.101854	0.725669	145.49301	3,085.36	Yes	0.123721	0.637641
SMN8627	SMH9540	SMH9498	300	64.893755	0.003698	9.332939	0	0	2.506324	0	0	Free Surface	0.609319	0.268982	0.158276	0.080695	0.072455	0.810608	58.966264	1,299.51	No	0.080695	0.609319
SMN8416	SMH9223	SMH9262	200	63.457016	0.004129	5.802505	2.705996	0	0.774907	0	0	Free Surface	0.573863	0.358154	0.274592	0.071631	0.063729	0.797763	21.131373	452.84	No	0.071631	0.573863
SMN8419	SMH9262	SMH9226	300	74.342299	0.008084	7.684293	4.509993	0	0.798887	0	0	Free Surface	0.760047	0.200638	0.088142	0.060191	0.06559	1.182735	87.180366	501.84	Yes	0.087406	0.448712
SMN18837	SMH9284	SMH9262	300	78.804905	0.005228	0.993616	0.901999	0	0.021171	0	0	Free Surface	0.353947	0.083206	0.014173	0.024962	0.023246	0.86805	70.108622	43	Yes	0.042577	0.161945
SMN8408	SMH9240	SMH9223	200	76.116473	0.00356	4.908502	1.803997	0	0.776907	0	0	Free Surface	0.519283	0.340881	0.250142	0.068176	0.058456	0.742365	19.622855	452.83	Yes	0.069904	0.501844
SMN18827	SMH9248	SMH9240	200	56.187955	0.003186	0.979454	0.901999	0	0.017959	0	0	Free Surface	0.312901	0.156082	0.052767	0.031216	0.025675	0.680184	18.561873	51.01	Yes	0.049696	0.160846
PSPB2-1	PMHB2-1	SMH9240	300	89.238207	0.001995	3.012277	0	0	0.739999	0	0	Free Surface	0.352113	0.178589	0.06956	0.053577	0.040717	0.582532	43.3046	312.81	No	0.053577	0.352113
SMN8420	SMH9226	SMH9260	250	59.412853	0.007237	11.281042	8.117987	0	0.815821	0	0	Free Surface	0.831386	0.320465	0.222386	0.080116	0.084194	1.100467	50.727194	749.84	Yes	0.25	0.229816
PSPB3-1	PMHB3-1	PMHB3-2	300	77.253882	0.002006	2.582727	0	0	0.629999	0	0	Pressurized	0.337108	0.165436	0.059467	0.049631	0.037662	0.580465	43.431531	267.03	Yes	0.3	0.036538
PSPB3-2	PMHB3-2	SMH9040	300	87.860004	0.001992	2.582727	0	0	0.629999	0	0	Pressurized	0.336256	0.165726	0.059684	0.049718	0.037662	0.578471	43.273584	267.03	Yes	0.3	0.036538
SMN8235	SMH16802	SMH9040	450	86.278619	0.005401	280.58185	226.785592	0	18.044347	0	0	Pressurized	1.76419	1	1.335476	0.45	0.322936	0.839467	210.098704	9,399.99	Yes	0.45	1.76419
SMN8246	SMH9040	SMH9028	450	67.884364	0.004066	283.169945	227.67359	0	18.692953	0	0	Pressurized	1.780463	1	1.553444	0.45	0.300433	0.84721	182.28531	9,677.03	Yes	0.45	1.780463
SMN15576	SMH16805	SMH16802	450	95.997733	0.005906	279.666981	225.897593	0	18.033671	0	0	Pressurized	1.758438	1	1.272911	0.45	0.330227	0.83673	219.706572	9,393.98	Yes	0.45	1.758438
PSPB1-2	PMHB1-2	PMHB1-3	300	149.769486	0.002003	2.46593	0	0	0.599999	0	0	Pressurized	0.332353	0.161804	0.056824	0.048541	0.03679	0.578939	43.39587	251.77	Yes	0.3	0.034886
PSPB1-3	PMHB1-3	SMH16805	300	118.122051	0.001998	2.46593	0	0	0.599999	0	0	Pressurized	0.332036	0.161911	0.056897	0.048573	0.03679	0.578188	43.340105	251.77	Yes	0.3	0.034886
SMN15577	SMH16804	SMH16805	450	36.502053	0.003918	272.8006	225.009595	0	15.898636	0	0	Pressurized	1.715265	1	1.524593	0.45	0.297578	0.816187	178.933386	8,875.20	Yes	0.45	1.715265
PSPB1-1	PMHB1-1	PMHB1-2	300	54.410413	0.001985	2.46593	0	0	0.599999	0	0	Pressurized	0.331269	0.16217	0.057083	0.048651	0.03679	0.576371	43.198664	251.77	Yes	0.3	0.034886
SMN8216	SMH9014	SMH8986	450	98.357869	0.004057	286.175731	229.449587	0	19.177066	0	0	Pressurized	1.799362	1	1.571697	0.45	0.300259	0.856203	182.080694	9,923.01	Yes	0.45	1.799362
SMN8234	SMH9028	SMH9014	450	66.339562	0.004387	285.069015	228.561589	0	19.09863	0	0	Pressurized	1.792404	1	1.505594	0.45	0.30634	0.852892	189.339925	9,907.00	Yes	0.45	1.792404
SMN8174	SMH8952	SMH8928	525	33.846017	0.002748	288.802808	231.225584	0	19.503735	0	0	Pressurized	1.334116	1	1.277629	0.525	0.320931	0.587731	226.045935	10,059.79	Yes	0.525	1.334116
SMN8196	SMH8986	SMH8952	450	98.983933	0.004233	287.899047	230.337586	0	19.497735	0	0	Pressurized	1.810198	1	1.547867	0.45	0.303558	0.861359	185.997311	10,057.46	Yes	0.45	1.810198
SMN8150	SMH8903	SMH8928	300	109.781046	0.003115	7.041848	5.327991	0	0.409897	0	0	Pressurized	0.52854	0.243607	0.130118	0.073082	0.062726	0.741775	54.118882	160.7	Yes	0.3	0.099622
SMN8151	SMH8929	SMH8903	200	111.018017	0.003999	4.851322	3.551994	0	0.307667	0	0	Pressurized	0.539745	0.328583	0.233264	0.065717	0.058104	0.787691	20.797524	118.04	Yes	0.2	0.154423
SMN8154	SMH8928	SMH8904	525	88.036126	0.003578	300.238704	238.329573	0	21.191314	0	0	Pressurized	1.386944	1	1.163946	0.525	0.343678	0.611004	257.948987	10,799.15	Yes	0.525	1.386944
SMN18768	SMH8968	SMH8928	200	88.183631	0.00398	5.607608	0.887999	0	1.187998	0	0	Pressurized	0.560946	0.355164	0.270272	0.071033	0.062614	0.783532	20.74801	503.33	Yes	0.2	0.178496
SMN15531	SMH16441	SMH16408	250	39.048252	0.002996	5.884658	0.823999	0	1.289449	0	0	Free Surface	0.504066	0.287506	0.180294	0.071877	0.060212	0.708397	32.639158	619.16	Yes	0.072666	0.496455
SMN16978	SMH11525	SMH16441	250	60.864425	0.00299	5.671164	0.617999	0	1.287449	0	0	Free Surface	0.498422	0.282257	0.173929	0.070564	0.059082	0.707559	32.606242	618.45	Yes	0.07122	0.492028
SMN16736	SMH11524	SMH11525	250	107.276485	0.003002	1.307987	0.411999	0	0.213271	0	0	Free Surface	0.32459	0.136581	0.040039	0.034145	0.028013	0.676321	32.667995	139.42	Yes	0.052355	0.175235
SMN19231	SMH11523	SMH11524	250	67.785944	0.002995	0.29407	0.206	0	0.020176	0	0	Free Surface	0.206802	0.067196	0.009012	0.016799	0.013203	0.619356	32.630596	25.71	Yes	0.025472	0.111988

Model Results for proposed pipes

ID	From ID	To ID	Diameter (mm)	Length (m)	Slope	Total Flow (L/s)	Unpeakable Flow (L/s)	Peakable Flow (L/s)	Coverage Flow (L/s)	Infiltration Flow (L/s)	Storm Flow (L/s)	Flow Type	Velocity (m/s)	d/D	q/Q	Water Depth (m)	Critical Depth (m)	Froude Number	Full Flow (L/s)	Coverage Count	Backwater Adjustment	Adjusted Depth (m)	Adjusted Velocity (m/s)
PSPB9-1	PMHB9-1	PMHB10-4	300	97.291511	0.009281	4.870573	0	0	1.229998	0	0	Free Surface	0.697362	0.155182	0.05214	0.046555	0.051974	1.241475	93.412683	532.92	Yes	0.06963	0.391478
PSPB10-1	PMHB10-1	PMHB10-2	300	31.009432	0.010029	11.470568	0	0	3.089995	0	0	Free Surface	0.922046	0.232086	0.118128	0.069626	0.080549	1.328056	97.10302	1,350.08	Yes	0.074448	0.838722
PSPB10-2	PMHB10-2	PMHB10-3	300	31.207923	0.005992	11.470568	0	0	3.089995	0	0	Free Surface	0.767813	0.264236	0.152826	0.079271	0.080549	1.031366	75.056415	1,350.08	No	0.079271	0.767813
PSPB10-3	PMHB10-3	PMHB10-4	300	51.124613	0.00401	11.470568	0	0	3.089995	0	0	Free Surface	0.665254	0.292786	0.18682	0.087836	0.080549	0.844995	61.399009	1,350.08	Yes	0.090271	0.640458
PSPB10-4	PMHB10-4	SMH9156	300	39.153811	0.006002	15.57788	0	0	4.319993	0	0	Free Surface	0.838302	0.309021	0.207378	0.092706	0.094313	1.033594	75.118405	1,883.00	No	0.092706	0.838302
SMN18817	SMH9156	SMH9177	250	34.631269	0.028096	15.80461	0.206	0	4.328934	0	0	Pressurized	1.486788	0.26886	0.15813	0.067215	0.100305	2.167268	99.946832	1,898.09	Yes	0.25	0.321969
PSPB8-4	PMHB8-4	SMH9276	300	106.991119	0.005944	18.104036	0	0	5.099992	0	0	Free Surface	0.871353	0.335114	0.242171	0.100534	0.101938	1.026899	74.757392	2,221.86	No	0.100534	0.871353
PSPB8-2	PMHB8-2	PMHB8-3	300	102.926191	0.005995	18.104036	0	0	5.099992	0	0	Free Surface	0.87397	0.334381	0.241155	0.100314	0.101938	1.031249	75.072189	2,221.86	Yes	0.105968	0.810904
PSPB8-3	PMHB8-3	PMHB8-4	300	108.222899	0.00401	18.104036	0	0	5.099992	0	0	Free Surface	0.755708	0.37207	0.294843	0.111621	0.101938	0.839299	61.402313	2,221.86	No	0.111621	0.755708
PSPB8-1	PMHB8-1	PMHB8-2	300	110.5964	0.005986	18.104036	0	0	5.099992	0	0	Free Surface	0.873532	0.334503	0.241333	0.100351	0.101938	1.030522	75.016698	2,221.86	No	0.100351	0.873532
PSPB7-2	PMHB7-2	PMHB7-3	300	117.367474	0.002991	4.985374	0	0	1.259998	0	0	Free Surface	0.471083	0.207153	0.09402	0.062146	0.052595	0.720788	53.024811	540.35	Yes	0.065339	0.438606
PSPB7-1	PMHB7-1	PMHB7-2	300	78.48694	0.010014	4.985374	0	0	1.259998	0	0	Free Surface	0.721181	0.154083	0.051379	0.046225	0.052595	1.288631	97.031338	540.35	Yes	0.054185	0.573356
PSPB7-3	PMHB7-3	SMH9557	300	74.828904	0.002018	4.985374	0	0	1.259998	0	0	Free Surface	0.409847	0.228439	0.114458	0.068532	0.052595	0.595332	43.556525	540.35	No	0.068532	0.409847
PSPB5-6-1.	PMHB5-6-1	PMHB5-6-2	300	150	0.002	31.14026	0	0	9.349984	0	0	Free Surface	0.667298	0.627197	0.718138	0.188159	0.135172	0.531104	43.362513	4,029.08	No	0.188159	0.667298
PSPB5-6-2.	PMHB5-6-2	PMHB5-6-3	300	118.013805	0.008999	31.14026	0	0	9.349984	0	0	Free Surface	1.175466	0.401001	0.338553	0.1203	0.135172	1.250077	91.980401	4,029.08	Yes	0.153827	0.853365
PSPB4-1	PMHB4-1	PMHB4-2	300	150	0.002	16.379937	0	0	4.559992	0	0	Free Surface	0.570642	0.425964	0.377744	0.127789	0.096793	0.585608	43.362513	1,962.89	No	0.127789	0.570642
PSPB4-2	PMHB4-2	PMHB4-3	300	33.539763	0.001998	16.379937	0	0	4.559992	0	0	Free Surface	0.570318	0.426147	0.377968	0.127844	0.096793	0.585126	43.336801	1,962.89	No	0.127844	0.570318
PSPB4-3	PMHB4-3	PMHB5-6-4	300	80.06974	0.001998	16.379937	0	0	4.559992	0	0	Free Surface	0.570426	0.426086	0.377909	0.127826	0.096793	0.585287	43.343625	1,962.89	No	0.127826	0.570426
PSPB5-6-3.	PMHB5-6-3	PMHB5-6-4	300	80.002938	0.002025	31.14026	0	0	9.349984	0	0	Free Surface	0.67066	0.624512	0.713704	0.187354	0.135172	0.535508	43.631886	4,029.08	Yes	0.259085	0.479852
PSPB5-6-4	PMHB5-6-4	PMHB5-6-5	300	61.904276	0.001987	44.112242	0	0	13.909977	0	0	Pressurized	0.624062	1	1.020628	0.3	0.160471	0.36369	43.220688	5,991.97	Yes	0.3	0.624062
PSPB5-6-5	PMHB5-6-5	PMHB5-6-6	300	26.965107	0.00204	44.112242	0	0	13.909977	0	0	Pressurized	0.624062	1	1.007348	0.3	0.161576	0.36369	43.790481	5,991.97	Yes	0.3	0.624062
PSPB5-6-6	PMHB5-6-6	PMHB5-6-7	300	150	0.002	44.112242	0	0	13.909977	0	0	Pressurized	0.624062	1	1.01729	0.3	0.160747	0.36369	43.362513	5,991.97	Yes	0.3	0.624062
PSPB5-6-7	PMHB5-6-7	PMHB5-6-8	300	150	0.002	44.112242	0	0	13.909977	0	0	Pressurized	0.624062	1	1.01729	0.3	0.160747	0.36369	43.362513	5,991.97	No	0.3	0.624062
PSPB5-6-8	PMHB5-6-8	SMH9079	300	69.886019	0.00807	44.112242	0	0	13.909977	0	0	Free Surface	1.236199	0.503784	0.506425	0.151135	0.162196	1.144121	87.105153	5,991.97	No	0.151135	1.236199
PSPB3-1	PMHB3-1	PMHB3-2	300	77.253882	0.002006	2.582727	0	0	0.629999	0	0	Pressurized	0.337108	0.165436	0.059467	0.049631	0.037662	0.580465	43.431531	267.03	Yes	0.3	0.036538
PSPB3-2	PMHB3-2	SMH9040	300	87.860004	0.001992	2.582727	0	0	0.629999	0	0	Pressurized	0.336256	0.165726	0.059684	0.049718	0.037662	0.578471	43.273584	267.03	Yes	0.3	0.036538
PSPB2-1	PMHB2-1	SMH9240	300	89.238207	0.001995	3.012277	0	0	0.739999	0	0	Free Surface	0.352113	0.178589	0.06956	0.053577	0.040717	0.582532	43.3046	312.81	No	0.053577	0.352113
PSPB1-3	PMHB1-3	SMH16805	300	118.122051	0.001998	2.46593	0	0	0.599999	0	0	Pressurized	0.332036	0.161911	0.056897	0.048573	0.03679	0.578188	43.340105	251.77	Yes	0.3	0.034886
PSPB1-2	PMHB1-2	PMHB1-3	300	149.769486	0.002003	2.46593	0	0	0.599999	0	0	Pressurized	0.332353	0.161804	0.056824	0.048541	0.03679	0.578939	43.39587	251.77	Yes	0.3	0.034886

PSPB1-1	PMHB1-1	PMHB1-2	300	54.410413	0.001985	2.46593	0	0	0.599999	0	0	Pressurized	0.331269	0.16217	0.057083	0.048651	0.03679	0.576371	43.198664	251.77	Yes	0.3	0.034886

Responses to Submissions Received November 24, 2021 to July 11, 2023

The following tables summarize and respond to comments that were received over the course of the MTSA ASP Planning Project from November 24, 2021 and July 11, 2023. For a summary of feedback received between September and November 2021, refer to staff report PL-02-22, Appendix E (MTSA Area Specific Planning Project: Feedback Report 1 (Fall 2021)).

This reporting period includes the following key events:

- **January 11, 2022 – MTSA ASP Interim Report:**
    - Community Planning, Regulation and Mobility (CPRM) Committee considered staff report PL-02-22 – Major Transit Station Area (MTSA) Area-Specific Recommended Preferred Precinct Plans (RPPPs). This report presented RPPPs for Council endorsement and the MTSA ASP Study Interim Report (December 2021).
- **July 12, 2022 – MTSA ASP Study Final Report:**
    - Staff Report PL-10-22 - Major Transit Station Areas – Area Specific Planning Study Update was considered at CPRM on July 5, 2022 and at City Council on July 12, 2022. The report included Appendix A: MTSA Area-Specific Planning (ASP) Study Final Report prepared by Dillon Consulting Ltd. Dated June 28, 2022. The Final Report refines the precinct plans of the Interim Report (December 2021) and contains policy directions to inform future official plan policies and implementation. Staff were directed by City Council to use the Final Report to prepare area specific plans and draft official plan policies, and re-examine the Burlington GO Central Precinct with respect to maximum height permissions alongside the provision of community amenities.
- **July 11, 2023 – MTSA Update and Community Planning Permit System (CPPS) Overview:**
    - Staff report PL-40-23 - MTSA Update and Community Planning Permit System Exploration was considered at CPRM on June 23, 2023 and received and filed by City Council on July 11, 2023. The report provides an update on the MTSA project as well as an overview of the CPPS tool. Through this report, City Council direct staff to proceed with preparing a draft Community Planning Permit By-law for consultation in the of Fall 2023 at the same time as the release of draft Official Plan policies.

Where necessary, comments have been summarized; in other cases, excerpts of comments have been quoted verbatim. Comments have been sorted by MTSA and 'general comment'.

Staff's response, unless otherwise noted, are reflective of the draft MTSA official plan policies and Community Planning Permit By-law presented in PL-59-23.

Table 1. Downtown Burlington Urban Growth Centre / Burlington GO MTSA

ID	Name & Address	Precinct (Final Report)	Date Received	Comment Summary
1	Nalco Water 1055 Truman Street, Burlington	Urban Employment	Jan 10, 2021	a. In response to the Interim Report (Dec 2021), policies should allow existing industrial use to continue to operate and expand in future on subject lands, and for new industrial users, as Nalco has no plans to relocate or redevelop lands at this time. b. Potential parks and active transportation connections shown in the Interim Report (Dec 2021) should be relocated off the owner's lands. c. Concern that it is premature for City to propose high-density residential uses to the south of subject lands before City's land use compatibility study is complete.
	Staff Response: a. The commenter's lands are proposed to be located within the Urban Employment Precinct, which is envisioned to continue to be an employment area where industrial uses are permitted. It is also identified within the Regional Employment Overlay in the Region's Official Plan. b. Parks and active transportation connections are important elements of complete communities, serving both residential and employment uses. The Final Report (Jun 2022) and proposed official plan schedules have shifted the location of the potential park so that it is no longer solely within one property. It is now a shared responsibility between lands within the Mid-Rise Residential and Urban Employment precincts. The location of the potential active transportation location has also been modified to be located along the southern boundary of the Urban Employment Precinct, north of the rail corridor. The City's Parks Provisioning Master Plan (Mar 2023) found that this is area is not within walking distance (400 m) to a city park. c. Provision 5.24.2 of the draft CPP By-law requires that land use compatibility studies be prepared prior to the submission of a CPP application containing sensitive land uses, to demonstrate that potential impacts to major facilities are minimized and mitigated in accordance with provincial guidelines, standards and procedures.			
2	Korsiak Planning on behalf of owners of 2207 Fairview Street	Burlington GO Central	Jan 10, 2022	Site-specific request to be afforded the highest heights in the MTSA
	Staff Response: The subject property is within the Burlington GO Central Precinct, which is envisioned to contain the tallest buildings in the MTSA and be the preeminent destination for major office, regional public service facilities as well as commercial, recreation, cultural and entertainment uses.			

ID	Name & Address	Precinct (Final Report)	Date Received	Comment Summary
3	MHBC Planning on behalf of owners of 850 Brant Street	Legion Node	Jan 10, 2022	Site-specific request for heights to be in accordance with the 30-storey height envisioned in the Mobility Hubs Draft Plan (2018) and Preliminary Preferred Precinct Plan (Oct 2021).
	Staff Response: The site is part of the Legion Node Precinct. The Interim Report (Dec 2021) contemplated a maximum height of 11-storeys across this precinct. The Interim Report noted that further study of the precinct and refinement of maximum heights is needed. After further study, in recognition of the site's location at the intersection of two frequent transit corridors and its proximity to the GO station, the maximum permitted height of the site has been increased back to 30 storeys.			
The following comments were received following the release of the MTSA ASP Final Report (Jun 2022):				
4	Emshih Developments Inc., 895 Brant Street; Lands at Emery/Plains Road, and Waterdown Road.	Burlington GO Central; Emery Commons (Aldershot)	Jul 19, 2022	**a. Burlington GO Central Precinct:** i. Request for no height maximums, no requirements for retail at grade, and no employment-related requirements as it relates to the Burlington GO Precinct, as described in the January 2022 Council Endorsed Precinct Plans ii. Request for a reduced setback from Rambo Creek that is less than 7.5 m b. **Emery Commons Precinct:** Request for clarity on precinct boundaries, cost sharing to fund new roads, and directions for setbacks in the ASP Study Final Report, as it relates to the owner's conceptual plans for their lands. **c. Overarching Policy Directions:** i. Suggestion for no minimum parking requirements ii. Request for the city to provide a definition of employment and jobs. iii. Expressed interest in engaging in inclusionary zoning and policy development.

ID	Name & Address	Precinct (Final Report)	Date Received	Comment Summary
	Staff Response: Some of the concerns related to height and the overall organization of the precincts were addressed through the MTSA ASP Final Study Report. **a. Burlington GO Central Precinct:** i. Active uses at grade contribute to vibrant streetscapes and encourage walkability and transit usage. The proposed OPA and by-law provide clarity and flexibility regarding where continuous at-grade retail, service commercial, or office uses are required. Employment uses are an important component of complete communities and the City is required to plan to accommodate future employment growth within the MTSAs in accordance with the Region of Halton's Official Plan. ii. Development adjacent to watercourse features or within/in proximity to hazardous lands must be consistent with provincial natural hazard policy and permission is required from Conservation Halton to undertake development within these areas. A reduced setback may only be considered on a site-specific basis through a Community Planning Permit Class 2 application where all other requirements are met. b. **Emery Commons Precinct:** See response above. Also, the draft OPA requires tertiary planning for select key areas of the MTSAs, including lands within the Emery Commons Precinct, to ensure the shared delivery of streets and blocks, land uses, parks and open space, and other matters. Tertiary plans, along with associated cost-sharing agreements by the landowner group, will be required to be completed prior to the approval of any development application in the MTSAs. c. **Overarching Policy Directions:** i. The draft by-law sets out minimum parking standards, including flexibility in the rates to encourage the provision of affordable housing, bicycle parking-supportive facilities (e.g. showers), and shared parking between residential and non-residential uses. ii. The draft OPA is based on the current legislative framework and will rely on the current definition of employment in the City's Official Plan (2020). It is acknowledged that the definition of "area of employment" is anticipated to change due to Bill 97. The City will continue to monitor legislative changes from the province and assess implications to the policies at that time. The CPPS acknowledges a broader approach to understanding space by adopting the term "job-related GFA". Staff are interested in feedback on this approach and on opportunities to clarify the intent. iii. Noted. The City is not proposing to pursue inclusionary zoning for the MTSAs at this time.			

ID	Name & Address	Precinct (Final Report)	Date Received	Comment Summary
5	Chris Ariens	Burlington Junction; Appleby Gateway	Oct 4, 2022	The potential rail crossing shown across the QEW and potential active transportation connection through the Urban Employment Precinct is critically important to achieving the modal split targets across the city but currently do not exist. Additional policies should be included to specifically require an active transportation crossing across the QEW and require that the connection be designed with public safety, lighting and wildlife protection in mind, including protection from industrial truck traffic.
	Staff Response: The crossing is currently being explored through the City's broader Integrated Mobility Plan (IMP). Specific details about connection/crossing are outside the scope of MTSA Project and will be explored through IMP. Staff note that the crossing is identified on Schedule P (Long Term Cycling Master Plan) of the Burlington Official Plan, and Section 6.2.4 of the Official Plan provides policy guidance on the design of active transportation connections as it relates to safety and lighting. The proposed amendment will continue to identify this as a potential crossing with an off-road active transportation connection (see draft Schedule F-1 (Transportation Network) for the Burlington GO MTSA) and refer to 6.2.4 of the Official Plan for design guidance.			
6	Robert Osborne	Upper Brant Precinct; Burlington Junction	Mar 9, 2023	Suggestion to clarify that maximum height permissions in Upper Brant Precinct ranges between 11 and 25 storeys, rather than "the minimum building height is eleven (11) storeys and the maximum building height shall not exceed twenty-five (25) storeys" as stated in subsection 4.4.8.1b) of the MTSA ASP Study Final Report.
	Staff Response: Staff note that the maximum building height is 25 storeys in the Upper Brant Precinct, and that buildings are required to achieve a minimum height of 11 storeys. Staff also note that the maximum heights for Community Planning Permit Class 1 and 2 applications are intended to be proportionate to the provision of services, facilities and matters. It is proposed that through a Community Planning Permit Class 3 application, proponents of development may request that Council approve additional height beyond the Class 2 maximums.			
7	Wellings Planning Consultants Inc., on behalf of Venier Properties 920 Brant Inc. (owner of 920, 930 & 932 Brant Street)	GO Central Precinct	Mar 23, 2023	**Complete Streets:** Supportive of complete streets principle, and notes that there is a potential for a new complete street in this precinct. **Retail Streets:** Suggestion to require a minimum percentage of the ground floor to be active non-residential use and allow for flexibility in permitted uses in these spaces, instead of requiring all ground floor space to be non-residential, to ensure that space is available to meet retail demand when it grows, while allowing for interim uses.

ID	Name & Address	Precinct (Final Report)	Date Received	Comment Summary
				Employment Conversions a. Request for clarification on how policy direction to "retain space for a similar number of jobs to be accommodated on site" would be implemented: • How would space be calculated? • Concern that it is not feasible to use a Holding Provision to restrict residential development until a minimum amount of employment is achieved on site since employment space would largely be on the ground floor of the mixed-use building. b. Suggestion that City provide an indication of the type of community service facilities that redevelopment of converted lands may be required to deliver, in accordance with policy direction 3.3.6(d), beyond the potential new park identified in Figure 4.4. **Land Use Compatibility** c. Presence of employment uses should not be reason to sterilize redevelopment potential of adjacent lands. **Comprehensive Block Plans:** Comments that client's lands are not in an area identified in Section 4.3 o) as being subject to comprehensive block planning. **Parks:** "We fully support the inclusion of Urban Parks as a distinct form of public space, and the recognition of the role that privately owned spaces (POPS) play in dense urban settings." **Burlington Junction Specific:** d. Generally supportive of vision for Burlington Junction and direction for tall buildings and height for the Burlington GO Central Precinct and height restrictions in areas adjacent to existing neighbourhoods or industry. Notes that height should not be restricted on client's lands as they are not in proximity to a low-rise residential area.

ID	Name & Address	Precinct (Final Report)	Date Received	Comment Summary
				e. Concern about proposed policy direction to limit residential development before employment targets are met. Suggestion for City to include phasing policies that will allow residential and commercial space to proceed together in stages. Suggestion for BEDC to establish an office attraction strategy that may include incentives. f. Interest in working with City staff to refine potential new streets, parks and active transportation connections.

Staff Response:

Complete Streets: Noted.

Retail Streets: Active uses (retail, service commercial, and office uses) at the ground level contribute to vibrant, pedestrian-oriented streetscapes. In response to suggestions from the public and industry for more flexibility in requirements for ground-floor active uses, the proposed OPA and by-law introduces more flexibility in the following ways:

- Whereas the Final Report required active uses along most streets, the proposed draft activated streets policies provide more focused locations where at grade active uses are required.
- The types of uses allowed along activated streets have been broadened to include office, as well as public service facilities, institutional uses and residential lobbies.
- A required minimum first floor height will help to ensure that the first floor of buildings can accommodate a variety of uses over time.
- There is also now flexibility in the requirement for at grade active uses along proposed new streets not identified on the MTSA transportation network schedules (Schedules F-2, G-2 and H-2). The appropriate activated street classification for a new proposed street not shown on the MTSA transportation network schedules will be determined by the City on a case by case basis, taking into consideration the objectives and vision of the precinct and the location of the new street in relation to other existing or proposed activated streets (see proposed policy 8.1.2(8.2)c)).

Employment Conversions:

a.

- The Provincial Growth Plan and Regional Official Plan require that the redevelopment of any converted employment lands include the replacement of a similar number of jobs. These policies are proposed to be satisfied through the draft CPP By-law. The draft by-law currently includes standards for a “TBD” (to be determined) minimum amount of job-related gross floor area. Staff are continuing to develop and seek feedback on this standard.

ID	Name & Address	Precinct (Final Report)	Date Received	Comment Summary
				• A holding provision is no longer contemplated. Instead, in order to ensure that future development incorporates job-related uses in the Burlington GO Central Precinct, dwellings above the first two storeys of a mixed use building are proposed to be allowed as a discretionary use if the development also contains office or community space. b. The City is currently updating its Parks, Recreation and Cultural Assets Master Plan (PRCAMP), informed by inputs including the Parks Provisioning Master Plan (completed March 2023) and the MTSA ASP Project. The PRCAMP update will determine the need for new city recreation and leisure facilities as well as revitalization of existing assets for a 20-30 year period. **Land Use Compatibility** c. Noted. Provincial policies require that land use compatibility be demonstrated between sensitive land uses and major facilities, to ensure the long-term operational and economic viability of major facilities. **Comprehensive Block Plans:** The Final Report contemplated a new road within the lands south of the rail, west of Brant Street and north of Fairview Street in the Burlington GO Central Precinct, but did not identify the lands as subject to comprehensive block planning. The proposed policies clarify that tertiary planning is required in this quadrant, including the subject lands, to ensure that the costs associated with active transportation connections and cultural heritage preservation in the quadrant, are distributed in a fair and equitable manner among landowners. **Parks:** Noted. **Burlington Junction Specific:** d. The policy intent is to ensure that development contributes to the proportional target of people and jobs for the MTSA, and supports the objective for the MTSAs to redevelop into complete communities. The maximum heights for Community Planning Permit Class 1 and 2 applications are intended to be proportionate to the provision of services, facilities and matters. It is proposed that through a Community Planning Permit Class 3 application, proponents of development may request that Council approve additional height beyond the Class 2 maximums. e. Comment has been shared with BEDC. See also response above regarding Employment Conversions. f. Noted. The transportation network and location of parks shown on the proposed schedules are informed by the MTSA Transportation Assessment (Dillon Consulting, September 2023) and Parks Provisioning Master Plan (March 2023). There is the opportunity to further refine these elements through tertiary planning.

ID	Name & Address	Precinct (Final Report)	Date Received	Comment Summary
8	Korsiak Planning on behalf of Bull Moose Tube, owner of 2170 Queensway Drive	(B) Queensway Commons; Low to Mid-Rise Residential	Mar 24, 2023	a. Opinion that subject property should be part of the GO Central Precinct with a maximum height of 45-storeys b. Suggestion that requirement for continuous retail or service commercial uses at-grade be revisited to ensure greater flexibility for at grade uses and greater ability to respond to market demand.
	Staff Response: a. The subject property is proposed to remain within the Queensway Commons precinct. This precinct is envisioned to function differently from the GO Central Precinct; it is envisioned to be a unique retail and service commercial destination with opportunities for public features that offer opportunities for community gatherings. While the maximum height for this precinct for a Class 2 application is between 11 and 20 storeys, it is possible to exceed these heights through a Class 3 application process subject to consideration of factors including the guiding principles of the CPP By-law, provision of services, facilities and matters, and the general intent of the City's Official Plan. b. In response to suggestions from the public and industry for more flexibility in requirements for ground-floor active uses, the proposed OPA and by-law introduces more flexibility. See response to Wellings Planning Consultants above regarding Retail Streets.			

Table 2. Appleby GO MTSA

ID	Name & Address	Precinct (Final Report)	Date Received	Comment Summary
1	Macaulay Shiomi Howson Ltd., on behalf of Presidio Construction Ltd (c/o the Remington Group), owner of lands at 5200 Harvester Road	Urban Employment	Feb 25, 2022	Provided copy of January 11, 2021 comments, which recommend that: a. The City's Land Use Compatibility should recognize not only existing industrial uses but future industrial development that will be allowed as-of-right in the Urban Employment precinct. b. The proposed east-west road in the Recommended Preferred Precinct Plan which crosses the owner's lands be studied further through the City's Transportation Assessment. The assessment should evaluate implications of the road on future as-of-right industrial development and any other potential land uses, and whether there is a need to extend the road through the lands.
	Staff Response:			

ID	Name & Address	Precinct (Final Report)	Date Received	Comment Summary
	a. The MTSA Land Use Compatibility Study (Dillon Consulting, May 2023) assessed the subject lands as a Class III facility, and the proposed policies continue to contemplate the subject lands to be within the Urban Employment Precinct. Industrial land uses are permitted in this precinct. The draft by-law also continues to allow the existing site-specific land use permissions for the subject lands. b. The supporting MTSA Transportation Assessment (Dillon Consulting, September 2023) confirmed that a new east-west MTSA Mixed Use/Commercial Connector is recommended to distribute travelers east-west between the GO rail line and Harvester Road, and create a multimodal corridor to connect sustainable modes to development. The connections shown in the draft OPA and by-law are conceptual in nature and are subject to refinement through additional transportation study. The Transportation Assessment recommended additional transportation impact study at the development application stage; this is reflected in the complete application requirements.			
2	Weston Consulting, on behalf of Fairview GO Ltd. (Valour Group), owner of lands at 5041 Fairview Street	Fairview Frequent Transit Corridor	Jul 5, 2022	Expressed support for Appleby GO Precinct Plan endorsed by Council in January 2022 and need for additional technical land use analysis. Disappointed in delay of ASP planning process, as owner has prepared an application to redevelop their lands.
	Staff Response: Comments have been noted.			
3	The Planning Partnership, on behalf of Appleby Vision Corp., owner of lands at 747 Appleby Line & 5091 Fairview Street	GO Central & Fairview Frequent Transit Corridor	Jul 4, 2022	Recommends City provide a framework to guide future site-specific applications to achieve land use compatibility. Notes that minimum separation distances in D-6 Guidelines are recommendations and not mandatory, and that D-6 Guidelines acknowledges that mitigation measures could allow for reduced separation where appropriate. Suggests that the area-specific plans continue to be developed based on the endorsed Recommended Preferred Precinct Plans (Dec 2021) and allow detailed land use compatibility concerns to be addressed through future site-specific development applications.
	Staff Response: The supporting MTSA Land Use Compatibility Study (Dillon Consulting, May 2023) recommends that the City's policy framework require land use compatibility assessments for all applications proposing sensitive land uses in Appleby GO MTSA south of the			

ID	Name & Address	Precinct (Final Report)	Date Received	Comment Summary
	rail line, and that such studies be required to be completed in accordance with a City-developed terms of reference. This recommendation is reflected in the proposed policies. The proposed policies also direct the City to develop a Terms of Reference for land use compatibility studies to assist proponents of development containing sensitive land uses.			
4	Chris Ariens	Burlington Junction; Appleby Gateway	Oct 4, 2022	Concern that existing and planned post-secondary institutions and convention spaces outside the Appleby Gateway MTSA will undermine the ability to achieve the employment vision for the MTSA and result in increased car dependency and traffic. City should plan to mitigate for the potential impacts of these uses as well as address land use compatibility impacts from existing industrial facilities in the MTSA.
	Staff Response: The Appleby GO MTSA is envisioned to continue to be a prominent employment area. Office uses are permitted in most precincts of this MTSA, and industrial uses are permitted within the General Employment and Urban Employment precincts. The employment vision is further supported through the proposed permissions for accessory retail and service commercial uses within the employment precincts; permissions for range of retail and commercial, recreation, cultural, public service facility, entertainment and residential uses elsewhere in the MTSA; and a network of new streets and active transportation connections.			
5	Korsiak Planning on behalf of Penta Properties Inc., owners of 4415, 4445, 4460-4490 Fairview Street, 666-676 Appleby Line, and 750 Appleby Line	GO Central; Fairview Frequent Transit; Mid-Rise Residential	Mar 24, 2023	a. The Appleby GO ASP should not establish maximum height restrictions, for the following reasons: • No maximum height restrictions would help assist with achieving the City's municipal housing pledge • It is not in keeping with the recommendations of the Ontario Housing Affordability Task Force • It may restrict the desired intensification and design considerations to accommodate a potential park, linear park and complete streets b. Minimum setbacks should not be introduced through the area-specific plan. Rather an appropriate setback should be allowed to be determined through the development review process to avoid future site-specific variances.
	Staff Response: a. It is appropriate to regulate building height to achieve a balance between the objectives of ensuring land use compatibility and mitigation, supporting the ongoing viability of employment uses, as well as achieving compatibility with the adjacent low-rise neighbourhoods to the south and west of the MTSA. The proposed height permissions and the comprehensive planning of the City's three MTSAs support the achievement of the City's housing pledge. The maximum heights for Community Planning Permit Class 1 and 2 applications are intended to be proportionate to the provision of services, facilities and matters. It is proposed that through a			

ID	Name & Address	Precinct (Final Report)	Date Received	Comment Summary
	Community Planning Permit Class 3 application, proponents of development may request that Council approve additional height beyond the Class 2 maximums. b. Ensuring appropriate built form transitions between the MTSA and adjacent Established Neighbourhood Areas is an objective of the MTSA ASP Planning Project and is reflected in the proposed policies which provide direction for the Community Planning Permit By-law regarding setbacks to ensure appropriate built form transitions. The draft by-law sets out minimum setback requirements and also provide flexibility in how built form transitions may be satisfied. In the Mid-Rise Residential Precinct, the minimum setback applies only where the development abuts a rear or side property line of a Residential – Low Density designation outside the MTSA. There is also the opportunity for variations to the setback standards through a Class 2 Community Planning Permit application.			

Table 3. Aldershot GO MTSA

ID	Name & Address	Precinct (Final Report)	Date Received	Comment Summary
1	Bousfields Inc. on behalf of Infinity Development Group, owners of lands at 1029, 1033 and 1053-1063 Waterdown Road & 2 Masonry Court ("Waterdown Road Lands"); and lands at 40-70 Plains Road East ("Plains Road Lands")	Aldershot GO Central	Mar 24, 2022	a. Request to re-designate Waterdown Road Lands from Aldershot Main Street Precinct to Aldershot GO Precinct. b. Site-specific height request for Plains Road Lands.
	Staff Response:			

ID	Name & Address	Precinct (Final Report)	Date Received	Comment Summary
	a. In the Final Report (Jun 2022) and the proposed OPA and by-law, the boundary of the Aldershot Main Street Precinct has been adjusted so that it is concentrated along Plains Road instead of Waterdown Road. The Cooke Commons and Emery Commons precincts have been extended to meet at Waterdown Road. The commenter's Waterdown Road Lands are now within the Aldershot GO Central Precinct. b. Staff note that the Plains Road Lands were the subject of official plan amendment and rezoning applications when the comment was received. In February 2023, the applications were approved by the Ontario Land Tribunal. A site-specific policy has been included in Section 9 of the draft by-law to implement the Tribunal's decision.			
2	Blueheron	Aldershot Corners	May 9 & 28, 2022	Suggestion for bus from Aldershot GO station towards Royal Botanical Gardens to serve west Aldershot, particularly late at night.
	Staff Response: Comment was shared with Burlington Transit.			
The following comments were received following the release of the MTSA ASP Final Report (June 2022):				
3	Evans Planning, on behalf of 2412947 Ontario Ltd, Laith Al-Dabbagh and 2381798 Ontario Ltd., owner of 141, 147 & 153 Plains Road West.	Mid-Rise Residential	Sep 14, 2022	a. Suggestion to provide a street classification map and identify right-of-way widths of new streets; reduced parking rates and allow for on-street parking **Maximum Heights & Urban Design:** b. Tall buildings should be allowed in all locations within the Aldershot GO MTSA, provided they meet the overarching urban design policy directions of the Final Report, particularly on lands that do not abut an existing neighbourhood c. Suggestion for mapping of key entryways and related design criteria to guide development d. Suggestion for more guidance for transitions between mid-rise/tall buildings, in addition to guidance between mid-rise/tall buildings and low-rise residential buildings **Retail Streets:**

ID	Name & Address	Precinct (Final Report)	Date Received	Comment Summary
				e. Provide flexibility in the frontage and floor area of retail spaces and allow residential lobbies to be located fronting streets where active uses at grade are required; f. Allow servicing, loading and parking access to be from side streets **Housing:** incentives should be provided to developments that adhere to City's guidelines in order to offset costs of implementing the guidelines; Final Report does not acknowledge the concept of 'intrinsically affordable' units **Community Benefits & Facilities:** Opinion that community benefit charges create a disincentive to implement design measures. Incentives should be provided for private projects with community facilities/services (e.g. additional gross floor area or height, reductions to development charges); more detail requested regarding how community facilities are to be determined and funded, suggestion that any required off-site community facilities should not be the sole responsibility of one landowner. **Parkland:** privately owned, publicly accessible spaces (POPS) should count towards parkland dedication requirements; request for information about how City will indemnify future condominium corporations from liability associated with POPS. **Comprehensive Block Planning:** suggestion to mapping which identifies the areas where block planning is required and the general locations of community elements that must be considered; opinion that City should take lead in identifying transportation and active transportation networks rather than individual landowners through block planning. **Land Use Compatibility:** suggestion for City to provide guidance for interim conditions within the MTSA (e.g. areas within the MTSA where existing employment lands are envisioned to be redeveloped with residential uses, but

ID	Name & Address	Precinct (Final Report)	Date Received	Comment Summary
				continue to operate as employment), such as by classifying the MTSAs as a Class 4 area under provincial environmental noise guidelines.

Staff Response:

a. The supporting MTSA Transportation Assessment (Dillon Consulting, September 2023) provides recommended street classification and right-of-way widths for new streets within the MTSA, as well as recommended policy direction regarding parking rates and the need for a monitoring program to ensure that parking needs are met, which are reflected in the proposed policies and by-law.

Maximum Heights & Urban Design:

b. The vision for the MTSA builds on the long-standing vision for a main street, mid-rise character along Plains Road. Across Plains Road, the maximum expression of mid-rise height (i.e. 11 storeys) is permitted where it is not adjacent to a Residential—Low Density designation. Additional heights beyond 11 storeys may be permitted through a Class 3 Community Planning Permit application, subject to consideration of factors including the guiding principles of the CPP By-law, provision of services, facilities and matters, and the general intent of the City's Official Plan.
c. As part of the monitoring and implementation strategy for the MTSAs, a strategic action plan that could include placemaking may be developed by the City.
d. The City's urban design guidelines will continue to apply to proposals for mid-rise and tall buildings and provide guidelines for transitions between tall and mid-rise buildings.

Retail Streets (referred to as Activated Streets in the draft policies and by-law):

e. The proposed Activated Streets policies and by-law allow residential lobbies and public service facilities along MTSA Major Mixed Use and MTSA General Mixed Use Streets. The proposed by-law clarifies that the intent of the maximum frontage at grade and minimum floor area requirements is to create a character of small shops along active streets and to achieve a vibrant, active and animated built environment. An operation can occupy more than one individual unit.
f. The by-law clarifies that servicing, loading and parking access should be from a rear public lane, shared private lane and shared driveways and not from an activated street frontage (5.14.7).

Housing: Noted. The City is exploring inclusionary zoning to assist with the provision of affordable housing. For more information, please visit getinvolvedburlington.ca/housingstrategy

Community Benefits & Facilities: The City's Community Benefit Charges By-law will not apply to the MTSAs. However, development within the MTSAs will be required to provide services, facilities and matters as outlined in Section 5.29 of the by-law.

ID	Name & Address	Precinct (Final Report)	Date Received	Comment Summary
	Parkland: The parameters for parkland dedication under the Planning Act have recently changed as a result of Bill 23. The City is currently exploring the implications of these changes, including POPS. **Comprehensive Block Planning:** The draft OPA and by-law establish a conceptual transportation (including active transportation) network for each of the MTSAs. Due to the size and fragmented ownership of some areas within the MTSAs, more detailed planning (tertiary planning) beyond the scope of the MTSA project is required prior to the approval of development applications in tertiary planning areas to ensure the shared delivery of streets and blocks, and other community elements such as parks and public service facilities. The draft OPA includes Schedules F-3, G-3, and H-3, which identify the areas where tertiary planning will be required, and policies provide more guidance on the matters that are to be addressed through tertiary planning. In the proposed OPA, the subject lands are not proposed to be subject to tertiary planning requirements. **Land Use Compatibility:** The supporting MTSA Land Use Compatibility Study (Dillon Consulting, May 2023) addresses transitions to employment lands envisioned to be redeveloped and employment lands to be retained. The recommendations from the study include direction for the City to develop city-wide guidelines for the procedures for determining when a Class 4 classification may be appropriate. The recommendations have been incorporated into 8.1.2(6) of the draft OPA.			
4	Emshih Developments Inc.	Emery Commons	Mar 24, 2023	Potential new east-west complete street shown in Final Report within the Emery Commons precinct should be relocated to be shared between 1021 Emery Avenue and 1070 Waterdown Road instead of wholly on 1021 Emery Avenue.
	Staff Response: The proposed policies identify the area west of Waterdown Road, south of the rail, east of Howard Road and north of Plains Road within the Aldershot GO Central, Emery Commons and Aldershot Main Street precincts, including the subject lands, as an area where tertiary planning is required. The tertiary plan will provide a framework for the distribution of development and shared delivery of new transportation connections, among other elements.			
5	MHBC Planning on behalf of Losani Homes, for lands at 127 Plains Road West	Mid-Rise Residential	April 13, 2023	a. Additional height beyond the maximum 11 storeys contemplated in the Mid-Rise Precinct are appropriate on the subject lands due to site location, size and configuration, and to support achievement of provincial, regional and city planning objectives for the MTSAs to be primary growth areas in the City, with a density target of 150 people and jobs/ha.

ID	Name & Address	Precinct (Final Report)	Date Received	Comment Summary
				b. Not supportive of the requirement for a block plan prior to approval of development applications in this area. Flexibility should be provided to allow sites to proceed in already built-up areas.
	Staff Response: a. The vision for the MTSA builds on the long-standing vision for a main street, mid-rise character along Plains Road. Across Plains Road, the maximum expression of mid-rise height (i.e. 11 storeys) is permitted where it is not adjacent to a Residential—Low Density designation. Additional heights beyond 11 storeys may be permitted through a Class 3 Community Planning Permit application, subject to consideration of factors including the guiding principles of the CPP By-law, provision of services, facilities and matters, and the general intent of the City's Official Plan. b. In the proposed OPA, the subject site is not proposed to be subject to tertiary planning requirements.			
6	Lydia Thomas	Aldershot GO MTSA (General)	July 10 & July 14, 2023	a. Concern that proposed plans will worsen existing traffic congestion on Plains Road and roads in the vicinity of the Aldershot GO MTSA. Request that any new applications for non-single detached dwellings within the MTSA be denied until there is sufficient transportation infrastructure and other amenities, such as grocery stores, parks and schools, in place to accommodate growth. b. Request that building heights be limited to four storeys.
	Staff Response: a. The vision for the MTSAs is that they become mixed-use, walkable and transit-oriented communities where day-to-day needs can be accessed without driving. To support this vision, the proposed policies and by-law includes: • A grid transportation network, including new active transportation connections, to improve permeability and provide alternative routes. • Permissions for a mix of uses, including requirements for ground-level retail, service commercial, and office uses, and broad permissions for public service facilities and institutional uses across the MTSA. While the City cannot control for specific users such as grocers to locate within the MTSAs, the proposed policies and by-law provides the framework to ensure the future development includes flexible space that could accommodate a range of non-residential uses. • Tertiary planning is required in the Emery Commons Precinct and GO Central Precinct west of Waterdown Road prior to the approval of applications in that area, to ensure that the provision of elements such as new streets, parks and public service facilities are coordinated across development sites and the cost is shared among landowners.			

ID	Name & Address	Precinct (Final Report)	Date Received	Comment Summary
	Also, at a broader City-level, the City is preparing an Integrated Mobility Plan, which includes policies and programs to rebalance the transportation network by offering additional travel options to existing streets rather than creating new capacity by widening roads. b. The City is required to plan to accommodate the population and employment targets for the MTSA that are set out in the Region's Official Plan. The intent of the proposed by-law and policies, including policies and provisions regarding a future transportation network, permitted and discretionary uses, activated streets, tertiary planning, and services, facilities and matters, is to ensure that the MTSAs redevelop into complete communities.			

Table 4. General Comments

ID	Name & Address	Date Received	Comment Summary	Staff Response
1	Geoff Wozniak	Apr 16, 2022	Recommends that MTSAs be planned for alternative modes of transportation to driving.	The proposed OPA and by-law include land use, transportation, and built form policies and provisions. Together, the proposed OPA and by-law support the objective of facilitating the evolution of the MTSAs into transit-supportive communities.
2	Blueheron	May 23, 2022	Suggestion for bus service along North Service Road to the McMaster Business School.	Comment was shared with Burlington Transit.
3	Jim Turner	Mar 9, 2023	Interest in seeing a bus stopover lane on main roads such as Brant Street to improve traffic flow on Brant, Guelph Line and Appleby Line.	The Integrated Mobility Plan (IMP) will establish transit priority measures to create more convenient routes and connections for transit. These measures may include transit signal priority and transit-only lanes for corridors where it can be justified. A preferred Transit Priority Network has been identified through the IMP, which includes bus rapid transit / transit priority corridors.
3	Louise Bernier	Mar 9, 2023	Suggestion for early morning Burlington Transit service on weekends to improve access to jobs.	Comment was shared with Burlington Transit.

SUBJECT: Integrated Mobility Plan final report

TO: Community Planning, Regulation & Mobility Cttee.

FROM: Transportation Services Department

Report Number: TS-07-23

Wards Affected: All

File Numbers: 830-03

Date to Committee: October 31, 2023

Date to Council: November 14, 2023

Recommendation:

Direct the Director of Transportation Services or designate to file a Notice of Completion for the Master Plan; and

Approve the Preferred Integrated Network identified in Section of 6.4 (Figure 6-7) of the Integrated Mobility Plan, listed as Appendix A in transportation services department report TS-07-23; and

Approve the Policy Framework identified in Section 7.0 of the Integrated Mobility Plan, listed as Appendix A in transportation services department report TS-07-23; and

Approve the Program Framework identified in Section 8.0 of the Integrated Mobility Plan, listed as Appendix A in transportation services department report TS-07-23.

PURPOSE:

To present Council with the finalized 2023 Integrated Mobility Plan which contains a strong policy framework that builds upon the mobility policies contained within the Official Plan that position the City to shift to active and sustainable modes of travel that actualizes the 30-year vision for mobility and supports growth. The plan presents a recommendation for enhanced programming that will enhance and transform the way the city delivers mobility services. The plan also sets a framework that will guide future mobility decision-making, and summarizes the capital projects required to implement the Preferred Integrated Network.

Vision to Focus Alignment:

- Increase economic prosperity and community responsive city growth.
- Improve integrated city mobility.
- Support sustainable infrastructure and a resilient environment.

Executive Summary:

The **Integrated Mobility Plan (IMP)** is a community-driven action plan that aligns transportation investments over the next 30 years with community goals. The IMP is a combination of progressive policies, active programs and capital projects that will guide how we build and operate a sustainable transportation system for the entire city.

The IMP is the path forward to meeting Council's previous policy commitments including Vision 2040 Strategic Plan, 2018 – 2022 Burlington's Plan: From Vision to Focus, the Official Plan, Climate Action Plan, and others. The IMP sets out three key areas for action:

1. Implement transportation network improvements through capital planning & budget;
2. Policy direction to guide future studies, plans and capital projects to meet the goals of the IMP; and
3. Enhance and develop innovative programs to support the implementation of the plan.

City Council has long-recognized that relying on a car-centric approach where streets are widened to add car capacity is not a feasible solution to traffic congestion issues. Continued reliance on a car-centric approach creates a transportation network that fails to serve other mobility modes, which is evident in our rural and employment areas; does not support the City's growth strategy and perpetuates negative impacts to the natural environment and atmospheric climate by contributing to greenhouse gas levels.

In 2019 Council directed staff to form the basis of the IMP on the fundamental direction that there were to be no new road widenings for the sole purpose of adding car capacity. Instead, the City has chosen to adopt a sustainable and integrated approach to resolve the historic and on-going issues associated with the car-centric planning approach.

Key elements of the integrated network approach include:

- Considering street widenings only to improve conditions for walking, cycling or transit users, or when required to resolve safety concerns.

- Rebalancing the right-of-way on select streets to change the priority afforded to travel modes.
- Extending and constructing new multi-modal corridors within growth areas, where required, to provide multi-modal access to areas of intensification.
- Develop a transit infrastructure network, improve transit service, and reduce transit delays within frequent transit corridors.
- Consider the future conversion of general-purpose traffic lanes, or, in limited circumstances, consider widening existing streets to create dedicated transit corridors.
- Develop a spine network of high-quality cycling facilities designed to serve cyclists of all ages and abilities by building new and improving existing cycling infrastructure.
- Improving the pedestrian environment within employment areas, future intensification areas and rural areas.
- Create new active transportation connections across key barriers such as the QEW and rail lines.

The IMP recommends two groups of capital projects – routine and catalyst. A total of ninety-eight routine projects are recommended, involving the renewal and transportation of existing streets to align with the IMP vision through complete street design and implementation. The capital costs associated with routine projects is estimated at $204 million (over 30 years). The IMP also recommends future planning of seven catalyst projects which involve construction of new, multi-modal facilities that are required to unlock development in key areas targeted for intensification and are instrumental in achieving the mode share targets set out through the IMP. Budget planning estimates for the seven catalyst projects total a cost of $315 million including a 40% contingency.

The IMP provides the vision of the city's future transportation network and outlines the policy, programs and capital projects required to achieve long-term mobility goals for a 2051 horizon and beyond. The capital and operating budgets are the tools in which Council will set and manage the pace and extent to which the plan is implemented. Approval of future investments recommended through the IMP is to be sought through Council decisions through the annual capital budget/multi-year forecast, and subject to funding prioritization as part of the Multi-year Community Investment Plan (MCIP).

It is imperative that Council considers the IMP in its entirety, as its many components are intended to be mutually supportive. Adoption of some of the recommendations, without others, will incur risk associated with disjointed policies, programs and projects which may undermine each other and will ultimately fail to deliver on the established goals. While the cost to implement the recommended capital projects is substantial, it is

important to note that by approving the IMP, Council is not approving the capital and operating costs. Instead, Council is approving a strategic direction and guiding philosophy for future mobility planning. The IMP sets the vision, the multi-year capital budget process sets the pace of implementation. To help offset the costs of implementing the IMP, staff will explore alternative revenue sources in future budget years such as consideration of future mobility charges, dynamic parking pricing, demand-based curbside pricing strategies, etc. These potential revenue sources will be subject to further study and analysis and brought to Council for future consideration.

It is imperative to note that the city currently lacks a Council-approved Transportation Master Plan. The lack of a strategic transportation master plan puts the City at risk when defending transportation-related decision making, which is increasingly experienced through appeals brought forward to the Ontario Lands Tribunal (OLT). Council's approval of the IMP protects the interests of the City and strengthens staff's ability to defend requests for right-of-way, enhanced pedestrian realms and multi-modal facilities through new development.

Once approved, the IMP will be reviewed and refreshed on a 5-year cycle, incorporating updated population and employment forecasts, refining the strategic transportation demand model, and reporting on actual mode share usage and refining targets, where necessary. The IMP provides valuable guidance and input into the 5-year Transit Business Plan and will complement the transit planning efforts of Burlington Transit.

Background and Discussion:

The IMP has been identified as a priority action in the City of Burlington's 2018-2022 From Vision to Focus workplan, and has been developed to establish a Council-approved strategic mobility plan that delivers on Focus Area 2 – "Improving Integrated City Mobility".

Like all GTHA municipalities, Burlington is facing significant growth pressures. The Regional Official Plan through the Minister's decision on ROPA 49 distributed population and employment targets of over 265,000 residents and 124,000 jobs by 2051in accordance with the Growth Plan. Transportation and mobility planning is intertwined with almost every other aspect of community planning and affects the lifestyle of every resident within the city. The IMP recognizes the importance of aligning land use and transportation as the two are inextricably linked.

Previous transportation planning objectives primarily considered land use as a generator of transportation demand, especially vehicle travel. This has typically led to recommending construction of new roads, widening of existing roads, and optimizing

vehicular movement over all other modes. It is more apparent that cities cannot build their way out of congestion. In fact, Council has long acknowledged this by reiterating the underpinning philosophy of the IMP: No new widenings are to be constructed for the sole purpose of increasing auto capacity.

The IMP strategy relies on ***rebalancing*** the transportation network, adding the required person-movement capacity to support growth by offering additional travel options to existing streets. Thereby, replacing the traditional strategy of creating new capacity through the widening of roads and meeting the city's targeted growth by way of implementing the rebalancing projects identified in this plan.

Planning Context and Alignment

The technical work of the IMP was initiated in 2020 and used the best information available at the time of analysis. The strategic transportation demand model was required to utilize the 2031 Best Planning Estimates (BPE's) with the understanding that Master Plans require a five-year review to update population and employment estimates as new data becomes available.

The Region of Halton Municipal Comprehensive Review (MCR) is being implemented in a phased approach. The first phase of work was implemented through Halton Region's Regional Official Plan Amendment 48 (ROPA 48) and was adopted by Regional Council in July 2021 and approved by the Minister of Municipal Affairs in November 2021.

ROPA 48 implements a regional urban structure hierarchy of strategic growth areas and delineates and establishes intensification targets for Urban Growth Centres and Major Transit Station Areas (MTSA's). The second phase of work was implemented through ROPA 49. It was adopted by Regional Council in June 2022 to implement the results of the Region's Integrated Growth Management Strategy (IGMS), providing direction on how Halton Region will accommodate population and employment growth to 2041.

When ROPA 49 was approved by the Minister of Municipal Affairs and Housing on November 4, 2022, the Minister made several modifications which impact Burlington. The modifications, among other things, include new urban land in Burlington, converts regional employment area designations and extends the planning horizon to 2051.

Planning staff are now working to establish a local planning vision for the areas impacted by the Minster's decision on ROPA 49 for consideration by council. This work is necessary to inform a process with the Region and local municipal partners to develop a clearly defined plan for where and when growth is expected to occur in order to coordinate the delivery of significant and critical infrastructure to support that growth.

The IMP utilizes 2031 population and employment forecasts for the purpose of developing the transportation demand model. This created the Preferred Integrated Network as an ***ultimate plan***, representing a series of re-imagined corridors paired with progressive policy. Thereby, enabling programming that supports future mobility needs beyond the 2051 horizon. It is expected that once the details of the local planning vision work are confirmed and implemented, there will be an opportunity to refine and utilize the 2051 forecasts in subsequent updates to the IMP.

At the municipal level, the IMP is one of many growth-related projects that are currently underway.

Alignment of the IMP with other growth-related initiatives is essential to provide a consistent message to Council. To ensure alignment across projects, the IMP included an inter-disciplinary working group, utilized the most current information from other projects, acknowledged the interconnectivity of other corporate projects and has considered challenges that may be faced by the City to achieve its strategic goals and vision. Community Planning staff intend to province an update to Committee and Council on ensuring alignment of growth-related projects and establishing future processes that respond to new information including future technical work.

Building on the Official Plan

Investment in integrated mobility should be used as a tool to help shape the city. The aim is to strengthen strategic areas of intensification, including the MTSA's, while respecting established neighbourhoods and complementing the parks and trail system. The IMP builds upon, and connects policies in the Official Plan to:

- Develop an equitable, integrated, multi-modal mobility system that offers safe, convenient, and efficient movement of people and goods within the city.
- Maximize the capacity of the City's existing transportation infrastructure and re-prioritize decision making to achieve an equitable and integrated, multi-modal transportation system.
- Create urban environments that support multi-modal transportation with an emphasis on pedestrians, cyclists, and public transit, connecting people to places.
- Re-prioritize movement to achieve balanced mobility in places expected to remain low density; and
- Implement context-sensitive design for City streets, roads, and intersections, particularly where constraints such as the natural environment, natural heritage

features, property impacts, and cost require flexibility and creativity in design to achieve an optimal solution that is safe and meets the needs of the community.

The development of the IMP provides an opportunity to shape connected, healthy, sustainable, and vibrant communities and offer mobility choice. The plan has been rooted in eight pillars of integrated mobility that are inspired through the complete communities, environment and sustainability, and multi-modal transportation policies contained within the Official Plan:

1. **Affordability:** Achieving best value for investment, managing infrastructure, promoting economic growth through an efficient mobility network and reallocating capital funding to reflect the City's mobility priorities.

2. **Aligning land use and transportation:** Aligning new development with existing transportation infrastructure to promote the creation of complete and compact communities. Development of progressive policy to support the shift to walking, cycling and transit usage and shaping the landscape of future development through requirements to provide mobility choice.

3. **Connected mobility:** Creation of accessible and diverse mobility options through the adoption of a Complete Streets philosophy that achieves a connected, integrated mobility network across multiple modes, providing choice and equitable access.

4. **Healthy & safe:** Prioritizing design of transportation infrastructure that delivers on safer streets for the most vulnerable users while providing safe, comfortable, and convenient mobility choices.

5. **Innovation and integration:** Recognition that there are no "one-size-fits-all" solutions, and that context-sensitivity is required when developing an integrated mobility network. Success will require studying, assessing, and integrating new and emerging trends and drawing upon inspiration from other communities.

6. **Managing congestion:** Address the growing population by maximizing the capacity of our existing infrastructure, connecting operations across agencies (MTO, Metrolinx, Halton Region), providing real-time responsiveness and implement innovative technologies to better manage congestion.

7. **Moving people efficiently:** Addressing growth and increased travel demands by shifting the focus to moving people, rather than moving vehicles. Aim to increase the connectivity of the mobility network utilizing multiple modes, which will in turn,

improve the reliability of travel times within the city. Proactive management of the right-of-way to protect for future mobility corridors.

8. **Sustainability:** Creation of sustainable mobility networks through development of compact and complete communities. Development of a plan that supports environmentally responsible mobility choices and reduces the reliance on the single-occupant vehicle while addressing the “first and last” mile challenges of public transit.

Informative Background Studies

The IMP is rooted in, and aligned with, several strategic background studies that have influenced the development of key recommendations of the plan:

- Climate Action Plan (April 2020)
- Burlington Transit Five-Year Business Plan 2020-2024 (November 2020)
- City of Burlington Cycling Plan (March 2021)
- Electric Mobility Strategy for Burlington (September 2022)
- Rural Active Transportation Plan (November 2022)

The plan integrates the recommended network elements of the individual mode plans and incorporates key directions of the Transit Five-Year Business Plan to develop the integrated network plan. The resulting integrated network plan supersedes past “stand alone” mode plans with the intent that previous individual mode plans and studies will be sunset after approval of the IMP. The transit network plan and supporting policy framework will be referenced when preparing the next iteration of the Transit Five-Year Business Plan and updated accordingly though the work of Burlington Transit.

Integrated Mobility: Vision, Values and Goals

The IMP represents an innovative approach to integrated and strategic transportation master planning. The plan reflects the needs of the community and was developed with collaboration from residents, businesses, agencies, and local partners. The Vision, Values and Goals (VVG) framework is derived from existing strategic directions and has been used to align all subsequent decision marking to the City’s core values. The **vision** statement that underpins the planning philosophy of the IMP is defined as:

*Mobility in Burlington will be **safe, accessible, sustainable, balanced,** and **liveable**.*

The vision statement reflects the community's **values** – top priorities and core beliefs:

1. **Safe:** Movement of people and goods in Burlington will be safe for users of all modes. Special attention will be paid to ensuring the safety of vulnerable users. We will not accept transportation-related death and serious injury as a normal part of our daily lives; our mobility network will be designed to minimize risk of transportation-related death and injury from occurring on our streets.

2. **Accessible:** Movement through the city will be accessible to people of all ages and abilities. There will be no infrastructure or service gaps in the network, so each traveler can make a comfortable trip from point A to point B when they require, by their mode of choice.

3. **Sustainable:** The mobility network will prioritize efforts to encourage walking, cycling, transit and other non-auto modes and city-wide transportation demand management efforts will make micro-mobility modes more accessible for people with reduced mobility. By doing this, we will emphasize the health of our communities, improve the vibrancy of the city, and move toward our collective goal of reducing GHG-emissions.

4. **Balanced:** We will re-balance the mobility network through reallocation of the right-of-way in a way that provides safe facilities for active and sustainable modes.

5. **Liveable:** Our streets will be designed to fit within their surroundings, complementing the character of surrounding neighbourhoods and communities.

The values were further refined to six aspirational **goals** that actualize the vision for integrated mobility:

1. Burlington will adopt a Vision Zero approach to street design and operations, eliminating transportation-related deaths and serious injury (Safe).

2. Burlington's mobility network will be accessible and reliable for all users regardless of factors such as age, ability, income, or familiarity with the city (Accessible and Balanced).

3. Burlington will provide high-quality travel options to move people and goods wherever and whenever, while maintaining a high quality of life for the community (Accessible and Balanced).

4. Burlington will eliminate transportation-related carbon emissions (Sustainable and Balanced).

5. Burlington's streets will support the intended roles of the communities they run through and help them to become vibrant and prosperous (Livable).

6. Burlington will actively plan for the transportation challenges of tomorrow while delivering great service today (Accessible, Sustainable and Balanced).

Deliverables

The resulting IMP includes nine key deliverables:

1. **Neighbourhood Mode Share Profile:** The IMP adopts a sustainable approach that is mode-share driven. Emphasis is placed upon the potential to shift trips away from auto usage and toward sustainable modes, compared to the traditional corridor-capacity driven approach where road widenings are triggered when volume to capacity thresholds are met, thereby increasing auto capacity, and inducing demand. The resultant mode share profile has been refined based on several inputs including typology and land use and has assigned neighbourhood-level mode share targets for the 2051 horizon.
2. **Transportation Demand Model:** Development of a strategic transportation demand forecasting model that estimates PM peak hour transportation demands, assign demands to travel modes using the mode share profile, and assigns resulting auto demands to the street network. The travel demand model will continue to be used as a tool in strategic mobility planning and informs GHG emission analysis.
3. **Preferred Integrated Network:** The resulting integrated network plan rebalances the right-of-way on existing streets, extends multi-modal corridors, enhances transit through the creation of future dedicated transit corridors and greatly improves the cycling and pedestrian environment. The preferred integrated network also recommends four new multi-modal corridors, and three active transportation corridors. These are considered "catalyst projects," that will facilitate significant growth and deliver multi-modal access to key areas of future intensification.
4. **Mobility Policies:** Development of a strong policy framework for mode-specific policies that build upon the Official Plan and position the city to shift more trips to active and sustainable modes, actualizing the vision for mobility.

5. **Enhanced Programming:** The IMP recommends the creation of six mobility programs that will build upon and, in some cases, enhance current service delivery in a way that supports the City's pursuit of the IMP goals and successful implementation of the plan. The recommended programs are a collection of smaller projects and action-items that are intended to transform the way Transportation Services delivers strategic mobility planning and operations.
6. **Priority Setting Framework:** Accommodating mobility needs of the present and future will require trade-offs and acknowledgement that priorities will shift. Investments in active transportation and higher order transit will have to accompany population growth. Furthermore, the introduction of transit signal priority measures and eventual bus rapid transit may require the removal of on-street parking and a reduction in auto capacity. Recognizing that mobility needs are evolving, the IMP utilizes a novel approach to prioritize projects recommended through the Preferred Integrated Network, one that reflects the values and goals of the community and the ability of each recommended project to deliver on the vision of the plan.
7. **Capital Project Listing:** The Preferred Integrated Network is presented as a set of capital projects (refer to Appendix B). Corridor-wide projects are broken down into multiple smaller projects to align with changing conditions and to manage project size and the corresponding requirement for future EA planning studies. Project costs were generated, and the resulting capital project list was prioritized using the priority-setting framework discussed above.
8. **Priority Action Items:** The IMP is more than just an infrastructure plan. Progressive policy and enabling programs have been developed to support the implementation of the plan with the intent of forming the basis of future work plans within Transportation Services. The IMP provides a set of immediate (1-5 year) and medium-term (6-10 year) action items that serve as foundational work in achieving the City's mobility vision.
9. **Monitoring Plan:** The plan concludes with a monitoring strategy that relies on more systemic data collection and compilation to report on key performance indicators that will be used to measure progress towards achieving IMP goals year over year. To address this, the plan recommends pursuing collaboration with a Big Data provider and combining data collection efforts with other internal departments such as Burlington Transit and Community Planning.

Strategy/process/risk

Highlights of the Plan

The IMP is a community-driven action plan that aligns the City's future transportation investment over the next 30 years with the values and goals of the community. Key highlights include:

- Mode-share targets developed at the neighbourhood-level to assist in decision making when determining where to direct investment in active transportation infrastructure.

- Development of ideal mode plans that align with 2051 mode share targets, refined to create the recommended Preferred Integrated Network. This represents the framework for future mobility planning to the 2051 horizon.

- Progressive policy directions that establish future actions the City will take to achieve the IMP objectives:

Mode	**Overview of Policy Direction**
Walking / Pedestrian	• Create a complete and connected pedestrian network • Improve pedestrian safety • Build a walkable environment • Enhance the pedestrian experience • Increase pedestrian level-of-service, especially in areas of intensification
Cycling	• Create a complete and connected cycling network • Improve safety and promote cycling • Enhance the cycling experience • Build a cycling network that attracts new cyclists and broadens the community of cycling • Explore micro-mobility and support expansion where feasible • Create attractive cycling connections to transit and expand end-of-trip facilities
Transit	• Build and maintain the Frequent Transit Network (FTN) to provide 15-minute service or better • Stage the implementation of supporting infrastructure elements for the FTN when the need emerges • Enhance the transit passenger experience • Explore on-demand transit and consider future expansion to underserved / rural areas • Increase cross-boundary transit trips

	• Promote transit as a reliable and convenient alternative to the auto
Goods Movement	• Build and maintain a quality goods movement network • Enhance goods movement with trucks • Enable efficient goods movement with rail
Auto	• Maximize road safety for all users • Actively manage congestion • Build and maintain a sustainable and integrated road network • Protect new and established neighbourhoods from undesirable road impacts • Enhance city parking facilities and services • Plan for strategic road projects and align with the IMP vision

- Six strategic mobility programs that represent a collection of actions that support the City's pursuit of the IMP goals:

Program	**Overview**
Strategic Transportation Planning	Enhancement of existing Transportation Planning portfolio to shift emphasis to designing the future mobility network to align with the Vision and Goals of the IMP. Responsibilities to include developing a Complete Streets Design Guide and maintaining integrated strategies and networks for all modes. Aligning network planning with design guidelines and policies. Monitoring and reporting on progress toward achieving the IMP goals. Partnering with external agencies to manage strategic transportation planning issues.
Transportation Demand Management (TDM)	Development of a city-wide TDM program that focuses on initiatives that aim to reduce traffic, particularly in the commuter peak hours. New program that develops and administers tools to manage demand for all transportation modes, targeting factors like cost and convenience. The program will prepare and maintain the city-wide TDM strategy and action plan, prepare a micro-mobility strategy and foster relationships with local businesses.
Strategic Parking Management	Enhancement of the existing Parking Services portfolio to include a shift to strategic parking management. Develop measures and tools to proactively manage parking supply and demand for all modes. Foster public-private partnerships to expand parking supply within intensification areas and develop a city-wide parking plan for non-auto modes to support the targeted shift in mode share. Prioritize the development of a flex-zone / curbside use guideline to maximize efficiency of the curb and better utilize the right-of-way.

Active Transportation	Enhancement of the existing Active Transportation program to place emphasis on ***planning***, design, and implementation of active transportation projects outside of the priority networks and creation of a data collection program to inform decision making and support monitoring of mode shares.
Transportation System Management (TSM)	Enhancement of Transportation Systems Management program to plan and implement measures to optimize vehicle flows in key corridors and at intersections. Execution of operational initiatives aimed at aligning the existing transportation network with long-range mobility objectives and harnessing new and emerging technology solutions to maximize efficiency of existing lane capacity.
Vision Zero	Development of a formalized road safety program for the City of Burlington. Develop, design, and implement strategies, tools, and measures to eliminate fatal and injury collisions and protect vulnerable road users to achieve Vision Zero.

- Dedicated action plan for Rural Burlington that recognizes the need for increased access and mobility for our rural residents, while respecting the unique character of our rural roads and communities.

- Capital project listing for future implementation of the Preferred Integrated Network.

Implementation

The IMP is a combination of capital projects, progressive policies and enabling programs that, when applied together, will make mobility in Burlington safe, accessible, sustainable, balanced, and liveable. Successful implementation of this plan resides foremost with Council's commitment to approving the IMP. Staff must champion the vision of the IMP and the inter-disciplinary staff team that contributed to the development of the plan must continue to work together to ensure that the vision for mobility is advanced through on-going coordination of strategic initiatives, capital projects, operations, and maintenance activities.

The implementation of a network plan that achieves the vision for integrated mobility within the city will require significant investment of funding and time. Integrated mobility enhancement projects will need to be prioritized based on the current infrastructure need and risk, but also consider the project's ability to achieve an equitable and integrated, multi-modal transportation system.

The costing of the plan recommendations was a joint effort undertaken by both city staff and Dillon Consulting. The cycling facility recommendations were costed by internal staff, and the first step involved organizing the IMP recommendations into their

associated road classifications. The recommendations were then grouped according to their active transportation facility type (protected, buffered lanes, local bikeways, and roadway widening in rural areas). Lastly, the degree of obstructions and utility relocations were assessed. Based on these criteria, ten distinct cross sections were created for the cycling facilities. The IMP recommendations that overlapped with the City's capital program were costed and the estimates were then used to populate the unit costs for the ten different cross sections and applied across the remaining cycling facility recommendations. These estimates were based on a conceptual plan and factors may change during detailed design that could affect the facility type and overall cost of the project. Land acquisition was not considered during the costing of the IMP.

An enhanced pedestrian realm was also recommended within the IMP and the consultant provided a unit rate of $2.5 million per km for construction. This estimate was used to cost the enhanced pedestrian realm recommendations. The plan also includes seven catalyst projects that include construction of new multi-modal corridors, roadway extensions, over/underpasses, and dedicated active transportation bridges across key barriers. Dillion Consulting prepared budget planning estimates for these catalyst projects to support the IMP, this can be found in Appendix B.

The implementation strategy focuses on a combination of smaller, stand-alone service improvements, large catalyst projects, and enhancements that are timed with planned "state of good repair" transportation and servicing renewal/replacement work. Stand-alone projects would consist of improvements that can be accomplished quickly, such as signage, markings, and small-scale safety improvements. The implementation of larger-scale network improvements will typically involve reconstruction and conversion of the City's right-of-way to a new integrated and multi-modal standard. For these projects it would be opportunistic for the city to plan and construct recommendations in conjunction with the city's road right-of-way renewal projects. It should be noted that construction of active transportation facilities results in a typical incremental cost of 35%-100% above the traditional "like-for-like" roadway renewal cost.

Risk

The following risk analysis has focused on Council's approval of the IMP as a whole. It is imperative that the plan be considered in its entirety, as its many components are intended to be mutually supportive so that the sum is greater than the parts. Adoption of some of the recommendations (policy, programs, integrated network plan and resulting capital projects), without others, will incur additional risks associated with disjointed policies, programs and projects which may undermine each other and ultimately, fail to deliver on the vision, values, and goals of integrated mobility. While a

Risk Confidence Record (RCR) is contained in Appendix C for further reference, the following summarizes key risks to the success of the IMP.

What success looks like:

- *Council-approved Integrated Mobility Plan to guide future mobility planning to the 2051 horizon.*

Key Risk	Likelihood	Mitigation
IMP and supportive policies & programs not approved by Council.	Low	Communicate to Council that the lack of a Council-approved Transportation Master Plan puts the city at risk when defending decision making. Council approval of the IMP protects the interests of the City and strengthens staff's ability to defend requests for right-of-way through development projects.
Funding not available to implement IMP recommended projects as part of 10-year Capital Budget and Forecast.	High	Communicate the potential for lost opportunity to deliver on the IMP if recommended projects are not incorporated within the 10-year Capital Budget and Forecast. Explore alternate funding models and grant opportunities to offset funding gap.
Operating budgets under-funded / under-staffed to deliver on IMP programs.	High	Clearly identify staff and operating budget needs to support IMP programs and include staff resourcing needs in future DEOO submission.
Regional and Provincial facility expansion undermines IMP philosophy and priorities.	Moderate	Steadfast commitment to the goals of the IMP and providing mobility choice to the residents of the city. Continued advocacy for multi-modal transportation solutions at the Regional and Provincial levels, and integration with the municipal network, where feasible. Council advocacy at Regional Council.

Options Considered

N/A

Financial Matters:

The IMP provides the vision of the City's future transportation network and outlines the policy, programs and capital projects required to achieve our long-term mobility goals. The capital and operating budgets are the tools in which Council will set and manage the pace and extent to which the plan is implemented. For future investments

recommended by the Integrated Mobility Plan, approval is to be sought through Council decisions through the annual capital budget/multi-year forecast, and subject to funding prioritization as part of the Multi-year Community Investment Plan (MCIP).

As the City supports growth in the community, new and expanded capital infrastructure is inevitable. Therefore, it is important to note that as the city plans for, and makes infrastructure investment decisions, the long-term nature of the assets and their associated capital and operating costs must be considered. The City's asset management and financing plan provides a long-term planning horizon, with long term goals and objectives of sustainability, predictability, and stability; that the assets are managed for present and future residents in a fair and sustainable manner.

The most recent update to the asset management financing plan (report F-20-23) proposed an increase in the dedicated infrastructure levy to 2%, with a commitment to re-calibrate based on changing variable and factors, inclusive of asset expansions such as additions from endorsed master plans.

Total Financial Impact

The IMP recommends two groups of capital projects – routine and catalyst. Routine projects involve the renewal / transformation of existing streets to align with the IMP vision through complete streets design and implementation. The capital costs associated with implementation of these projects is estimated at $204 million (over 30 years), based on the methodology discussed above. In addition to the above, the IMP recognizes seven catalyst projects which involve construction of new, multi-modal facilities that unlock development in key areas of intensification and are instrumental in achieving mode share targets. Dillon Consulting prepared budget planning estimates for the seven catalyst projects, totaling a cost of $315 million including a 40% contingency.

In December 2023, staff will provide a report to Council on Phase 2 of the Multi-Year Community Investment Plan (MYCIP), outlining capital needs and a preliminary financing strategy to work towards achieving the objectives of the master plans completed to-date (PPMP, Integrated Mobility Plan, Fire Master Plan, Transit Master Plan, etc.,) and sets the stage for the prioritization and financing of future master plans. The capital needs defined by the MYCIP will represent future new/expansion of assets or renewed assets that may exceed the current service standard.

Funding for the projects identified in the IMP are substantial and will need to be addressed through emergent tools or strategies such as funding partnerships with senior levels of government and/or land developers, along with the development of the MYCIP and through the annual capital budget and forecast.

Capital Projects as recommended by the IMP over the next 30 years, are listed in Appendix B.

Source of Funding

Failure to identify dedicated funding to support the implementation of the stated IMP recommendations will result in the city being unable to align the construction of the active transportation facilities with future road right-of-way renewal projects. Between 2025 and 2029 there is $45 million in IMP recommendations that overlap with the capital “state of good repair” program for the Roadways asset category (as presented in Appendix D). Staff are utilizing new annual dedicated active transportation funding ($500,000 approved as part of the 2023 Budget); however, this level of funding is inadequate to support the larger-scale improvements noted above. If utilized as the City’s only source to financially support the IMP recommendations, this would result in a 408-year implementation timeline (not including the catalyst projects).

Alternatively, if funding shifts from “state-of-good repair” to manage the incremental costs associated with IMP recommendations, we will be taking on an increased level of risk across the transportation network. These risks tied to funding new active transportation enhancements with renewal funds will put roadway assets at greater risk of failure and will compromise public safety. Given this risk, and absent sufficient funding, the only other option available is to proceed with necessary “state of good repair” work and not construct the recommended active transportation enhancements. The plan recommendations represent a change in service standards and the community expectation is that renewal of infrastructure will include all identified enhancements. The community anticipates active transportation facilities will be constructed, but without adequate funding the city will be unable to deliver on planned expectations.

Other Resource Impacts

Operations and maintenance of the transportation network will require systematic growth in staff resources, equipment, and materials as the network of protected cycling facilities and enhanced pedestrian realm is expanded. Consultation with Roads, Parks and Forestry staff has generated the following generalized maintenance costs for the new facility types being proposed through the IMP:

Facility Type	Cost per Linear km
Protected Cycling Facility	$4,541 / km
Sidewalk / Enhanced Pedestrian Realm	$3,193 / km
New Paved Shoulder	$2,734 / km
Road widening for Cycling Lane	$2,734 / km

Climate Implications

The sustainable, multi-modal approach taken by the IMP aligns with the objectives of Provincial policy including the Growth Plan, 2020 and Provincial Policy Statement, as well as the City's Official Plan, Strategic Plan and Climate Action Plan. This report recommends approval of a long-range mobility plan that supports a critical shift toward sustainable modes of transportation and a reduction in auto mode share. The lens of sustainability and environmental resiliency has been applied throughout the development of the IMP with an emphasis on increasing the person-carrying capacity of our transportation network through the increased use of active transportation and transit to accommodate daily trip making. The recommended integrated network, when implemented, will achieve the goal of reducing auto mode share and associated impacts of greenhouse gas emissions from the transportation sector.

Engagement Matters:

Community engagement was paramount to the development of a mobility plan that meets the needs of the community, today and in the future. The engagement program was designed to solicit feedback and gather meaningful input from the community, interested and affected parties, and local agencies at key milestones throughout the planning process. Technical input and feedback received through the engagement activities was critical to the success of the plan and considered in the decision-making at each stage. A detailed engagement summary is contained in Appendix E for further reference.

Conclusion:

The IMP represents an innovative approach to integrated mobility planning and provides a framework for responding to future travel demand associated with intensification. It has been designed to meet the 2015-2040 Strategic Plan goals to enable "people and

goods move through the city more efficiently and safely" and provide "more mobility choice within the city and region through improved public transportation, active transportation and community-responsive growth management to allow more residents to get where they need to go more efficiently." The plan sets a framework to rebalance the existing transportation network through adding people-carrying capacity by offering additional travel options to existing streets and replacing the traditional strategy of creating new auto capacity through road widenings. From conceptualization to implementation and operation, the IMP provides the city with a strategy for transforming mobility to 2051 and beyond.

Respectfully submitted,

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Manager, Integrated Mobility

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Appendices:

A. Burlington Integrated Mobility Plan (September 2023) (can be accessed at events.burlington.ca)
B. IMP Capital Project Listing & Estimated Costs
C. IMP Risk Confidence Records
D. IMP / Roadway "State of Good Repair" Overlap Projects
E. Engagement Summary (June 2023)

Report Approval:

All reports are reviewed and/or approved by Department Director, the Chief Financial Officer, and the Executive Director of Legal Services & Corporation Counsel.

Appendix A
Burlington Integrated Mobility Plan
(September 2023)

City of Burlington

Integrated Mobility Plan

September 2023

DILLON CONSULTING

burlington.ca/IMP

CITY OF Burlington

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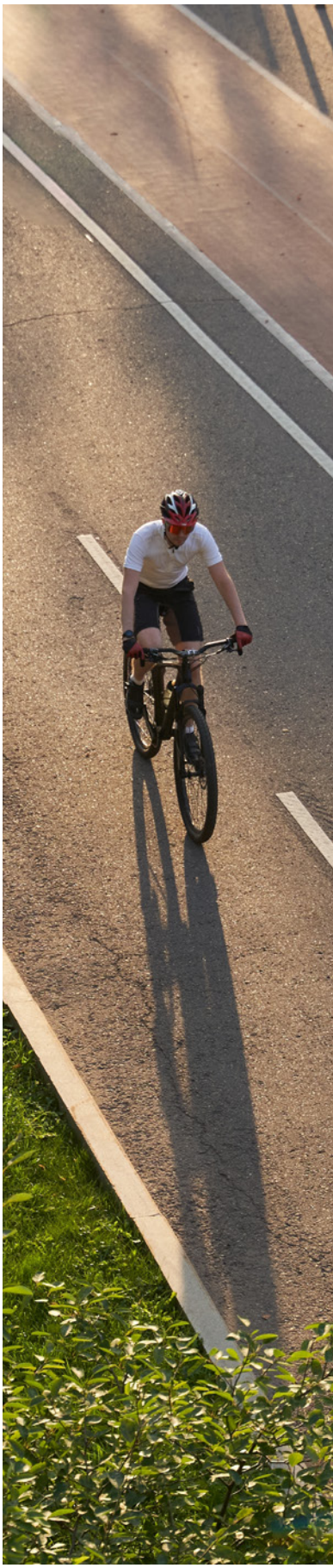

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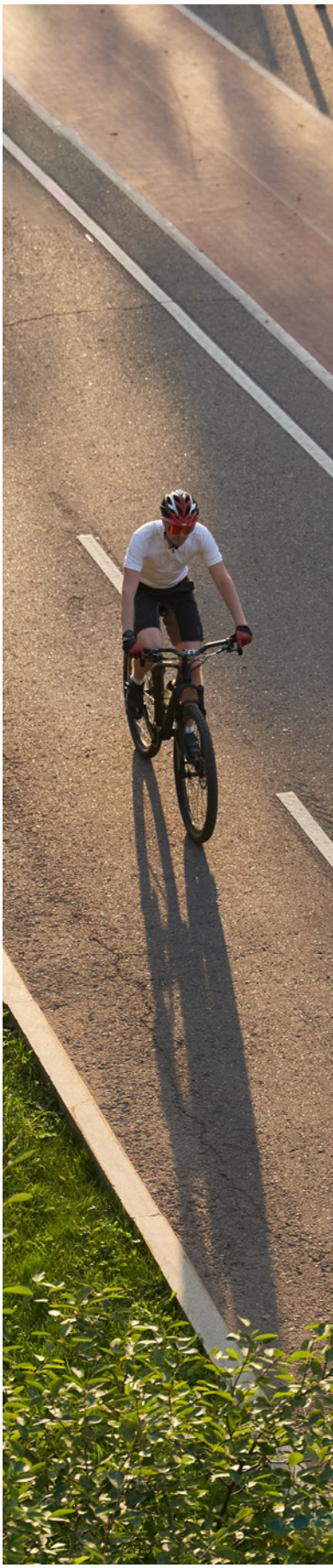

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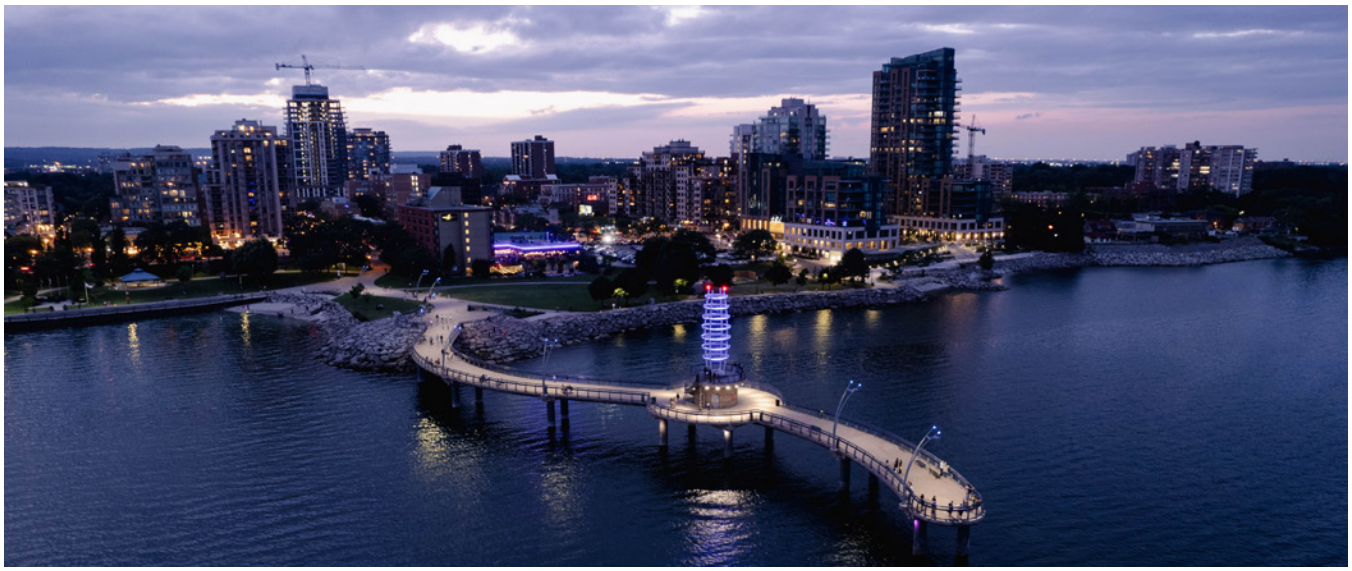
Acronyms

AAA: All Ages and Abilities
AM: Ante Meridiem (Morning)
AT: Active Transportation
BRT: Bus Rapid Transit
CNR: Canadian National Railway
CPR: Canadian Pacific Railway
EA: Environmental Assessment
FTN: Frequent Transit Network
GGH: Greater Golden Horseshoe
GHG: Greenhouse Gas
GO: Government of Ontario
GTHA: Greater Toronto and Hamilton Area
HOV: High-Occupancy Vehicle
IMP: Integrated Mobility Plan
km: Kilometre
KPI: Key Performance Indicator
m: Metre
MEA: Municipal Engineers Association
MTO: Ministry of Transportation Ontario
MTSA: Major Transit Station Area
OP: Official Plan
PM: Post Meridiem (Afternoon)
PPN: Pedestrian Priority Network
PSI: Potential for Safety Improvements
QEW: Queen Elizabeth Way
ROW: Right-of-Way
TDM: Transportation Demand Management
TIS: Transportation Impact Study
TMP: Transportation Master Plan
TSM: Transportation Systems Management
TTS: Transportation Tomorrow Survey

Executive Summary



Introduction

Burlington's **Integrated Mobility Plan (IMP)** is a community-driven action plan for Burlington that aligns its transportation investments over the next 30 years with its community goals. The IMP is a combination of progressive policies, active programs and capital projects that together will make mobility in Burlington safe, accessible, sustainable, balanced and liveable.

The Burlington IMP is:

A New Strategy for Serving Growth

The IMP strategy to rebalance the transportation network adds the required person-movement capacity by offering additional travel options to the existing streets, replacing the more traditional strategy of creating new capacity by widening roads.

Community Driven

The Burlington IMP was developed through a multi-dimensional collaboration with Burlington's residents and businesses, Burlington's agency partners and neighbouring municipalities, and Burlington's transportation advocacy groups.

Founded on the Goals of Burlington's Strategic Plan

The IMP is designed to meet the 2015-2040 Strategic Plan goals to enable "people and goods move through the city more efficiently and safely" and provide "more mobility choice within the city and the region through improved public transportation, active transportation and community responsive growth management to allow more residents to get where they need to go more efficiently."

Committed to a Sustainable Core

Sustainability is at the core of the IMP from both an environmental and financial perspective. The IMP promotes the movement of people and goods in a way that minimizes impacts on the natural environment.

Future Ready

The IMP is a 30 year plan; it provides the road map that will lead Burlington down the path of developing a transportation network that is sustainable.

The **Burlington IMP** has been prepared under Approach # 1 of the Municipal Class Environmental Assessment process for Master Plans. The engagement, technical analysis and background review has been completed at a broad level of assessment, applicable to all of Burlington, thus satisfying Phases 1 and 2 of a Class EA study. More detailed investigations at the project-specific level would be required following the completion of the Master Plan to fulfill the Municipal Class EA documentation requirements for the specific Schedule B and C projects identified.

Engagement

The engagement program provided numerous opportunities for residents and interested & affected parties from across the city to participate in the project and provide feedback. Through the engagement program, the City was able to educate the community about the future of transportation, anticipated growth in Burlington, and what sustainable transportation solutions might look like.

A variety of engagement methods were used to increase the reach and feedback received throughout the project, to reach diverse communities, and collect meaningful feedback.

Project Engagement Page

The City of Burlington launched an online community engagement page on Get Involved Burlington (https://www.getinvolvedburlington.ca/imp) to be the central hub for engaging with the project.

Project Launch Event

The City hosted a moderated panel discussion to introduce the project to the public and set the stage for the IMP.

Virtual Public Information Centres/ StoryMap

The Burlington IMP StoryMap was used to provide information on the project and invite participants to explore the project Vision, Values and Goals, the current transportation system in Burlington, Lived Experiences with Transportation stories, the draft Preferred Network, and the Future State of Transportation.

Map your Feedback

A placed-based mapping survey was conducted to understand what needs to change to help people get around and where problems occur when people move around Burlington.

Lived Experiences Stories

A survey was launched to gather input on current transportation issues related to the IMP values of safe, accessible, sustainable, balanced, and liveable transportation.

Meetings

A number of progress and decision feedback meetings were held with interested and affected parties to review project analysis and findings and collaborate on recommendations.

Food for Feedback

This drop-in event provided residents the opportunity to share their thoughts on City projects, City services, and initiatives with City Staff in exchange for a free lunch.

Foundation

The **Vision** represents the desired transportation future and steers the direction of the IMP. The **Values** are the themes that formed the foundation of the final plan. The **Goals** represent long-term high-level outcomes for transportation in Burlington.

The Vision

"Mobility in Burlington will be safe, accessible, sustainable, balanced, and liveable."

The Values

Safe – The movement of people and goods in Burlington will be safe for users of all modes.

Accessible – Getting around Burlington will be accessible to people of all ages and abilities.

Sustainable – The transportation network will prioritize efforts to encourage transit, cycling, walking, and other non-car modes in order to encourage their use.

Balanced – We will rebalance the transportation system to incentivize travel by non-car modes.

Liveable – Streets in Burlington will be designed to fit within their surroundings.

The Goals

1. Burlington will eliminate transportation-related deaths and serious injuries.
2. Burlington's transportation system will be accessible and reliable for users regardless of factors like age, ability, income, or familiarity with the city.
3. Burlington will provide high-quality transportation options to move people and goods wherever and whenever, while maintaining a high quality of life for residents.
4. Burlington will eliminate transportation-related carbon emissions.
5. Burlington's streets will support the intended roles of the communities they run through and help these communities be vibrant and prosperous.
6. Burlington will actively plan for the transportation changes of tomorrow while continuing to deliver great service today.

Existing and Planned Conditions

The sustainable approach adopted for the IMP is mode share driven rather than corridor-capacity driven. At its core, the IMP sets mode share targets for the future and develops the plan to achieve them. The existing and IMP proposed 2051 mode shares for Burlington are presented in **Figure ES-1** and **Figure ES-2**.

Figure ES-1: Existing Mode Shares Graph

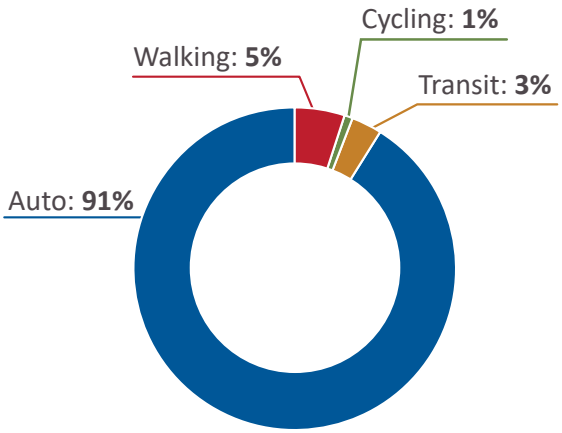
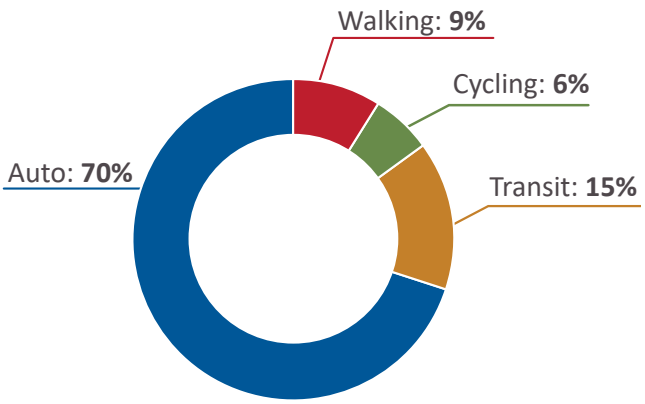


Figure ES-2: IMP Proposed 2051 Mode Shares Graph



Existing trip length data was reviewed to verify the targeted increases in walking and cycling mode share. Data showed that approximately 25% of existing trips originating in Burlington are less than 2.5km, a distance generally accepted to be a comfortable walk. It was also observed that another 36% of existing trips originating in Burlington are between 2.5 and 7.5km, a distance generally accepted to be within the range of a large percentage of cyclists. These statistics indicate that the targeted mode share is achievable, and possibly conservative.

Problem and Opportunity Statements

Phase 1 of the EA Planning process requires identification of Problem and Opportunity Statements, which are to be answered by the development and assessment of Alternative Solutions. The Burlington IMP Problem and Opportunity Statements are outlined below:

- Burlington's streets need to be designed in a way to safely serve all transportation modes, including walking, cycling, and transit.

- Burlington's streets need to be designed to serve the needs of a diverse group of people, of all ages and abilities.
- Burlington's transportation projects should prioritize improving multimodal access and connectivity for more residents.

- Burlington needs better walking and cycling connections to transit stops and hubs.
- Burlington needs safer crossings of the rivers, rail lines, and highways for people walking and cycling.
- Burlington needs to reduce transit travel times and enhance traveler convenience to most destinations, particularly between neighbouring areas of the City.
- Burlington needs robust (i.e., fast and direct) transit connections to current and future job opportunities.
- Burlington needs to enhance transportation options for residents living in rural areas.

- The percentage of trips made by car needs to be reduced in Burlington.
- Burlington's untapped potential for electric vehicles needs to be explored.

- The redesigning of streets in key growth areas to prioritize walking, cycling, and transit is necessary for Burlington.
- Road designs in Burlington need to be updated to reflect the unique priorities of different areas and current thinking on urban street design.

- Burlington's transportation system's resiliency requires improvement.
- Burlington needs to make better preparations for the future of mobility.
- The capital planning in Burlington needs to be connected and leveraged with asset management.

Preferred Network

Burlington has recognized that relying on a car-centric approach or widening streets to add car capacity:

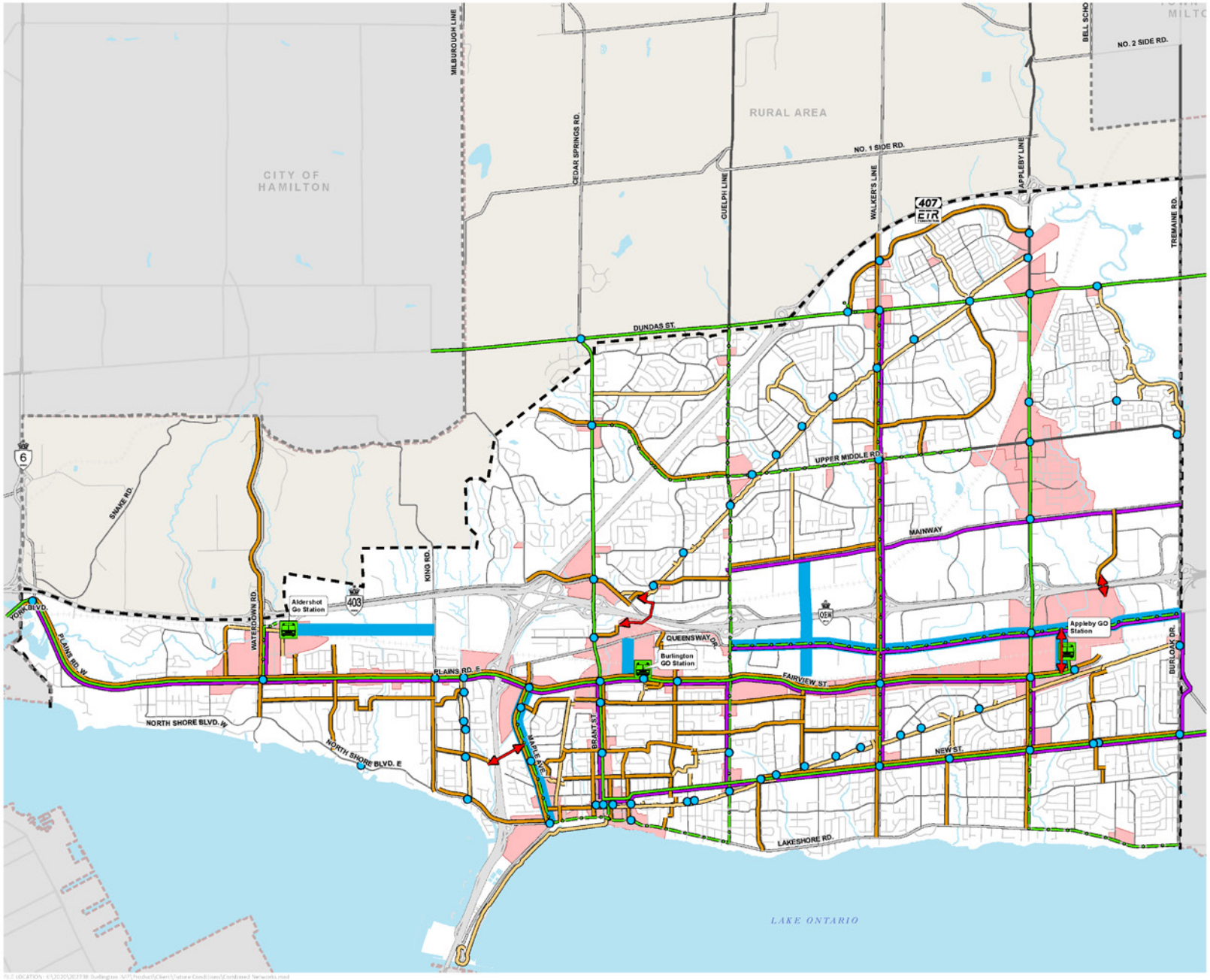
- is not a feasible solution to its traffic congestion issues;
- creates a transportation network that fails to serve other modes of transportation, especially in rural and employment areas;
- does not support the City's growth strategy; and
- perpetuates negative impacts on the natural environment and atmospheric climate by contributing to greenhouse gas levels.

The City has chosen to adopt **a sustainable and integrated network** approach to resolve these historic and on-going issues. Key elements of a sustainable and integrated network include:

- Only widening streets to improve conditions for walking, cycling or transit users or to resolve safety concerns;
- Rebalancing the right-of-way on a select number of streets to change the priority afforded to the travel modes;
- Extending new multi-modal corridors into growth areas of the City, where required, to provide multi-modal access to development parcels;
- Developing a transit infrastructure network, improve transit service and reduce transit delays within frequent transit corridors;
- Considering conversion of existing general purpose traffic lanes, or, in limited circumstances, consider widening existing streets in order to create dedicated transit corridors;
- Developing a spine network of high-quality cycling facilities designed to serve cyclists of all ages and abilities by building new and improving existing cycling infrastructure;
- Improving the pedestrian environment within employment areas and the future MTSA's and rural areas; and
- Creating new walking and cycling connections across barriers (freeways and rail lines) where supported by appropriate environmental studies.

Figure ES-3 shows the preferred integrated network.

Figure ES-3: Preferred Integrated Network



CITY OF BURLINGTON

BURLINGTON INTEGRATED MOBILITY PLAN

PREFERRED INTEGRATED NETWORK

- Major Transit Station
- Intersection Improvements
- Barrier Crossings
- Enhanced Pedestrian Realm
- Bus Rapid Transit
- Transit Priority Corridor
- On-Road Spine Network
- Off-Road Spine Network
- Truck Network
- Multi-Modal Corridor Studies

Base Mapping

- Provincial Highway / Freeway
- Regional Road / Major Arterial
- Arterial
- Collector
- Local
- Rail Line
- City of Burlington
- Urban Boundary
- Major Creeks
- Waterbody
- Rural Area
- Municipal Boundaries

SCALE 1:50,000

0 0.5 1 2 km

MAP DRAWING INFORMATION:
DATA PROVIDED BY CITY OF BURLINGTON 2020, MNRF 2020, ALTA 2021

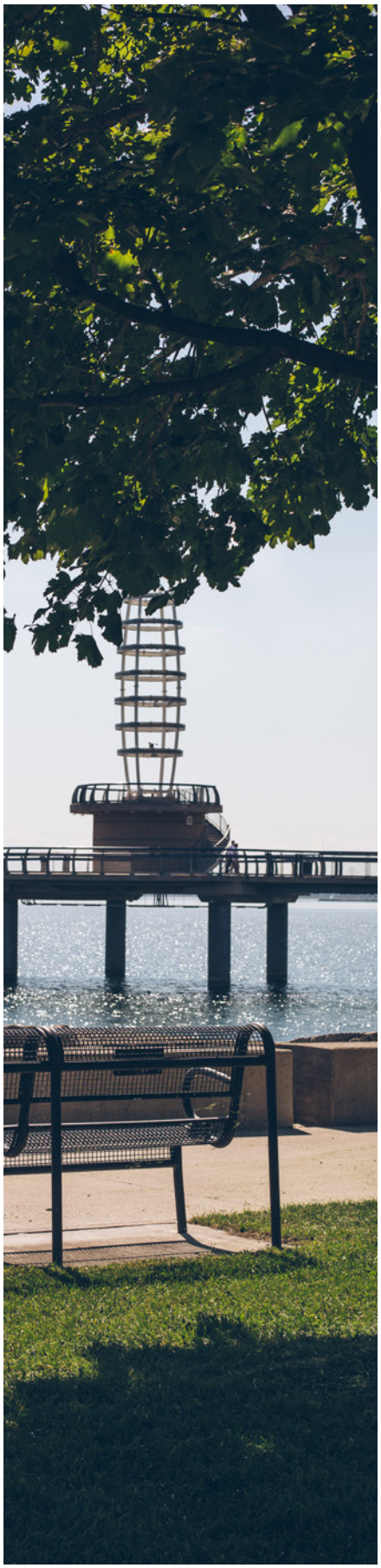
MAP CREATED BY: GAM
MAP CHECKED BY: SD
MAP PROJECTION: NAD 1983 UTM Zone 17N

DILLON CONSULTING

PROJECT: 202738
STATUS: DRAFT
DATE: 2023-06-09

The City will stage the implementation of the transit infrastructure network, with progressively more dedicated elements constructed only when and if the need for them emerges, according to the following guidelines:

- **Stage 1** – Increase frequency of service and/or optimize performance for all routes on the Transit Infrastructure Network.
- **Stage 2** – Implement transit priority measures where buses continue to experience significant delays (more than five minutes late), even with Stage 1 implemented. Transit Priority Measures are subject to appropriate environmental assessment studies.
- **Stage 3** – Convert general traffic lanes to dedicated transit lanes (either at peak times or all-day) on existing four-lane streets and/or widen existing two-lane streets to four lanes to create dedicated transit lanes where delay and ridership warrants. Lane conversions and widenings are subject to relevant technical and environmental assessment studies.



Policies

The policy framework is a collection of directions, positions, procedures, and documents that establish the actions that Burlington will take to achieve the IMP objectives. They are standards that outline how staff will make decisions on a day-to-day basis.

Walking / Pedestrian

The key IMP policy directions for pedestrians are to:

- Create a complete and connected pedestrian network, including establishing dedicated rights-of-way or connections on private property through agreements with landowners;
- Enhance the pedestrian level of service (experience);
- Build a walkable environment; and
- Improve pedestrian safety and promotion.

Cycling

The key IMP policy directions for cyclists are to:

- Create a complete and connected cycling network, including establishing dedicated rights-of-way or connections on private property through agreements with landowners;
- Enhance the cyclist level of service (experience);
- Build a cycling network that attracts new cyclists and broadens the community of cyclists in Burlington;
- Explore micro-mobility and support its expansion where practical;
- Create attractive connections to transit;
- Create attractive trip-end facilities; and
- Improve safety and promote cycling.

Transit

The key IMP policy directions for transit are:

- Build and maintain the Frequent Transit Network (FTN) to provide 15-minute service or better;
- Stage the implementation of supporting infrastructure elements for the FTN when and if the need emerges;
- Enhance the transit passenger level of service;
- Explore on-demand transit and consider expansion of the program to rural areas;
- Increase cross boundary transit trips; and
- Promote transit.

Goods Movement

The key IMP policy directions for goods movement are to:

- Build and maintain a quality goods movement network;
- Enhance efficient goods movement with trucks; and
- Enable efficient goods movement with rail.

Integrated Planning

The key IMP policy directions for integrated transportation planning are to:

- Build a sustainable and integrated road network;
- Actively manage mode share;
- Protect new and established neighbourhoods from undesirable road impacts;
- Maximize road safety for all users;
- Prioritize reduction of energy consumption and environmental impacts;
- Enhance city parking facilities and services;
- Manage congestion;
- Plan for strategic road projects;
- Improve the monitoring and reporting process; and
- Align existing and future tools and plans with the IMP vision.

Programs

Programs are a collection of actions and smaller projects that are organized around a common objective that support the city's pursuit of the IMP goals. The IMP has identified six key programs.

Strategic Transportation Planning Program

Strategic Transportation Planning is the process of designing the transportation network, facilities, and services to align with the Vision and Goals of the IMP. Strategic Transportation Planning requires a strong understanding of social and economic aspects that impact how, when, and why people move.

An enhancement of Burlington's existing Transportation Planning Program is proposed. The program's mandate/ key responsibilities include:

- Develop/ maintain integrated strategies and network plans for all modes.
- Develop/ align network planning and design guidelines and policies.
- Monitor and report on progress towards IMP Vision and Objectives.
- Partner with other departments and external agencies to manage strategic transportation planning issues.

Transportation Demand Management (TDM) Program

Transportation Demand Management (TDM) is a term used to describe a suite of initiatives that aims to reduce traffic, particularly in the commuter peak hours. TDM could include education, marketing and outreach to improve the overall efficiency of the transportation network and influence how, when, and where people travel. These types of initiatives are relatively low-cost and can have a substantial impact on demand. TDM can also apply to developments. Requiring new developments to include elements like bike parking, showers, car-sharing spaces, transit stop amenities, and more in new developments can make sustainable transportation options more attractive and convenient for people living or working there. An effective TDM program can reduce congestion and shift more trips to sustainable options like walking, cycling, and taking the bus.

Creation of a city-wide TDM Program is proposed for Burlington. The program's mandate / key responsibilities could include the following actions:

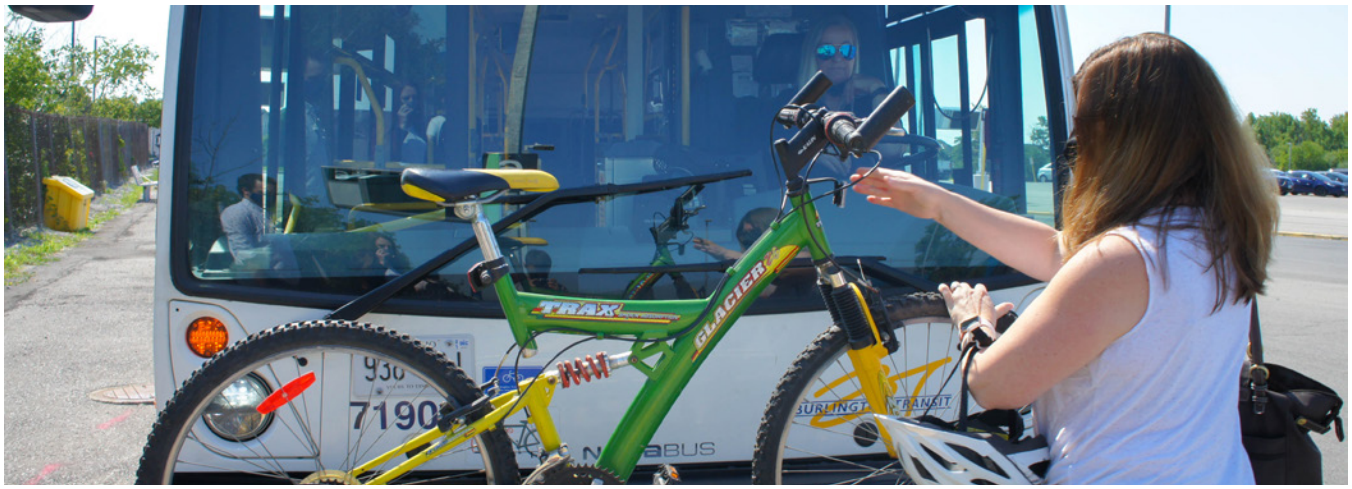
- Prepare and maintain a TDM Strategy and Action Plan for Burlington.
- Developing measures and tools to manage demand for travel for all transportation modes, targeting factors like cost, convenience, and all factors that affect mode choice.
- Prepare a micro-mobility plan/ strategy that is linked to the Complete Streets Design Guide and connected to Traffic By-laws.
- Form partnerships and support community collaborations.

Strategic Parking Management Program

Strategic Parking Management refers to a set of tools and strategies that can be used to improve the effectiveness of parking in a city and align supply and pricing with the city's strategic transportation objectives. Optimizing parking management can reduce environmental nuisances and traffic volume, shift the modal split to more sustainable modes, and diminish mobility costs and stress for users.

A new Strategic Parking Management Program is proposed for Burlington. The program's mandate / key responsibilities could include the following actions:

- Develop measures and tools to manage parking supply for all modes.
- Review on-street and off-street parking locations and supply to ensure the city-wide parking system is in alignment with the goals and objectives of this plan.
- Maintain and update the traffic, parking and zoning bylaws.
- Develop the city's first Downtown Parking Master Plan.
- Consider public-private partnerships to expand the parking supply.
- Assess parking enforcement strategies and efforts.
- Develop a city-wide parking plan for non-auto modes to support the targeted shift in mode share.
- Develop a flex zone/curbside use prioritization guideline.



Active Transportation (AT) Program

Active Transportation requires a person to move themselves to a destination through non-motorized means. Examples of active transportation include, walking, cycling, scootering, and rollerblading. By definition, Active Transportation also includes electric-powered bicycles, e-scooters and other micro-mobility devices that require human power to move them.

An enhanced Active Transportation Program is proposed for Burlington. The program's mandate/ key responsibilities could include the following actions:

- Designs and implements Active Transportation (AT) projects (retrofit, connector network, connections to transit stops) outside of the pedestrian and cycling Priority Networks.
- Increase connectivity through eliminating gaps within the active transportation network.
- Provide input into capital design projects to facilitate implementation of the active transportation networks recommended through the IMP.
- Monitor progress toward implementation of the Priority Networks.

Transportation Systems Management (TSM) Program

Transportation Systems Management (TSM) is a term used to describe a suite of operational initiatives aimed at aligning the transportation network with the City's long range mobility objectives. TSM includes measures such as transit signal priority at intersections, signal coordination and optimization, and use of dedicated lanes for high-occupancy vehicles.

An enhanced Transportation Systems Management Program is proposed for Burlington. The program's mandate / key responsibilities could include the following actions:

- Develop a TSM Strategy and Action Plan that considers traffic flow optimization, access management, transit signal priority, intelligent transportation systems and smart signals, and enhanced data collection.
- Plans and implements measures to optimize vehicle flows in key corridors and at intersections.

- Implement traffic flow improvements on key arterial corridors.
- Prepare strategies to manage traffic spillover from events on Provincial facilities.
- Implement adaptive traffic signal control.
- Create a centralized traffic management centre.
- Prepare, manage and maintain a traffic signals management plan.
- Prepare an Intelligent Transportation Systems strategy.
- Stay informed and assess feasibility of implementation of new and emerging technologies.
- Design and deliver a data collection program that supports operational analysis.
- Continue to be the city's Centre of Excellence for traffic operations; collaborate with others to implement measures aimed at rebalancing the transportation network and reducing emissions from transportation sources.

Vision Zero Program

All road users are impacted by the safety of the transportation system. Vision Zero refers to the strategies, tools, and measures cities can use to prevent collisions resulting in injuries and deaths.

A new Vision Zero Program is proposed for Burlington. The program's mandate / key responsibilities could include the following actions:

- Develops, designs, recommends and implements measures to eliminate fatal and injury collisions and protect vulnerable road users to achieve Vision Zero.
- Achieve Council-endorsement to formally adopt the Vision Zero approach to transportation safety.
- Increase efforts dedicated to proactive analysis and identification of problems.
- Review, create and update various transportation guidelines including but not limited to traffic calming, speed management, street and trail lighting.
- Develop metrics, mapping tools, dashboards and reports that measure safety performance and assist with analysis.
- Review, develop and pilot new and innovative street and intersection design with a focus on safety for all users.
- Review the applicability and implementation of automated enforcement tools.
- Become the Centre of Excellence for Vision Zero.

Implementation

A list of capital projects was identified based on the Preferred Integrated Network for Burlington (**Figure ES-3**). Roads / corridors were broken down in to multiple projects to align with changing conditions and/or to manage the projects size. **Table ES-1** and **Table ES-2** displays the IMP capital projects.

Table ES-1: IMP Capital Projects – Pre-Approved

Notes: * indicates a tie

Road Name	From	To	Project Type	Prioritization (Score/Rank)
Plains Road	York Boulevard	Daryl Drive	Protected Bikes, Bus Rapid Transit (BRT) Dedicated Lanes	7.7 / 47
Plains Road	Daryl Drive	Shadeland Avenue	Protected Bikes, Pedestrian Realm, BRT Dedicated Lanes	11.0 / 8*
Plains Road	Shadeland Avenue	King Road	Protected Bikes, Pedestrian Realm, BRT Dedicated Lanes	9.0 / 32*
Plains Road	King Road	QEW northbound Off Ramp/ Plains Road East	Protected Bikes, Pedestrian Realm, BRT Optimized	10.3 / 12
Fairview Street	QEW northbound Off Ramp / Plains Road East	Brant Street	Protected Bikes, Pedestrian Realm, BRT Dedicated Lanes / Optimized	11.1 / 6*
Fairview Street	Brant Street	Drury Lane	Protected Bikes, Pedestrian Realm, BRT Dedicated Lanes / Optimized	13.0 / 1*
Fairview Street	Drury Lane	Guelph Line	Protected Bikes, Pedestrian Realm, BRT Dedicated Lanes	13.0 / 1*
Fairview Street	Guelph Line	Walkers Line	Protected Bikes, Pedestrian Realm, BRT Dedicated Lanes	10.0 / 14*

Road Name	From	To	Project Type	Prioritization (Score/Rank)
Fairview Street	Walkers Line	Appleby Line	Protected Bikes, Pedestrian Realm, BRT Dedicated Lanes	10.0 / 14*
Fairview Street	Appleby Line	Road End	Protected Bikes, Pedestrian Realm, BRT Dedicated Lanes	7.6 / 48
James Street	Brant Street	Martha Street	Pedestrian Realm, BRT Optimized	10.0 / 14*
New Street	Martha Street	Guelph Line	Pedestrian Realm, BRT Optimized	9.0 / 32*
New Street	Guelph Line	Walkers Line	Protected bikes, Pedestrian Realm, BRT Dedicated Lanes	6.9 / 61
New Street	Walkers Line	Appleby Line	Protected bikes, Pedestrian Realm, BRT Dedicated Lanes	8.2 / 41
New Street	Appleby Line	Burloak Drive	Protected bikes, Pedestrian Realm, BRT Dedicated Lanes	9.1 / 30*
Lakeshore Road	825 m south of North Shore Boulevard East	North Shore Boulevard East	Pedestrian Realm	11.0 / 8*
North Shore Boulevard East	King Road	QEW northbound Off-Ramp	Protected bikes	5.9 / 73
North Shore Boulevard East	QEW northbound Off-Ramp	Maple Avenue/ Lakeshore Road	Protected bikes, Pedestrian Realm	13.0 / 1*
Lakeshore Road	Maple Avenue / Lakeshore Road	Brant Street	Buffered Bikes, Pedestrian Realm, Transit priority corridor	12.0 / 5
Lakeshore Road	Brant Street	Martha Street	Buffered Bikes, Transit priority corridor	10.0 / 14*
Lakeshore Road	Martha Street	Guelph Line	Sidewalks / Pedestrian Realm, Transit priority corridor	9.5 / 26*
Lakeshore Road	Appleby Line	Burloak Drive	Pedestrian Realm, Transit priority corridor	6.1 / 68

Road Name	From	To	Project Type	Prioritization (Score/Rank)
Harvester Road	Appleby Line	Burloak Drive	Buffered Bikes, Sidewalks / Pedestrian Realm, Transit priority corridor	8.5 / 40
Upper Middle Road	Havendale Boulevard	Brant Street	Protected bikes, Pedestrian Realm	5.3 / 75
Upper Middle Road	Brant Street	Guelph Line	Protected bikes, Pedestrian Realm, Transit priority corridor	6.0 / 69*
Waterdown Road	Mountain Brown Road	Highway 403 eastbound Off-Ramp	Multi-Use Path / Protected bikes, Sidewalks	6.7 / 62
Waterdown Road	Highway 403 eastbound Off-Ramp	Plains Road	Protected bikes, Sidewalks / Pedestrian Realm, Transit priority corridor	10.5 / 10
King Road	Plains Road	Northshore Road	Protected bikes	7.0 / 53*
Maple Avenue	Fairview Street	Lakeshore Road	Protected bikes, Pedestrian Realm, Transit priority corridor	8.9 / 38
Brant Street	Fairview Street	Lakeshore Road	Protected / Buffered Bikes, Pedestrian Realm, BRT Optimized	8.1 / 42*
Guelph Line	Fairview Street	New Street	Buffered Bikes, Pedestrian Realm, Transit priority corridor	9.8 / 23
Guelph Line	New Street	Lakeshore Road	Buffered Bikes, Pedestrian Realm, Transit priority corridor	5.2 / 76
Walkers Line	Highway 407	Dundas Street	Protected bikes, Pedestrian Realm	5.5 / 74
Walkers Line	Dundas Street	Upper Middle Road	Protected bikes, Pedestrian Realm, Transit priority corridor	6.5 / 64*
Walkers Line	Upper Middle Road	Mainway	Protected bikes, Pedestrian Realm, Transit priority corridor	6.2 / 67
Walkers Line	Mainway	Harvester Road	Protected bikes, Transit priority corridor	6.5 / 64*

Road Name	From	To	Project Type	Prioritization (Score/Rank)
Walkers Line	Harvester Road	Fairview Street	Protected bikes, Pedestrian Realm, Transit priority corridor	7.3 / 49*
Walkers Line	Fairview Street	New Street	Protected bikes, Pedestrian Realm, Transit priority corridor	9.2 / 28*
Walkers Line	New Street	Lakeshore Road	Protected bikes	5.0 / 79*
Appleby Line	Fairview Street	New Street	Protected bikes, Pedestrian Realm, Transit priority corridor	10.2 / 13
Appleby Line	New Street	Lakeshore Road	Protected bikes, Pedestrian Realm, Transit priority corridor	7.1 / 52
Burloak Drive	Harvester Road	New Street	Buffered Bikes, Pedestrian Realm	7.2 / 51
Palladium Way	Dundas Street	Walkers Line	Protected Bikes, Pedestrian Realm	5.1 / 77*
Palladium Way	Walkers Line	Appleby Line	Protected Bikes, Pedestrian Realm	5.1 / 77*
Mainway	Guelph Line	Walkers Line	Protected Bikes	7.0 / 53*
Mainway	Walkers Line	Appleby Line	Protected Bikes, Sidewalks / Pedestrian Realm	8.1 / 42*
Mainway	Appleby Line	Burloak Drive	Protected Bikes, Sidewalks / Pedestrian Realm	6.6 / 63
North Service Road	Kerns Road	Brant Street	Sidewalks / Pedestrian Realm	7.0 / 53*
North Service Road	Brant Street	Industrial Street	Sidewalks / Pedestrian Realm	8.8 / 39
South Service Road	Harvester Road	Century Drive	Pedestrian Realm	7.0 / 53*
Harvester Road	Guelph Line	Walkers Line	Buffered Bikes, Transit priority corridor	9.0 / 32*
Harvester Road	Walkers Line	Appleby Line	Buffered Bikes, Sidewalks / Pedestrian Realm, Transit priority corridor	11.1 / 6*
Maple Avenue	Plains Road E	Fairview Street	Protected Bikes, Pedestrian Realm	10.4 / 11

Road Name	From	To	Project Type	Prioritization (Score/Rank)
Sutton Drive	Mainway	North Service Road	Protected Bikes, Sidewalks	4.0 / 106
Howard Road	Lemonville Road	Plains Road	Local Bikeway, Sidewalks / Pedestrian Realm	10.0 / 14*
Gallagher Road	Road End	Plains Road	Local Bikeway, Sidewalk	8.0 / 44*
Shadeland Avenue	Plains Road	Townsend Avenue	Local Bikeway, Sidewalk	8.0 / 44*
Townsend Avenue	LaSalle Park Road	Eagle Drive	Local Bikeway, Sidewalk	7.0 / 53*
Surrey Lane / Warwick Drive	King Road	Francis Road	Local Bikeway	6.0 / 69*
Greenwood Drive	King Road	Francis Road	Local Bikeway, Sidewalk	7.0 / 53*
Maple Crossing Boulevard	Maple Avenue	Multi-Use Trail	Local Bikeway	9.0 / 32*
Caroline Street	Multi-Use Trail	Brant Street	Local Bikeway, Pedestrian Realm	9.2 / 28*
Caroline Street	Brant Street	Drury Lane	Local Bikeway, Pedestrian Realm	9.1 / 30*
Thorpe Road / Stephenson Drive	Maple Avenue	Grahams Lane	Local Bikeway	9.0 / 32*
Grahams Lane	Stephenson Drive	Brant Street	Local Bikeway, Sidewalks / Pedestrian Realm	13.0 / 1*
Prospect Street	Brant Street	Guelph Line	Protected Bikes, Pedestrian Realm	7.0 / 53*
Prospect Street	Guelph Line	Cumberland Avenue	Protected Bikes, Pedestrian Realm	7.0 / 53*
Woodward Avenue / Rexway Drive	Guelph Line	Walkers Line	Local Bikeway	5.0 / 79*
Headon Road	Multi-Use Trail	Jordan Avenue	Local Bikeway	5.0 / 79*

Road Name	From	To	Project Type	Prioritization (Score/Rank)
Jordan Avenue	Headon Road	Walkers Line	Local Bikeway	5.0 / 79*
Millcroft Park Drive	Walkers Line	Dundas Street	Local Bikeway	5.0 / 79*
William O'Connell Boulevard	Millcroft Park Drive	Upper Middle Road	Local Bikeway, Pedestrian Realm	6.4 / 66
Leighland Road	Brant Street	Truman Street	Local Bikeway, Sidewalks / Pedestrian Realm	10.0 / 14*
Mountainside Drive	Multi-Use Trail	Guelph Line	Local Bikeway, Pedestrian Realm	7.3 / 49*
Wedgewood Drive	Pinedale Avenue	New Street	Local Bikeway	5.0 / 79*
Rossmore Boulevard	New Street	Lakeshore Road	Local Bikeway, Sidewalk	6.0 / 69*
Cumberland Avenue	Fairview Street	Prospect Street	Painted bikes, Pedestrian Realm	10.0 / 14*
Ontario Street	Maple Avenue	Multi-Use Trail	Pedestrian Realm	9.0 / 32*
Elgin Street	Maple Avenue	Brant Street	Local Bikeway, Pedestrian Realm	9.7 / 24
Locust Street	Caroline Street	Lakeshore Road	Local Bikeway, Pedestrian Realm	10.0 / 14*
John Street	Caroline Street	Lakeshore Road	Pedestrian Realm, Transit Priority Corridor	9.5 / 26*
Elizabeth Street	Caroline Street	Lakeshore Road	Local Bikeway	10.0 / 14*
Martha Street	Caroline Street	Lakeshore Road	Local Bikeway, Pedestrian Realm	9.6 / 25
Cedar Springs Road	Dundas Street	No. 1 Side Road	Multi-Use Path	5.0 / 79*
Cedar Springs Road	No. 1 Side Road	No. 2 Side Road	Multi-Use Path	5.0 / 79*

Road Name	From	To	Project Type	Prioritization (Score/Rank)
Cedar Springs Road	No. 2 Side Road	Britannia Road	Multi-Use Path	5.0 / 79*
Britannia Road	Milburough Line	Cedar Springs Road	Paved Shoulder	5.0 / 79*
Britannia Road	Cedar Springs Road	Guelph Line	Paved Shoulder, Sidewalk	5.0 / 79*
Britannia Road	Guelph Line	Walkers Line	Paved Shoulder	5.0 / 79*
Britannia Road	Walkers Line	Appleby Line	Paved Shoulder	5.0 / 79*
Britannia Road	Appleby Line	Bell School Line	Paved Shoulder	5.0 / 79*
Walkers Line	Highway 407	No. 1 Side Road	Paved Shoulder	5.0 / 79*
Walkers Line	No. 1 Side Road	No. 2 Side Road	Paved Shoulder	5.0 / 79*
Walkers Line	No. 2 Side Road	Britannia Road	Paved Shoulder	5.0 / 79*
Walkers Line	Britannia Road	Derry Road	Paved Shoulder	5.0 / 79*
Bell School Line	Britannia Road	Derry Road	Paved Shoulder	5.0 / 79*
Snake Road	Old York Road	Thomson Drive / Main Street South (Waterdown)	Paved Shoulder	5.0 / 79*
King Road	North Service Road	Burlington / Hamilton Boundary	Paved Shoulder	6.0 / 69*

Table ES-2: IMP Capital Projects – EA Required

Notes: * indicates a tie

Road Name	From	To	Project Type	EA Required	Prioritization (Score/Rank)
South Service Road Extension	Waterdown Road	King Road	New Road, Protected Bikes, Sidewalks / Pedestrian Realm, Transit / Transit priority corridor	Schedule C	7.8 / 46
Cumberland Ave Extension	Mainway	Fairview Street	New Road, Painted bikes, Sidewalks, Transit	Schedule C	5.0 / 79*
New Collector Road (east of Brant Street)	Fairview Street	Plains Road	New Road, Painted bikes, Sidewalks, Transit	Schedule C	8.0 / 44*
New Collector Road (east of Appleby Line)	Fairview Street	Harvester Road	New Road, Painted bikes, Sidewalks, Transit	Schedule C	7.0 / 53*
AT overpass/ underpass of QEW (@ Maple Park)	Greenwood Drive	Maple Avenue	New AT overpass/ underpass, Multi-Use Path	Schedule C	6.0 / 69*
AT overpass/ underpass of QEW/ 403 (east of Brant Street)	Truman Street	Industrial Street	New AT overpass/ underpass, Multi-Use Path, Pedestrian Realm	Schedule C	6.0 / 69*
AT overpass/ underpass of QEW/ 403 (east of Appleby Line)	Century Drive	Sutton Drive	New AT overpass/ underpass, Multi-Use Path, Pedestrian Realm	Schedule C	7.8 / 46

Prioritization

Each project was assigned a score out of 18 points based on their ability to address six (6) criteria: Safe, Accessible, Sustainable, Balanced, Liveable, and Ease of Implementation. The higher the score the better the alternative aligns with the objectives of the criteria. The criteria were constructed in such a way as to not over-emphasize the role of any one criteria group. The overall Project Prioritization including the total scores and ranks are displayed in **Table ES-1** and **Table ES-2**.

Policy and Program Actions

The IMP requires more than just infrastructure in order to achieve its vision and goals. **Table ES-3** shows the IMP Policy and Program Actions.

Table ES-3: Policy and Program Actions

Action	Timeframe (years)	
Prepare / Update Mode Plans		
Integrated Mobility Plan Update		**6 to 10**
Pedestrian Master Plan	**0 to 5**	
Cycling Plan Update		**6 to 10**
Rural Active Transportation Plan Update		**6 to 10**
Five-Year Transit Business Plan Update	**0 to 5**	
Goods Movement Master Plan / Strategy	**0 to 5**	
Parking Master Plan	**0 to 5**	
Electric Mobility Strategy Update		**6 to 10**

Action	Timeframe (years)	
Prepare Guidelines		
Transit Service Guidelines	**0 to 5**	
Transportation Impact Study Guidelines	**0 to 5**	
Multimodal Level of Service Guidelines	**0 to 5**	
Flex Zone Management Guidelines		**6 to 10**
Complete Streets Design Guidelines	**0 to 5**	
Pedestrian Priority Network Design Manual	**0 to 5**	
Downtown Streetscape Guideline Update		**6 to 10**
Transportation Equity Guidelines		**6 to 10**
Pedestrian Infrastructure Assessment Guideline for Renewal and Reconstruction Projects	**0 to 5**	
Rapid Deployment Study for the Spine Cycling Network	**0 to 5**	
Programs and Required Actions		
Strategic Transportation Planning Program • Develop an action plan	**0 to 5**	
Transportation Demand Management Program • Develop an action plan	**0 to 5**	
Strategic Parking Management Program • Develop an action plan	**0 to 5**	
Active Transportation Program • Develop an action plan	**0 to 5**	
Transportation System Management Program • Develop an action plan	**0 to 5**	
Vision Zero Program • formally adopt a Vision Zero approach to transportation system planning, operations and design • Develop an action plan	**0 to 5**	

Monitoring Plan

The Monitoring Plan measures progress towards achieving the vision and goals of the IMP. The performance of indicators signals to the city when it should refine initiatives, shift funding or respond to evolving opportunities and challenges.

Key Performance Indicators (KPI) were identified for each of the six (6) IMP goals. For each IMP goal, KPI were developed with the goal of balancing transportation mode and whether the KPI was 'effort' or 'result' focused. **Table ES-4** displays the IMP Key Performance Indicators associated with each of the IMP's goals.

Table ES-4: Key Performance Indicators

Key Performance Indicator (KPI)	IMP Goal	Category	Frequency
1. Number of collisions by mode (per capita)	1	Road Safety	Annually
2. Injury and fatality rates by mode	1	Road Safety	Annually
3. Number of protected Intersections	1	Road Safety	Annually
4. Percentage of the spine bicycle network completed	2	Active transportation	Annually
5. Parking utilization rates by sub-region	2	Parking	Annually
6. Percent of bus stops and On-Demand pick-up / drop-off points that are fully accessible	2	Transit	Annually
7. Percentage of rural Active Transportation network completed	3	Active transportation	Annually

Key Performance Indicator (KPI)	IMP Goal	Category	Frequency
8. Percentage of residents and employees within 500m, of a transit stop or On Demand pick-up / drop-off point within the Urban Transit Service Boundary (Burlington Transit)	3	Transit	Annually
9. Number of intersections where signal timing has been optimised	3	Automobile	Annually
10. Vehicle ownership per capita	4	Automobile	Every 5 years
11. Number of residential units that are being built in Urban Growth Centres	4	Land Use	Annually
12. Percent of zero-emission vehicles in the municipal fleet	4	Transit & Automobile	Annually
13. Percentage of residents within 500m of a bicycle route by neighbourhood type	5	Active transportation	Annually
14. Percentage of streets with sidewalks by neighbourhood type	5	Active transportation	Annually
15. 100% installation of transit shelters in locations that meet shelter warrant within 1 year	5	Transit	Annually
16. Commuting duration by mode	6	Travel choices & perceptions	Every 5 years
17. Longest continuous cycling facility	6	Active transportation	Annually
18. Transit revenue vehicle-hours per capita	6	Transit	Annually
19. Household and population growth by sub region	Other	Land use	Every 5 years
20. User perception of walking, bicycling and taking transit as a transportation option	Other	Travel choices & perceptions	Every 2 years
21. Mode share of transportation to work by sub-region	Other	Travel choices & perceptions	Every 5 years
22. Length of new bicycle facilities, sidewalks and Local bikeways	Other	Active transportation	Annually
23. Transit ridership (boardings) per capita	Other	Transit	Annually

1.0 Introduction

1.1 Project Overview

Burlington's **Integrated Mobility Plan (IMP)** lays out how residents and visitors will move through the city over the next three decades. The IMP is a community-driven action plan for Burlington that aligns its transportation investments over the next 30 years with its community goals. The IMP is a combination of progressive policies, active programs and capital projects that together will make mobility in Burlington safe, accessible, sustainable, balanced and liveable.

As more people are expected to live in Burlington, the city is planning for future growth, including considering how people will move through the city. Burlington's transportation network has traditionally accommodated growth by building more roadways. However, the city no longer has the space to build new roadways and the financial cost to maintain a larger network of roads is significant.

Today's cities are designed to provide people of all ages and abilities with more travel choices. 21st century cities achieve this through a transportation model that gives people the ability to choose to walk, cycle or take transit to get to their destinations instead of solely relying on their car.

The Burlington IMP is:

A New Strategy for Serving Growth

Burlington is facing significant growth pressures, like all Greater Toronto and Hamilton Area (GTHA) municipalities. Provincial and Regional forecasts establish 2051 population and employment targets of 265,000 and 124,000, respectively, representing approximately 40% to 50% increase over 2023 levels. The IMP strategy to rebalance the transportation network adds the required person-movement capacity by offering additional travel options to the existing streets, replacing the more traditional strategy of creating new capacity by widening roads. The targeted growth cannot be accommodated without the rebalancing projects identified in this plan to create the additional person-movement capacity.

Community Driven

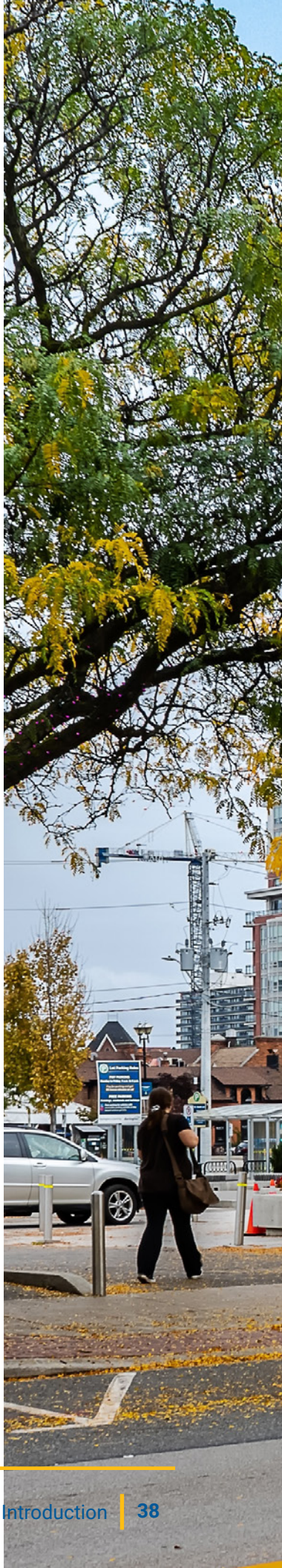
The Burlington IMP was developed through a multi-dimensional collaboration with Burlington's residents and businesses, Burlington's agency partners and neighbouring municipalities, and Burlington's transportation advocacy groups. The highly interactive approach to engagement used throughout the project resulted in strong participation from all sectors of the community including newcomers, youth, seniors, business, special interest groups, and people living in poverty.

The IMP is an evidence-informed and community-backed plan for transportation in Burlington to follow over the next three decades.

Founded on the Goals of Burlington's Strategic Plan

This Master Plan has been designed to meet the 2015-2040 Strategic Plan goals to enable "people and goods move through the city more efficiently and safely" and provide "more mobility choice within the city and the region through improved public transportation, active transportation and community responsive growth management to allow more residents to get where they need to go more efficiently."

The IMP policies and actions not only address social issues such as safety, equity and affordability, but also address environmental and health issues such as climate change and outdoor physical activity, which has proven so critical to maintaining physical and mental health during multiple pandemic lock-downs and restrictive measures between 2020 and 2022. These "stacked benefits" ensure that investments to implement this plan are realizing the highest possible benefit.



Committed to a Sustainable Core

Sustainability was at the core of the IMP, from both an environmental and financial perspective.

The vision of the IMP aims to promote the movement of people and goods in a way that minimizes impacts on the natural environment. The City of Burlington acknowledged in 2019 that it is in a climate emergency, and the Burlington IMP plays a crucial role in achieving the City's goal of becoming a net carbon zero community by 2050. The City's transportation networks will support and encourage travel by sustainable modes. The policies and programs encourage sharp increases in the use of sustainable modes and support electrification and innovation in the transportation sector.

To ensure that the City reaches these goals, the Burlington IMP provides policies that aim to move people sustainably. The Council-endorsed commitment to eliminating road widenings for the purpose of increasing car capacity has both minimized the capital cost of the transportation network and directed investments towards projects that increase available travel options and improve service to a broader group of travellers. Without the need for costly widening projects, more space and capital resources will be made available to improve road rights-of-way beyond the curb. This will include the resources to improve the equity of the overall transportation network, maintain or improve the character of existing corridors, and enhance the public realm with street trees, wide sidewalks and other amenities to encourage a sense of community.

Future Ready

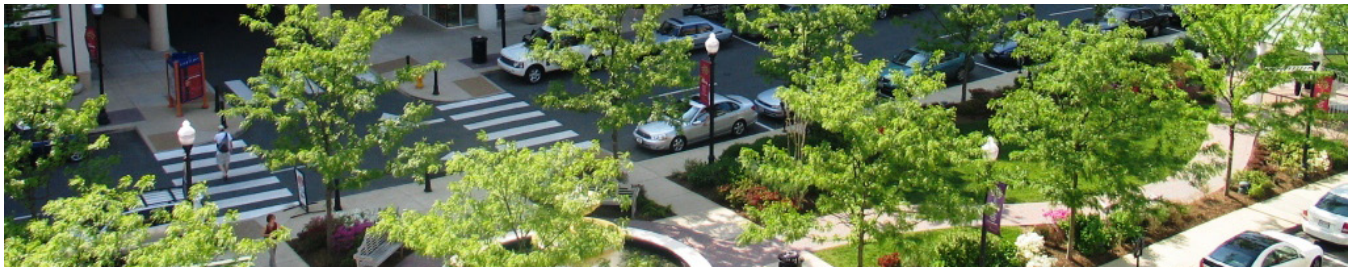
The IMP provides the road map that will lead Burlington down the path of developing a transportation network that is sustainable.

Based on years of listening and engaging with the community, considering current philosophies, and applying emerging technical input, the IMP has proposed a way to prepare Burlington for the future by building:

- A network that improves safety and equity for all residents and transportation modes;
- A network that supports environmental sustainability and directly works to reduce Greenhouse Gases (GHGs);
- A network that integrates with the future growth and urbanization of Burlington; and
- A network that is economically responsible compared to a traditional road expansion approach, which is controlled through the pace of budget implementation, and provides improvements to affordable modes of transportation for the community.

Ultimately, the IMP establishes the vision for how people and goods will move throughout the city for decades to come in a way that is conscious of the environment and moves Burlington to a future-ready state over the next thirty years.

1.2 Planning Process



1.2.1 Sustainable Transportation Master Planning Process

The Burlington IMP represents an innovative and leading-edge approach to integrated and strategic transportation master planning. It features:

A Vision, Values, and Goals framework that reflects the strategic direction of the community.

This framework is derived from the existing strategic directions of the community. The Vision, Values and Goals framework is the foundation of a sustainable Transportation Master Plan (TMP), as it is used to align all subsequent decisions to Burlington's core values: the problem statements, the plans mode share objectives, the evaluation criteria for comparing network alternatives, and the method used for prioritizing capital projects.

A commitment to developing a transportation strategy around Complete Streets and increasing sustainable mode share.

Sustainable TMPs, by definition, are rooted in a Complete Streets philosophy and are driven by managing mode share, rather than expanding road capacity for automobiles. The sustainable approach rebalances the transportation network by providing more mobility options for more modes and then sets mode share targets to align travel demand with the rebalanced network.

A multi-modal network that acknowledges the competition for right-of-way space and minimizes impacts on natural and urban features.

A multi-modal network extends the reach of sustainable modes (transit, cycling, and walking) so that they become more accessible to all travelers. The sustainable approach strives to make transit more competitive with the automobile for most trips and improves connections for active modes to key destinations and to transit.

A collection of policies and programs that support the shift in mode share.

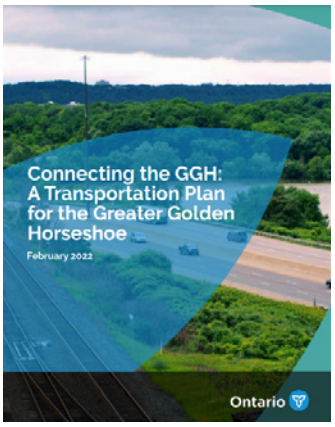
These are the tools used to shape the transportation demand to fit the vision for Burlington. To be successful, the plan has developed complementary policies and programs to actively manage the many factors affecting mode choice to bring the goals of the IMP to fruition.

1.2.2 Background Information and Development Policy Framework

The City of Burlington, a lower tier municipality, is located within Halton Region in Ontario. Therefore, Burlington's IMP will broadly consider and be subject to guidance from the following existing Provincial and Regional strategic transportation policy documents:

Connecting the GGH: A Transportation Plan for the Greater Golden Horseshoe

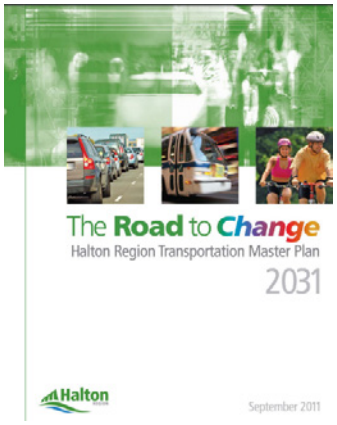
The provincial plan, **Connecting the GGH: A Transportation Plan for the Greater Golden Horseshoe**, provides a vision that aligns with planning and investments related to mobility in the GGH for the next 30 years. The Plan includes action items that aim to improve the movement of people and goods by providing a safe and interconnected transportation system that reduces gridlock and greenhouse gas emissions.



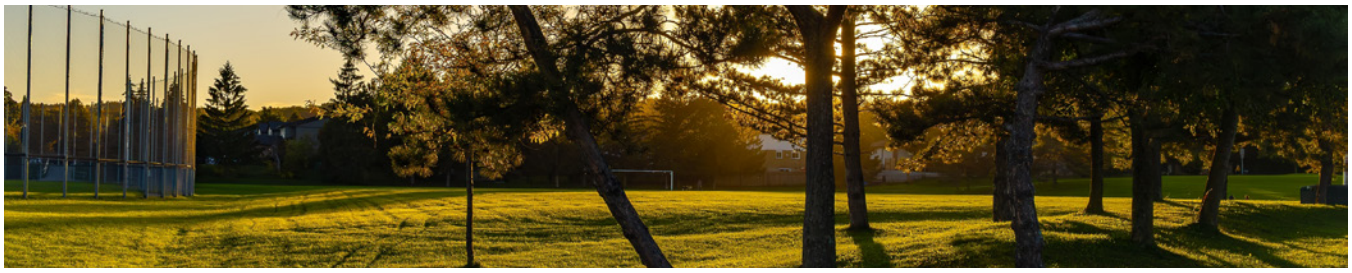
The Burlington IMP considers and incorporates the principles and policies of **Connecting the GGH** in order to meet the goals set out by the Province.

The Road to Change: Halton Region Transportation Master Plan

The Halton Region Transportation Master Plan, **The Road to Change: Halton Region Transportation Master Plan** provides strategies, policies and tools to meet the Region's long term transportation goals to 2031. The Halton Region Transportation Master Plan establishes the framework for municipalities in the Region to develop a sustainable, integrated transportation plan and strategies that consider all modes of travel (cars, transit, cycling and walking) to the year 2031. It is noted the Halton Region is currently preparing an update to its Transportation Master Plan to extend strategic planning to 2051.



The Burlington IMP considers and incorporates the principles and policies of **The Road to Change.**



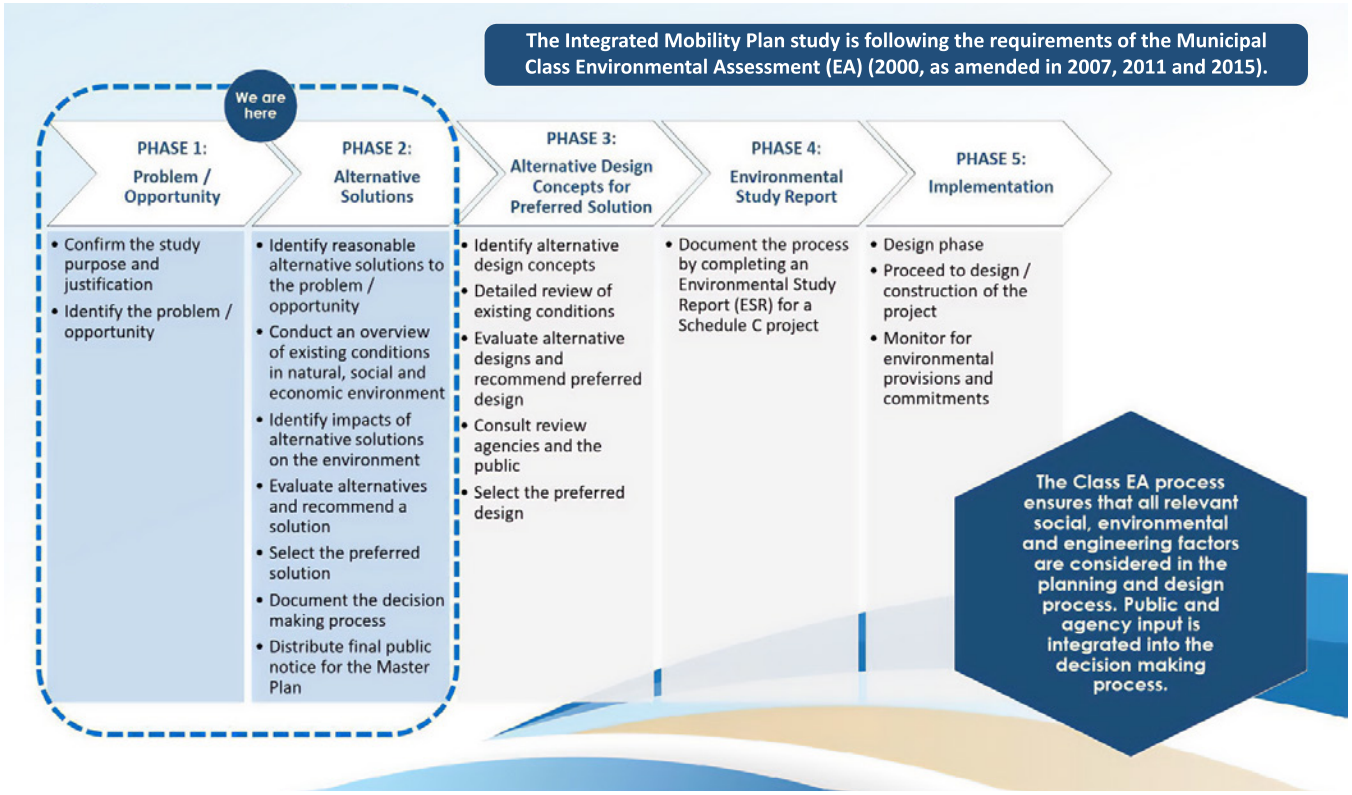
1.2.3 Municipal Class Environmental Assessment (EA) Process

Municipal transportation capital projects must meet the requirements of the *Ontario Environmental Assessment* (EA) Act. The Municipal Class EA applies to a group or "class" of municipal projects which occur frequently and have relatively minor and predictable impacts. These projects are approved under the EA Act, as long as they are planned, designed and constructed according to the requirements of the Class EA document.

The Municipal Engineers Association (MEA) published an update to the Class EA process in March 2023. The Burlington IMP follows the previous Class EA process (last updated in 2015) because the IMP began in 2020 and the majority of the work was completed prior to the adoption of the 2023 update.

The 2015 Class EA planning and design process is illustrated in **Figure 1-1**.

Figure 1-1: Class EA Planning and Design Process



The specific requirements of the Municipal Class EA depend on the type of project, its complexity and the significance of its environmental impacts. Three categories of projects are identified in the Class EA:

- **Schedule A** projects are the least complex and mostly consist of normal operational and maintenance activities. **Schedule A+** projects, such as streetscaping, localized operational improvements and changes to pavement markings for parking, turning lanes and bike lanes are also pre-approved but the public must be advised. Section A.1.2.2 of the Class EA includes various methods for public notification.
- **Schedule B** projects are more complex and generally include minor expansions to existing facilities. These projects are approved provided they follow Phases 1 and 2 of the Class EA process and are subject to an environmental screening. An example of a Schedule B road project is a new bridge costing less than $2.4M. The construction of a new transit station adjacent to a residential area or environmentally sensitive area is another example of a Schedule B project.
- **Schedule C** projects are the most complex and consist of new facilities or major expansions to existing facilities. These projects must follow all five phases of the Class EA process and require the preparation of an Environmental Study Report.

The Burlington IMP has been prepared under Approach # 1 of the Municipal Class Environmental Assessment process to ensure that future infrastructure projects meet the minimum criteria to proceed for additional detailed study and engagement. The engagement, technical analysis and background review has been completed at a broad level of assessment, applicable to all of Burlington, thus satisfying Phases 1 and 2 of a class EA study. As such, more detailed investigations at the project-specific level would be required following the completion of the Master Plan, in order to fulfill the Municipal Class EA documentation requirements for the specific Schedule B and C projects identified. The final documentation provides a table of all future works that would trigger Schedule B and C projects and would therefore require additional work as well as public and council touch points before construction.

Master Plans should be reviewed every five (5) years to determine the need for a detailed formal review and/ or updating.

2.0 Engagement

The IMP creates an integrated and sustainable network of mobility options that are designed to provide people of all ages and abilities with more travel choices for walking, cycling, and taking transit. Community input was important to developing a plan that meets the needs of the community. The engagement program for the IMP was designed to solicit feedback and gather input from the community and stakeholders at key milestones in the planning process and input and feedback was considered in the decision-making at each stage.

Below are the highlights for each engagement activity completed as part of the IMP.

2.1 Project Launch

2.1.1 Project Engagement Page (Fall 2020)

The City of Burlington launched an online community engagement page on Get Involved Burlington (https://www.getinvolvedburlington.ca/imp) to be the central hub for engaging with the project. Through the Get Involved page, people could learn more about the project, access the online engagement activities, and read and download documents.

2.1.2 Project Launch Event (Fall 2020)

To kick-off the project, the City hosted an online event to introduce the project to the public and set the stage for the IMP, with 180 people in attendance. The event featured a moderated panel discussion by transportation experts from across the country and explored important topics including the future of mobility, opportunities and challenges related to public health and the environment, social impacts of transportation, and how planning for a multi-modal transportation network will shape how Burlington residents will get around over the next 30 years.

2.1.3 Our Vision for the Future of Transportation in Burlington Survey (Fall 2020/ Winter 2021)

A survey was launched concurrently with the virtual Project Launch Event to gather input on the draft Vision and Values that will guide the IMP. The Vision and Values were drafted from existing policies and strategies related to mobility. There were 504 responses to the survey. Overall, participants expressed support for the draft Vision and Values. Feedback from the survey was used to finalize the Vision and Values for the IMP.

2.2 Foundations & Existing Conditions

2.2.1 Map Your Feedback (Summer 2021)

A placed-based mapping survey was conducted to understand what needs to change to help people get around and where problems occur when people move around Burlington. In total 210 respondents placed pins on the map to provide feedback.

Overall feedback included:

- Strong desire for better connectivity of active transportation networks. Respondents noted that there are many gaps in the network today and it is especially hard for active transportation users to cross physical barriers such as the Canadian National Railway (CNR) line and the Queen Elizabeth Way (QEW).
- Desire for protected cycling infrastructure to make cyclists feel safer, more comfortable, and more secure.
- More space for all active transportation users on multi-use paths to facilitate passing opportunities.
- Better maintenance of active transportation facilities, especially in the winter, to ensure safe travel.
- Improve safety for people who are walking and cycling at intersections.
- Reduce vehicle speeds to lower the likelihood of collisions with vulnerable users.
- More coverage and more convenient service options for transit, which will in turn help improve active transportation usage.

Feedback from this survey helped us shape the Problem and Opportunity statements.

2.2.2 Public Engagement (Summer 2021)

The Burlington IMP StoryMap was created to provide information on the project and invite participants to explore the project Vision, Values and Goals, the current transportation system in Burlington, and Lived Experiences with Transportation stories. Overall, the StoryMap was viewed hundreds of times.

2.2.3 Lived Experiences with Transportation Survey (Summer 2021)

A second survey was launched concurrently with the StoryMap to gather input on current transportation issues related to the IMP values of safe, accessible, sustainable, balanced, and liveable transportation. There were 144 respondents who completed the survey. Overall, feedback showed support for road safety, access to different modes, transit incentives, seasonal congestion relief, and access to new transportation trends.

2.2.4 Public Engagement (Fall 2021)

An update to the StoryMap was made to provide information on the Problem and Opportunity Statements and the Preferred Network Solution. Overall, the StoryMap page was viewed hundreds of times.

2.3 Preferred Network

2.3.1 Preferred Network Solution Mapping Survey (Fall 2021)

A second placed-based mapping survey was created to understand perspectives on the Preferred Network Solution. We asked people to tell us what they love, what we have missed, and any other comments or ideas they have on the priority networks. In total 157 respondents placed pins on the map to provide feedback.

Overall, feedback on the Preferred Network Solution showed support for a pedestrian priority network, cycling priority network, and transit priority network. Participants also asked to provide more transit and active transportation connections to major destinations and essential services, improve intersection conditions for all street users, and remove truck traffic from residential streets.

2.3.2 StoryMap Update - Future State of Transportation (Fall 2022)

The Burlington Integrated Mobility StoryMap was updated to provide information on new and emerging forms of mobility that will be considered in the Plan.

The following topics and relevant considerations and challenges were outlined in the StoryMap:

- E-Bicycles and Other Electric Micromobility Devices
- Car Share
- Shared Micromobility (Bike and Scooter Share)
- Ride Share and Ride Hailing

The update included a summary of each topic, relevant considerations and challenges to implementation.

2.3.3 Food for Feedback (Fall 2022)

A community engagement event, Food for Feedback, was hosted by the City of Burlington. This free drop-in event provided residents the opportunity to share their thoughts on City projects, City services, and initiatives with City Staff in exchange for a free lunch. City staff from the Burlington IMP project team were in attendance to speak to residents about transportation issues our residents currently face, the future vision for mobility, and how the City is working to enhance mobility options and improve quality of life through the completion and approval of the IMP.

Overall staff spoke to over 150 residents. Key feedback included a preference for active transportation modes and a desire to be able to utilize multiple modes to get around the city safely.

3.0 Foundations

3.1 Overview

The first step for the IMP was the development and definition of a vision and connected values and goals. The **Vision** represents the desired transportation future and steers the direction of the IMP. The **Values** are the themes that formed the foundation of the plan. The **Goals** build on the vision and values, establishing long-term, high-level outcomes for mobility in Burlington that represent progress toward a vision. Note that the goals represent long-term high-level outcomes and the achievement of all the goals would be a state where the vision is reached. As the IMP follows a sustainable Transportation Master Plan approach, the goals have played a fundamental role in the development of the plan.

The horizon year for the IMP is 2051. Therefore, the full achievement of goals may not occur for decades. Additionally, the IMP will be updated at regular intervals as Burlington moves towards the horizon year. These updates will offer opportunities to report on progress towards the goals and to revise the goals with new knowledge and best practices.

3.2 Vision, Values, and Goals

3.2.1 Vision

As part of the process to develop the vision, values, and goals, the project team reviewed existing city and regional plans and policies. The visions and goals from these plans were analyzed to identify key themes for alignment with the IMP.

The vision for the IMP is:

"Mobility in Burlington will be safe, accessible, sustainable, balanced, and liveable."

3.2.2 Values

The five values identified in the Vision reflect the community's values – top priorities and core beliefs.

Safe – The movement of people and goods in Burlington will be safe for users of all modes. Special attention will be paid to ensuring the safety of vulnerable users - pedestrians and cyclists – as they are most likely to get seriously injured or killed in an incident. We will not accept transportation-related deaths and serious injuries as a normal part of our daily lives; our transportation system will be designed to minimize the risk of transportation-related deaths and serious injuries from occurring on our streets.

Accessible – Getting around Burlington will be accessible to people of all ages and abilities. There will be no infrastructure or service gaps in the networks of any mode, so each traveller can make a comfortable trip from point A to point B in Burlington, when they want, by their travel mode of choice. Our transportation system will allow our community members to travel comfortably within Burlington and to nearby communities to make sure that all residents of Burlington can fully participate in society, by the travel mode of their choice.

Sustainable to reduce the emissions of all vehicles and to make modes like scooters or bikes more accessible for people with reduced mobility.

Balanced – We will rebalance the transportation system to incentivize travel by non-car modes. Our streets will allow comfortable travel for users of every mode.

Liveable – Streets in Burlington will be designed to fit within their surroundings. The design of our streets will support the environment and character we want to create in surrounding neighbourhoods and communities.

3.2.3 Goals

Six goals were developed for the Burlington IMP to align transportation in Burlington with its values. The goals were analyzed for how they align with the values and received feedback from multiple groups during the planning process. The goals for the Burlington IMP are:

Goal 1:
Burlington will eliminate transportation-related deaths and serious injuries

- Value aligned with: **Safe**

Goal 2:
Burlington's transportation system will be accessible and reliable for users regardless of factors like age, ability, income, or familiarity with the city

- Values aligned with: **Accessible and Balanced**

Goal 3:
Burlington will provide high-quality transportation options to move people and goods wherever and whenever, while maintaining a high quality of life for residents

- Value aligned with: **Accessible and Balanced**

Goal 4:
Burlington will eliminate transportation-related carbon emissions.

- Value aligned with: **Sustainable and Balanced**

Goal 5:
Burlington's streets will support the intended roles of the communities they run through and help these communities be vibrant and prosperous

- Value aligned with: **Liveable**

Goal 6:
Burlington will actively plan for the transportation changes of tomorrow while continuing to deliver great service today

- Value aligned with: **Accessible, Sustainable and Balanced**

4.0 Existing and Planned Conditions

4.1 Overview

Problem identification (EA Phase 1) begins with a review of the existing travel demands and existing and planned networks to identify key issues and trends. It then requires an assessment of the future mode share targets, given that the IMP is using a sustainable Transportation Master Plan (TMP) approach.

4.2 Existing Conditions

4.2.1 Existing Travel Demands

The IMP aims to optimize the use of different modes of transportation and improve mobility and accessibility for all users therefore, understanding existing travel demands is crucial to facilitate this shift. For this reason, this section of the report explores why, when, where, and how trips are taking place in and around Burlington.

4.2.1.1 Why Does Burlington Travel?

The reason for traveling influences many aspects of the trip, including trip start times and mode choice. This section provides a summary of why trips within, to, and from Burlington are made, based on the data analyzed.

Commuting trips make up roughly 40% of all daily trips in Burlington. Daily trips to and from work or school are predictable and focused on movement between well-defined areas. For most people, commuting trips start and end at the same time each day and coincide with the majority of others'

The majority of trips during the PM peak period are for shopping, services, and recreation.

start and end times. The characteristics of these trips provide the opportunity for focused analysis and delivery of solutions, including Transportation Demand Management and targeted infrastructure and service for key employment areas and educational buildings (e.g. high-frequency transit and cycling lanes). During the morning peaks, commuting trips make up a large percentage (69%) of total trips in the network. While there are similar volumes of commuter trips in the afternoon peak periods, commuters make up a smaller percentage (44%) of trips in the network, since there are many more non-commuting trips that are made during this period.

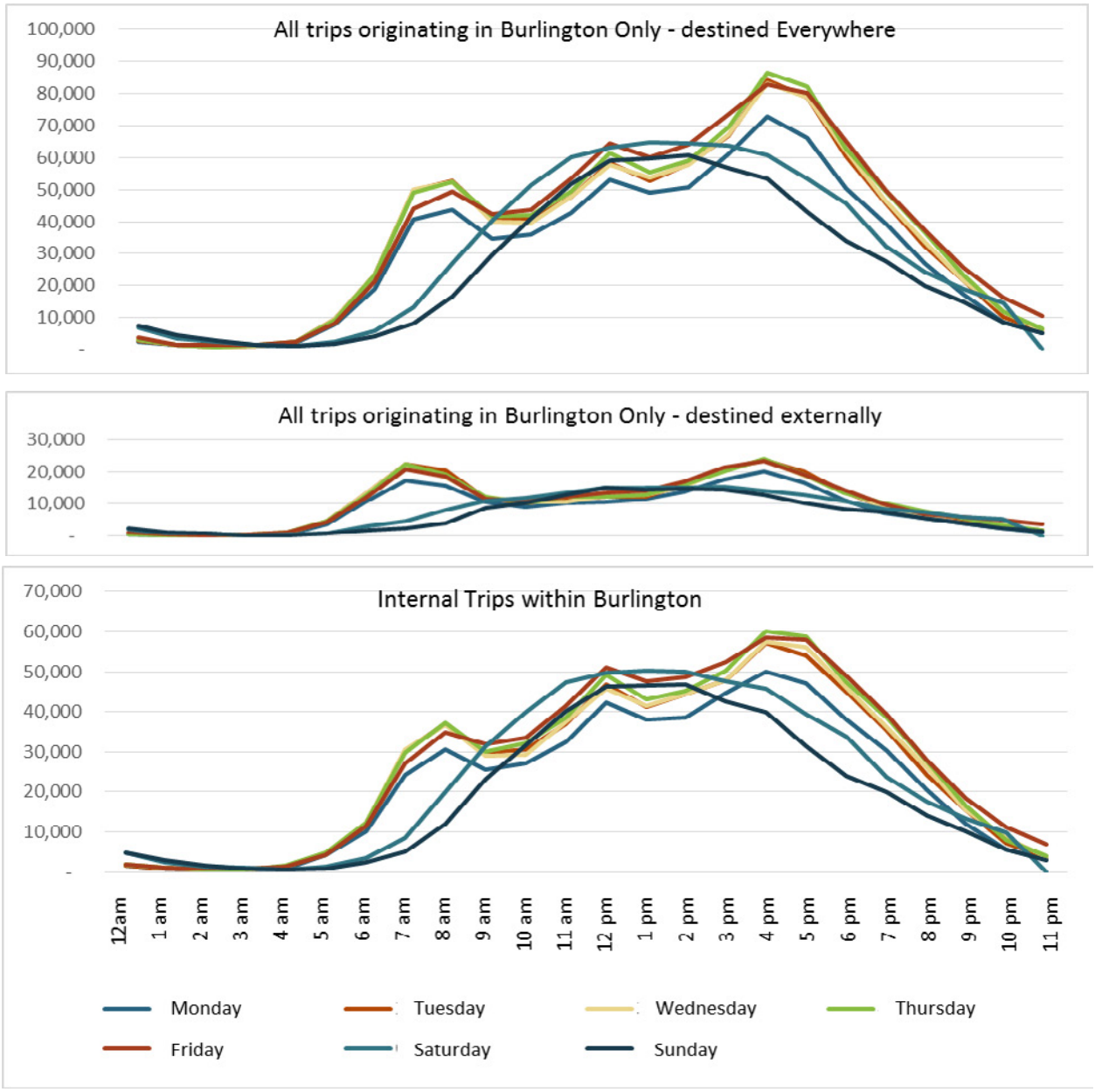
Conversely, non-commuting trips make up roughly 60% of all trips in Burlington. Non-commuting trips, such as visiting friends or family, running errands, getting groceries, attending appointments, recreation, etc. can be irregular and sporadic, meaning that they could be between any parts of the city and occur at any time. They are more difficult to manage then commuting trips. For these trips, travellers require infrastructure, coverage, and service by sustainable modes throughout the city and throughout the day.

4.2.1.2 When Does Burlington Travel?

Travel demands fluctuate throughout the day and can be significantly different on weekdays compared to weekends. To understand travel demands, it is important to look at travel profiles by the time of day and day of the week. **Figure 4-1** illustrates the trip start-time profile for daily trips starting in Burlington. As with other cities, Burlington experiences sharp morning and afternoon peak periods. These peaks represent when people generally travel to and from work and school.

In transportation analysis, the peak period refers to the time of day when the demand for transportation services is at its highest. This typically occurs during the morning and evening rush hours, when people are commuting to and from work or school. The peak period is important to consider when planning transportation systems, as it can help determine the capacity and efficiency of the system and the types of vehicles and infrastructure needed to meet the demand.

Figure 4-1: Burlington Origin Trip Profile by Time of Day and Day of Week



Source: StreetLight Data, 2019

Traffic congestion in Burlington is a reality of daily living, but occurs for only a short duration. As shown in the **Figure 4-1**, on average, the travel demand in the afternoon (PM) peak is significantly higher than in the morning (AM) peak, as PM is when commuter trips and other discretionary trips both occur on the network. It also shows how the daily profile is influenced by the location where trips are destined.

On average, the morning and afternoon peaks are sharp and concentrated. In the morning, the largest percentage of trip starts occurs within a two-hour period (between 7:00 am and 9:00 am). In the afternoon, the demand grows continuously from 2:00 pm in the midday into the PM Peak, before beginning to decrease at 6:00 pm.

AM peaks tend to be sharp due to the fact that work and school generally have a similar early morning start. In the PM peak, school trips typically peak first (as most schools end around 3:00 pm), followed by work trips (between 4:30 pm and 5:30 pm). This results in a longer PM peak or "plateau." Many travellers also make discretionary trips during this period, typically on their way home from work or school.

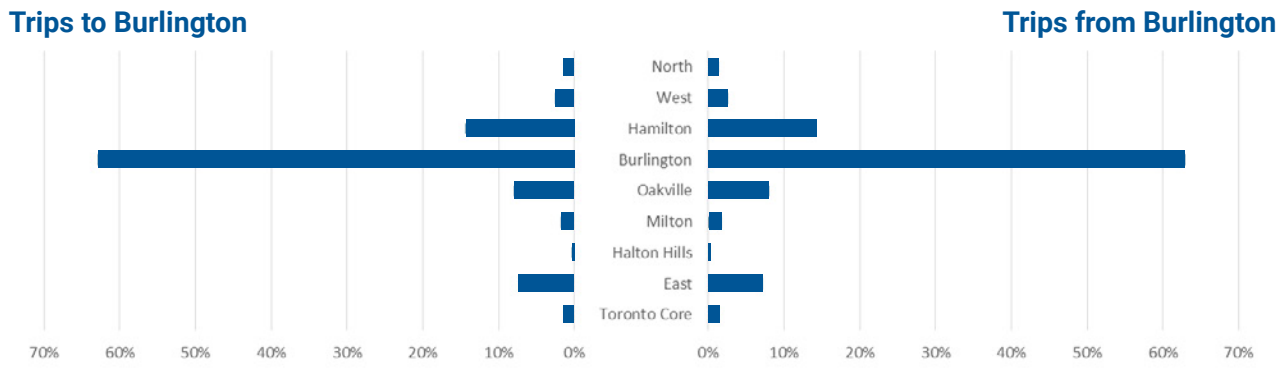
Since traffic demand cannot truly exceed the capacity of the network, the peak travel demands tend to flatten and spread as demand continues exceed supply. People innately choose to travel outside of the worst of the peak, switch modes, or eliminate peak period trips if they can. A flatter peak is longer in duration and it is common to see cities that experience a lot of traffic with much flatter morning and afternoon peaks.

4.2.1.3 Where Does Burlington Travel?

To help understand where Burlington residents travel when completing trips within, to, and from the city, this section provides a summary of the trip origin-destination analysis.

The area where trips are taking place is significantly influenced by the timing and the reason or purpose behind the trip. As shown in **Figure 4-2**, most daily trips that originate in Burlington (63%), stay within the City and are internal trips. The second highest daily Origin-Destination pair is between Burlington and Hamilton at 14%.

Figure 4-2: Trip Origins and Destinations – All Day



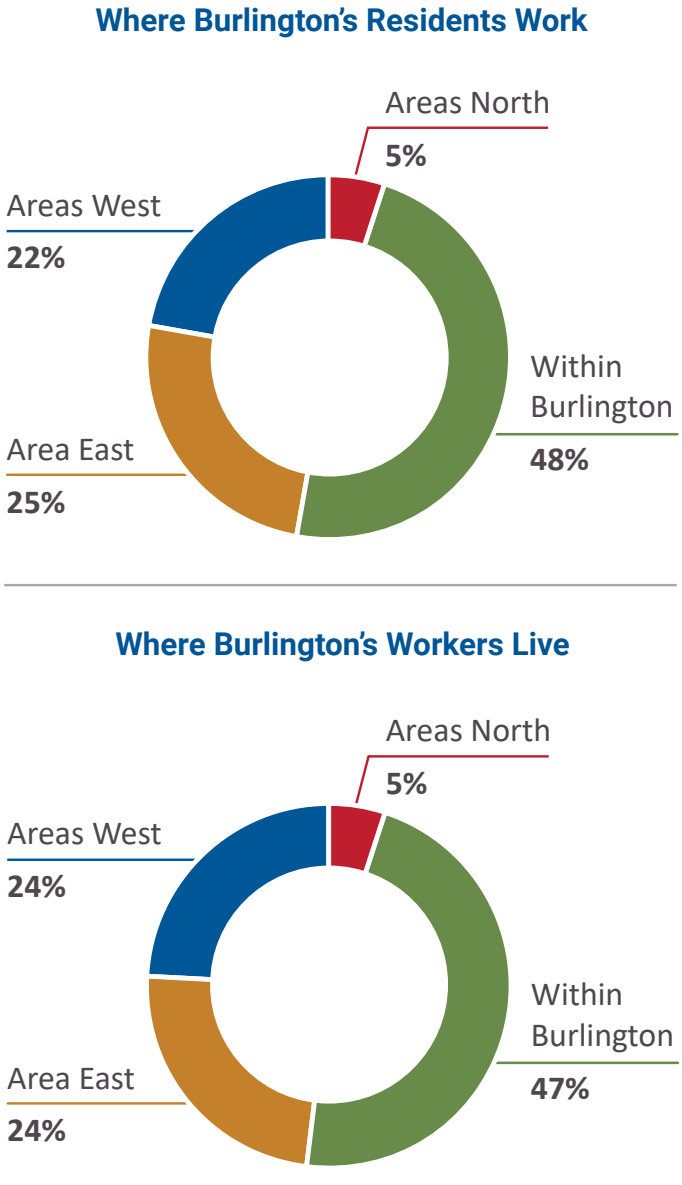
Source: 2016 Transportation Tomorrow Survey (TTS)

Commuting Trips

Burlington residents travel to adjacent areas in the GTHA for work and school- about 48% of Burlington residents commute within the city and approximately the same percentage of Burlington workers are residents of Burlington.

Externally, the strongest relationship with neighbouring communities is with the areas to the east including Toronto, and areas west including Hamilton and south towards Niagara. **Figure 4-3** shows Burlington's relationship to the surrounding communities for commuter travel.

Figure 4-3: Where Burlington Residents Work and Where Burlington's Workers Live

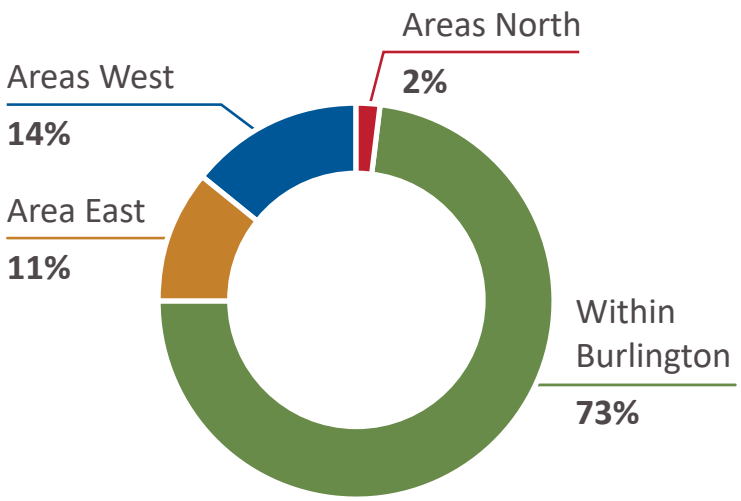


Source: 2016 Transportation Tomorrow Survey (TTS)

Non-Commuting Trips

More than 55% of daily trips originating in Burlington are made for non-commuting purposes. These purposes include all other lifestyle activities such as shopping, recreation, visiting friends and family, etc. **Figure 4-4** shows where non-commuting trips made by Burlington residents are destined to. As seen in the figures, the vast majority of these trips are made within Burlington (73%).

Figure 4-4: Non-Work/School Trip Destinations



Source: 2016 Transportation Tomorrow Survey (TTS)

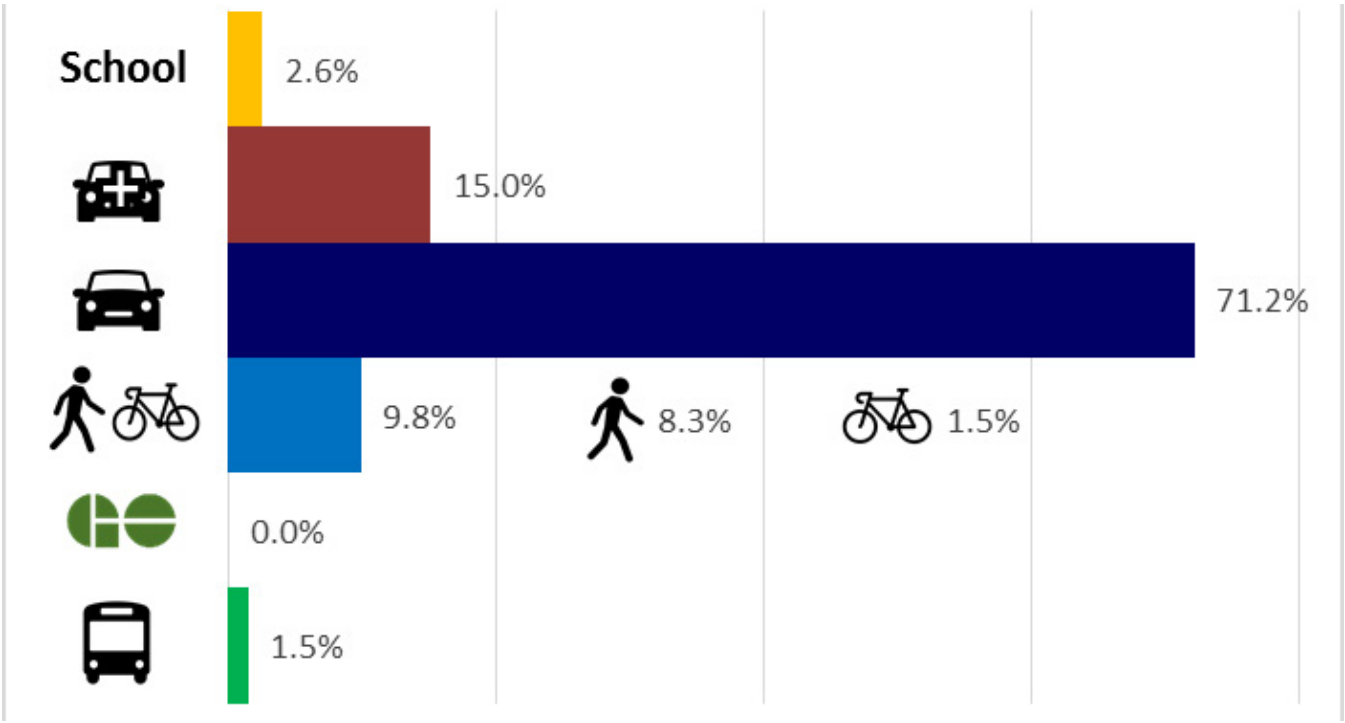
4.2.1.4 How does Burlington Travel?

Existing Mode Share

In Burlington, more that 71% of the trips that start and end in the city are completed by car, which is consistent with conditions found in many North American cities. Active Transportation makes up nearly 10% of daily trips while transit only make up 1.5% of daily trips (see **Figure 4-5**).

It is difficult or impossible for the city to influence external and through trip modes and volumes. Therefore, this IMP focuses on the mode share and traffic statistics for internal Burlington trips only.

Figure 4-5: Daily Mode Share in Burlington – Internal Trips



Source: 2016 Transportation Tomorrow Survey (TTS)

Traffic through Burlington

Burlington's location within the GTHA and the presence of three major highways means that there are a number of residents that travel through Burlington to get to other destinations within the region. The majority of through trips are east-west, between Hamilton and Oakville, Peel Region and the City of Toronto. These trips are primarily served by regional transportation systems such as the Provincial Highways and GO Transit, however, traffic infiltration and the potential for these trips to stop in Burlington on their journey results in further demands on Burlington's arterial and connector roads.

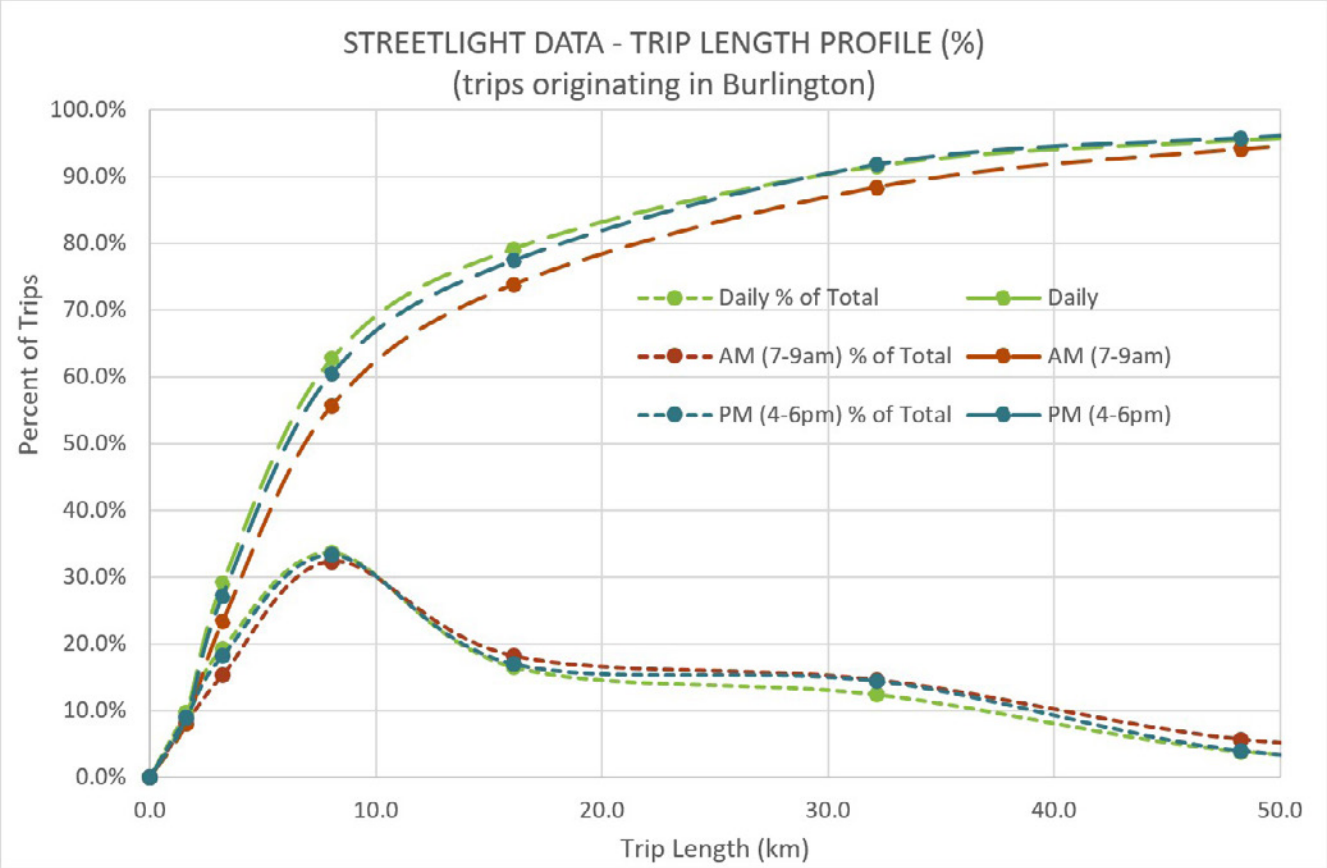
Overall, it is estimated that 23% of daily trips that travel within Burlington are simply passing though.

4.2.1.5 Potential to Change Mode Share

As noted in **Section 4.2.1.4**, 71% of existing trips that begin and end in Burlington are completed by car. The next step was to understand how far individuals travelled to reach their destinations. Streetlight data[1] allowed for the examination of the trip length for residents in Burlington as a proxy for the potential attractiveness of the various travel modes. **Figure 4-6** and **Table 4-1** present the mode share potential by travel mode.

Approximately 25% of trips originating in Burlington are less than 2.5km, a distance generally accepted to be a comfortable walk. It was also observed that another 36% of trips originating in Burlington are between 2.5 and 7.5km, a distance generally accepted to be within the range of a large percentage of cyclists.

Figure 4-6: Trip Length Profile for Burlington



Source: StreetLight Data

1. https://www.streetlightdata.com/

Table 4-1: Mode Share Potential by Distance

Travel Mode	Daily	Daily (Cumulative)
Walk (0 to 2.5km)	24.8%	24.8%
Cycle (2.5 to 7.5km)	36.2%	61.0%
Transit (7.5 to 15km)	15.9%	76.9%
Drive / Regional Transit (15km and more)	23.1%	100%

The most dramatic observation from the Burlington trip length profile was the potential for cycling. Whereas the Census and TTS estimate that cycling makes up approximately 0.8-1.0% of all daily trips, the actual distances travelled by people in Burlington on a daily basis means that more than 60% of daily trips could potentially be accomplished by cycling.

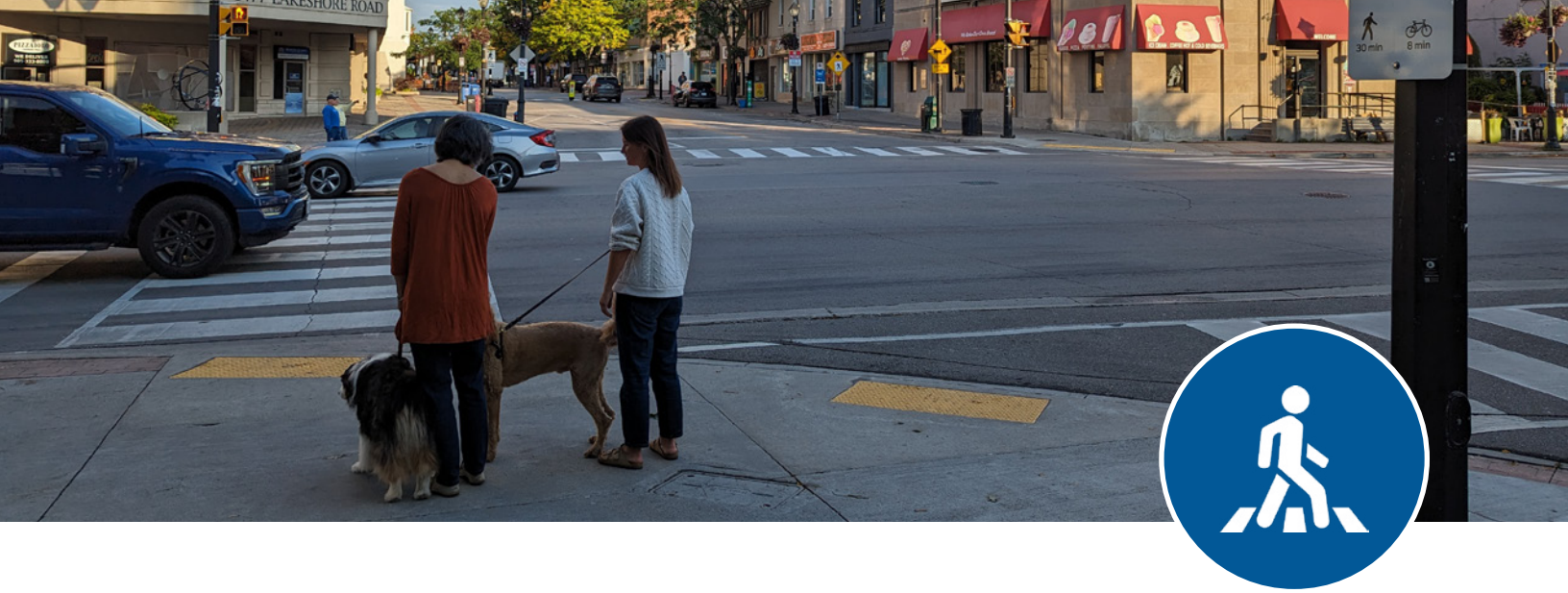
Also, of note is that the total percentage of trips under 15 km over the full day was about 77%. This means that under ideal conditions, the maximum sustainable transportation mode share that could be achieved in Burlington is 77%.

The values here, as noted, relate potential mode choice solely to the distance travelled, which is a simplistic view, but shows the significant potential for sustainable modes in Burlington. In reality, many other factors including weather, trip purpose, grades, comfort, physical ability, and personal attitudes play into the final mode choice. These values present the **theoretical maximums** that could be achieved. Placed alongside the mode share targets of the Strategic Plan (Vision to Focus), these demonstrate the **potential** to achieve or exceed these goals. To tap into this potential, it will be necessary that Burlington remove any barriers over which it has control, which means investment in safe, comfortable, and connected active transportation infrastructure and reliable and convenient transit service.

4.2.2 Existing Networks

Our transportation choices can be largely influenced by the availability and quality of infrastructure to support those transportation options. Exploring the existing networks for different transportation modes will help to identify key issues and trends and also forms the foundation upon which any new developments or improvements will be built. Understanding the current state of the network, including its condition, and usage patterns will help identify areas where additional focus is needed or where existing resources may be underutilized.

This section is organized by transportation modes in Burlington – pedestrians, cycling, transit, goods movement, roads, and rail.



4.2.2.1 Pedestrians

Walking in Burlington is supported by a network of sidewalks and in boulevard multi-use paths in many road corridors, combined with a collection of off-road trails. These work together to provide connections for pedestrians throughout the city. The existing pedestrian network in Burlington is shown in **Figure 4-7**.

Overall, there are approximately 1,024 kilometres of pedestrian facilities in Burlington. They are broken down as follows:

- About 75% (770 km) are sidewalks;
- About 20% (202 km) are off road trails [Outside of Road Right-of-Way (ROW)]; and
- About 5% (52 km) are in-boulevard multi-use paths or trails (within Road ROW).

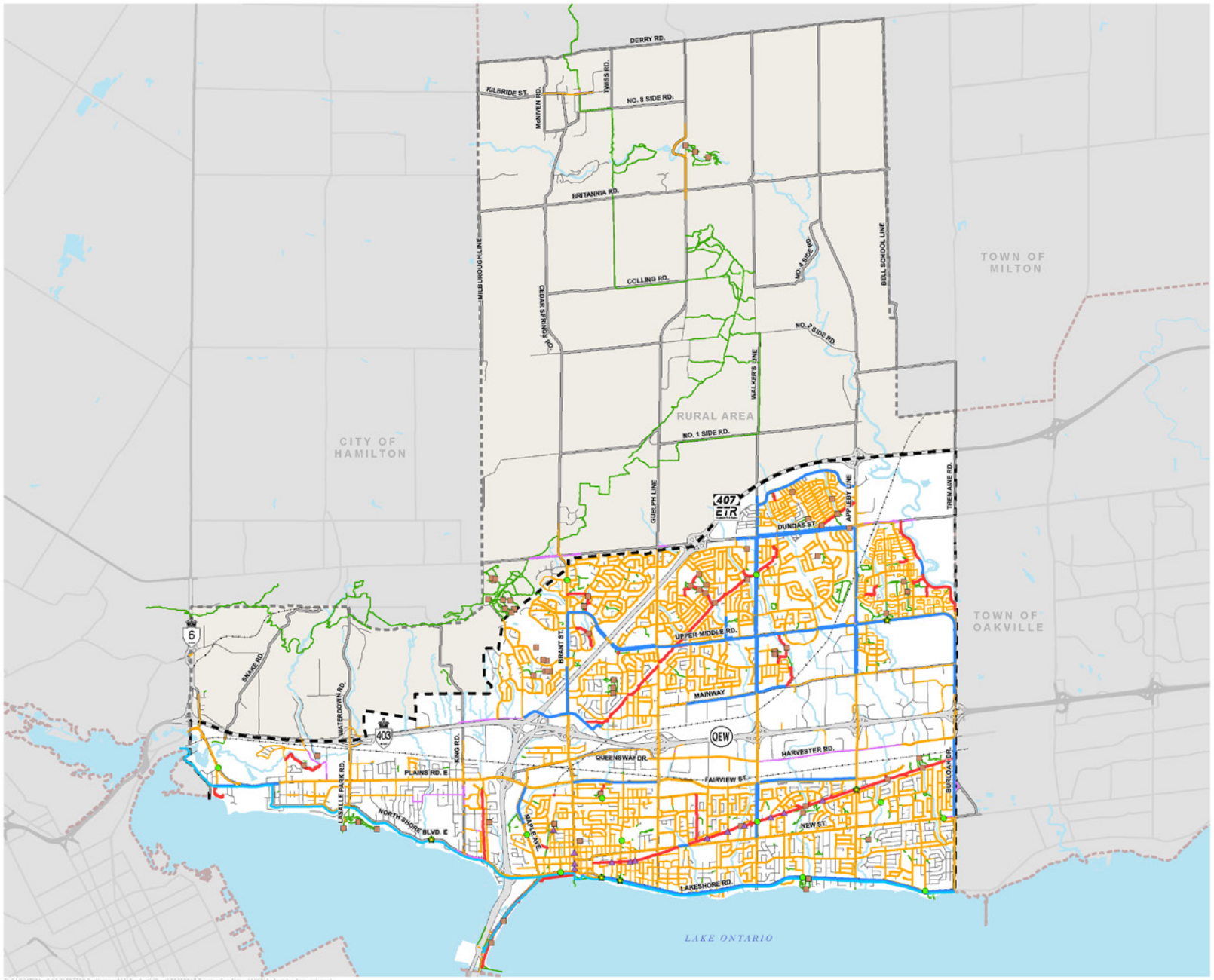
Pedestrian facilities are not equally distributed across the city as:

- Approximately 66% of local residential streets have sidewalks, but there are a number of older established neighbourhoods that lack sidewalks on a number of streets. These are primarily located in Aldershot and in neighbourhoods east of Walker's Line near the lake.
- Downtown Burlington is well-connected from a pedestrian point of view. There are wide sidewalks throughout downtown that are complemented by the Waterfront Trail that connects downtown to the broader area.
- Approximately 46% of arterial and collector roads in the industrial-zoned areas do not have sidewalks. These are primarily located along the Queen Elizabeth Way (QEW) corridor.

Barrier Crossings

On a network scale, Burlington has several physical barriers that make pedestrian travel difficult between certain areas of the city as these barriers have limited crossing points, thus lengthening trip distance. These barriers include the QEW, Highway 403, Highway 407, and the Canadian Pacific Railway (CPR) and the Canadian National Railway (CNR) lines.

Figure 4-7: Existing Pedestrian Network



CITY OF BURLINGTON

BURLINGTON INTEGRATED MOBILITY PLAN

PEDESTRIAN NETWORK

Pedestrian Network

- Mid-block Pedestrian Signals
- Intersection Pedestrian Signal
- Pedestrian Crossovers
- Foot Bridges
- Waterfront Trail
- Multi Use Trail (Within Road ROW)
- Multi Use Trail (Outside Road ROW)
- Asphalt Pathway
- Concrete Sidewalk
- Gravel Trail
- Off Road Trails

Base Mapping

- Provincial Highway / Freeway
- Major Roads
- Minor Roads
- Rail Line
- City of Burlington
- Urban Boundary
- Major Creeks
- Waterbody
- Rural Area
- Municipal Boundaries

0 0.5 1 2 km

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DATA PROVIDED BY CITY OF BURLINGTON 2020, MNRF 2020

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4.2.2.2 Cycling

Cycling in Burlington is supported by a network of bike lanes, in-boulevard multi-use trails, off-road multi-use trails, shared use lanes, and shared bike lanes. Together, all of these facilities provide cycling connections throughout the city. The existing cycling network in Burlington is shown in **Figure 4-8**.

Overall, there are approximately 197 kilometres of cycling facilities in Burlington. They are broken down as follows:

- 24% (48 km) are Bike Lanes;
- 24% (47 km) are Bike Route Streets;
- 3% (6 km) are Bike Lane/Sharrow Streets;
- 6% (12 km) are Paved Shoulders;
- 16% (32 km) are paved off-road multi-use paths or trails (outside of road ROW); and
- 27% (53 km) are in-boulevard multi-use paths or trails (within Road ROW).

At the time of writing, an additional 2.5 km of protected, All Ages and Abilities (AAA) cycling facilities are currently under construction on Plains Road from Spring Gardens Road to Waterdown Road as part of the Plains Road Protected Bikeway and Resurfacing project (to be completed by end of 2023).

Cycling infrastructure does not have a “one-size-fits-all” approach. For example, local streets in neighbourhoods that do not see large car volumes or high speeds may not register as formally having “cycling facilities” but they may be comfortable for some people to cycle on in their current shared traffic configuration.

It should be noted that 51% of Burlington’s arterial and collector road network have an on-road bike lane or adjacent multi-use path. While this provides a good representation, the majority of these facilities do not adequately serve people of all cycling abilities.

Intersections

Intersections in Burlington present the largest challenge to cycling, particularly where highways intersect. Many of Burlington’s on-road cycling facilities simply end prior to major intersections/interchanges leaving cyclists to navigate the intersection in mixed traffic.

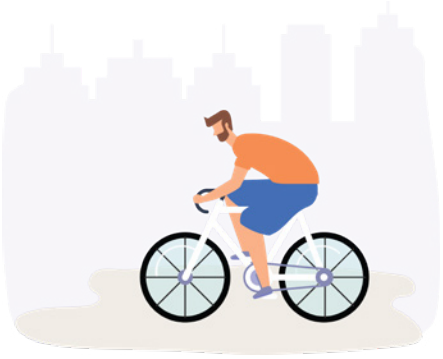
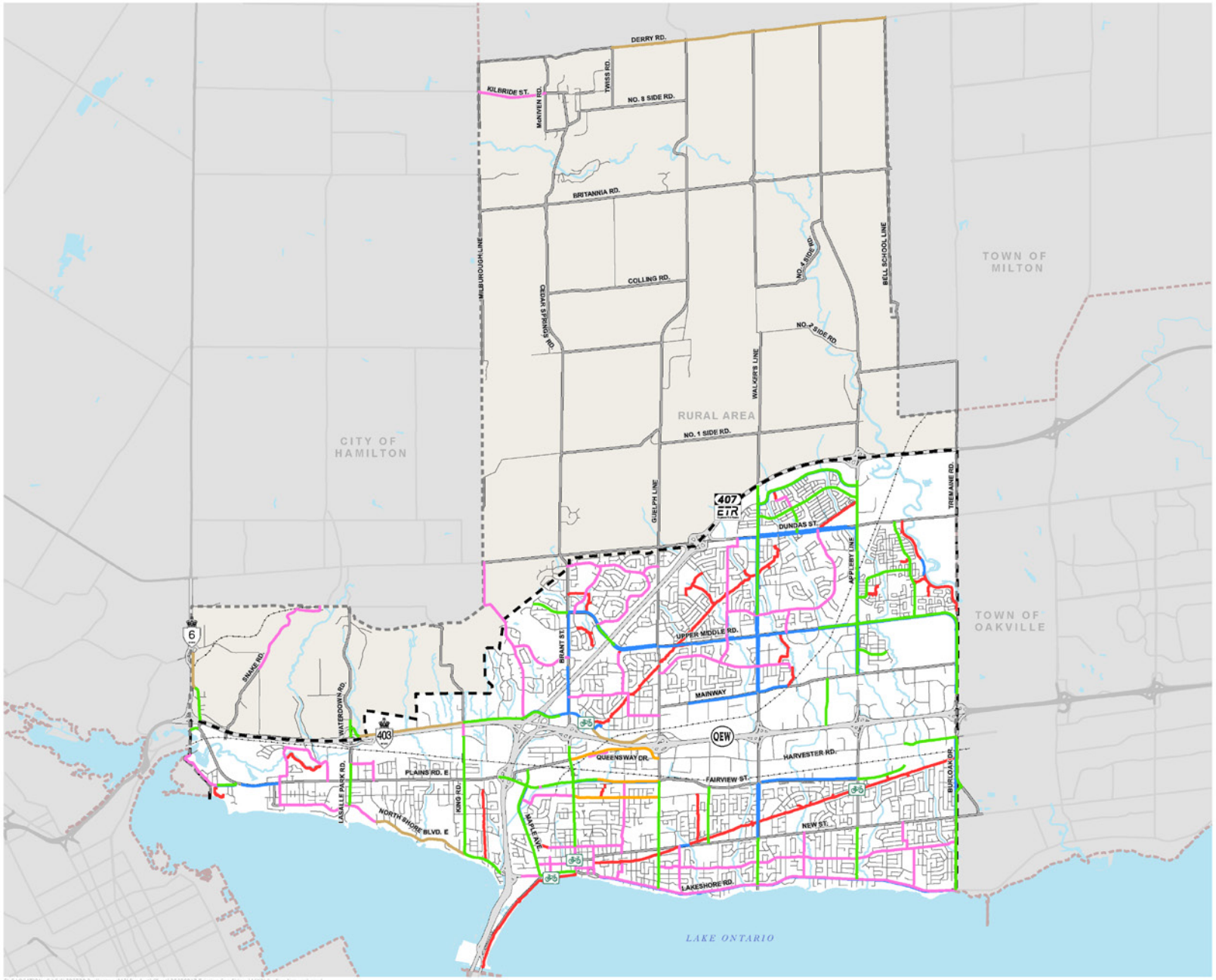


Figure 4-8: Existing Cycling Network



CITY OF BURLINGTON

CITY OF BURLINGTON
BURLINGTON INTEGRATED MOBILITY PLAN

CYCLING NETWORK

Cycling Network
- Bike Repair Locations
- Multi Use Trail (Within Road ROW)
- Multi Use Trail (Outside Road ROW)
- Shared Use (Sharrow)
- Bike Lane
- Shared Bike Lane
- Paved Shoulder

Base Mapping
- Provincial Highway / Freeway
- Major Roads
- Minor Roads
- Rail Line
- City of Burlington
- Urban Boundary
- Major Creeks
- Waterbody
- Rural Area
- Municipal Boundaries

0 0.5 1 2 km

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4.2.2.3 Transit

Burlington Transit's network is a robust system of bus routes that connect Burlington's neighbourhoods to key destinations within the City and to adjacent municipalities. Connections are also made to neighbouring transit systems; Oakville Transit and Hamilton Street Railway, and to inter-regional transit providers; GO transit (by bus and train) and VIA Rail (train). The existing municipal transit network in Burlington is shown in **Figure 4-9**.

In total, there are approximately 612 kilometres of bus routes within the City of Burlington.

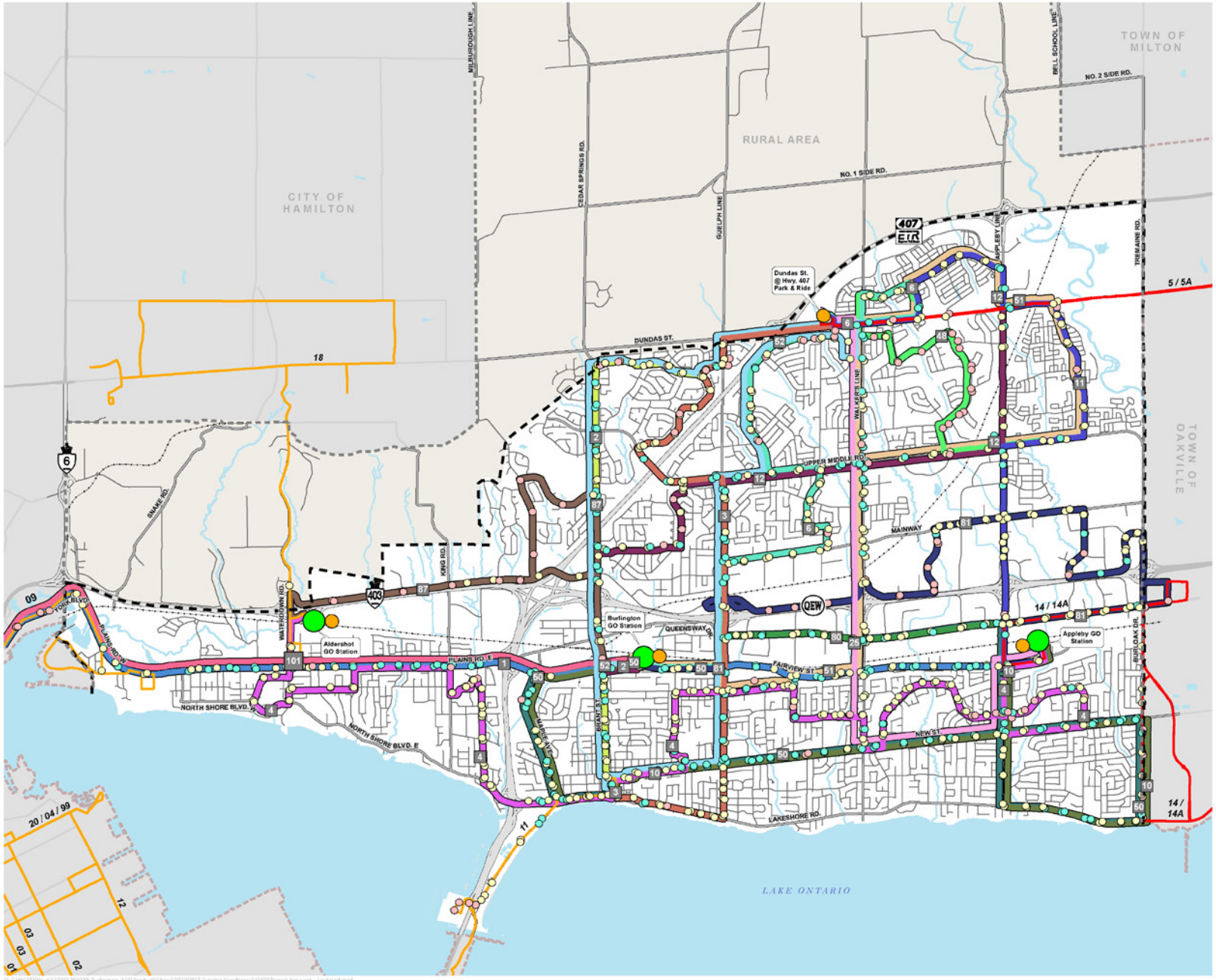
Burlington Transit is comprised of 17 conventional fixed routes and demand-responsive specialized transit services for persons with disabilities. Burlington Transit routes generally run Monday to Saturday between 4:45 am to 1:30 am, and Sundays and Civic Holidays between 6:30 am to 10:08 pm. The routes fluctuate in frequency, from 10 minutes to 60-minute headways.

Currently, 68% of the urban area population and employment are within a five-minute walk (400m) of a transit stop. There are a number of neighbourhoods that have limited access to transit, including along Lakeshore Road, the QEW corridor and between Upper Middle Road and Dundas Street. Higher frequency transit services (15-minute peak period frequency or better) are all located south of the QEW corridor. Within the urban area of Burlington, only 18% of the population and employment are within a five-minute walk of a high-frequency transit route or a Burlington GO Station. No transit service operates in the rural areas of Burlington.

Burlington Transit presently has 812 bus stops, 730 (90%) of which have hard surfaces. Stops with hard surfaces improve the accessibility of transit to all passengers, including persons with disabilities.

GO Transit operates both rail and bus route options through Burlington. The GO Rail network provides two-way, all-day service through Burlington on the Lakeshore Line, connecting Burlington to Hamilton and Niagara Region (on weekends) and east to Oakville, Mississauga and downtown Toronto. Service is provided between 4:40 am and 3:33 am every 30 to 60 minutes. There are also three GO Bus routes in Burlington, providing connections for Burlington residents to locations in Hamilton, Oakville, Mississauga and Toronto. **Figure 4-10** shows the GO Transit bus and rail network.

Figure 4-9: Existing Municipal Transit Network



CITY OF BURLINGTON
BURLINGTON INTEGRATED MOBILITY PLAN

TRANSIT NETWORK

Transit Network

Terminals
- Major Transit Station
- GO Transit Car Pool Lot

Bus Stops
- Landing Pad and Shelter
- Landing Pad Only
- No Landing Pad and Shelter

Bus Routes
1, 2, 3, 4, 6, 10, 11, 12, 25, 48, 50, 51, 52, 80, 81, 87, 101

Bus Routes in Neighbouring Municipalities
- Oakville Transit
- Hamilton Street Railway

Base Mapping
- Provincial Highway / Freeway
- Major Roads
- Minor Roads
- Rail Line
- City of Burlington
- Urban Boundary
- Major Creeks
- Waterbody
- Rural Area
- Municipal Boundaries

0 0.5 1 2 km

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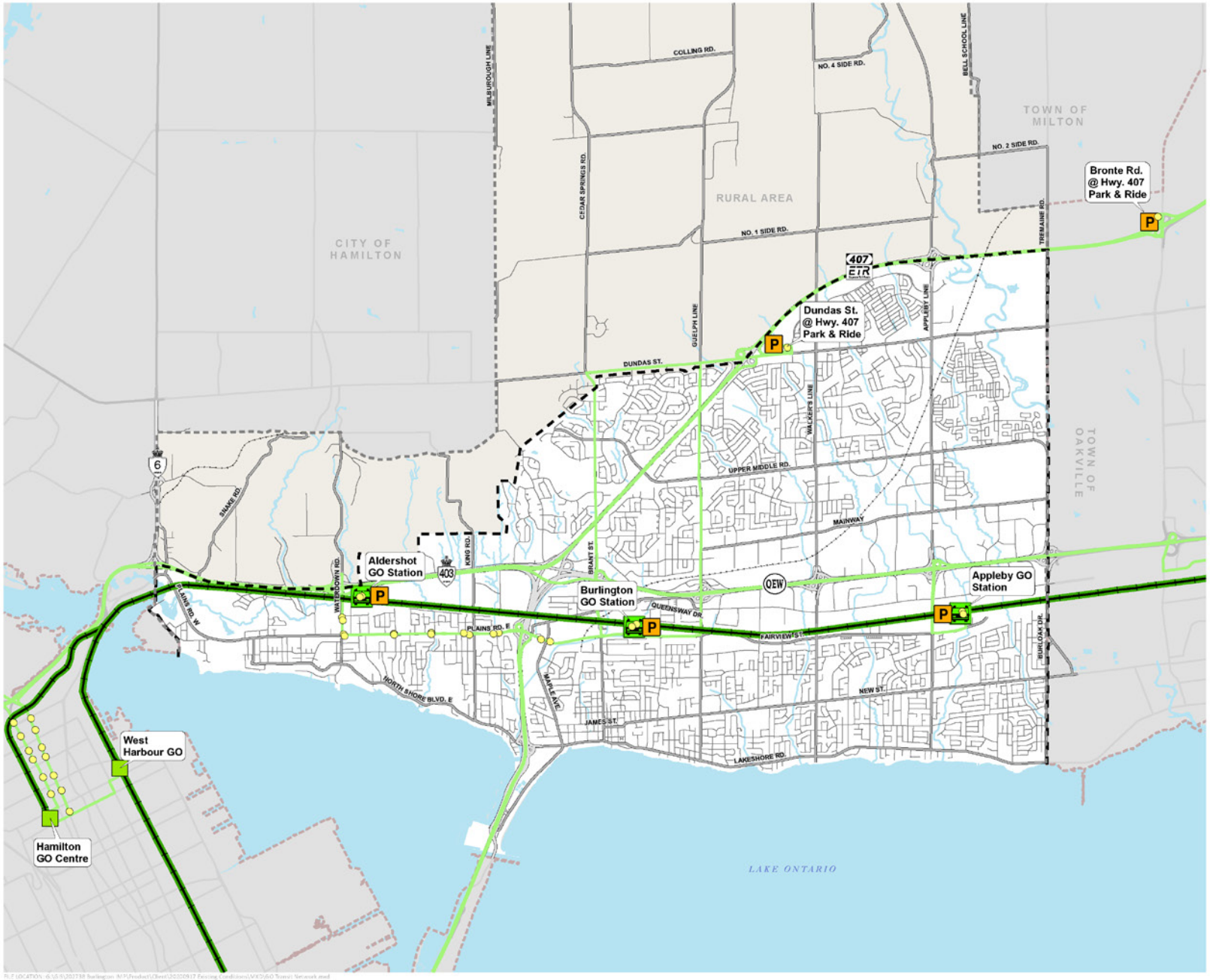
Figure 4-10: Existing GO Transit Network



CITY OF BURLINGTON
BURLINGTON INTEGRATED MOBILITY PLAN

GO TRANSIT NETWORK

GO Transit Network / Stops

Terminals
- Major Transit Station
- GO Transit Car Pool Lot
- Hamilton GO Stations

GO Train Lines
- Lakeshore West

GO Bus
- Bus Stops
- Bus Routes

Base Mapping
- Provincial Highway / Freeway
- Major Roads
- Minor Roads
- Rail Line
- City of Burlington
- Urban Boundary
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- Municipal Boundaries

0 0.5 1 2 km

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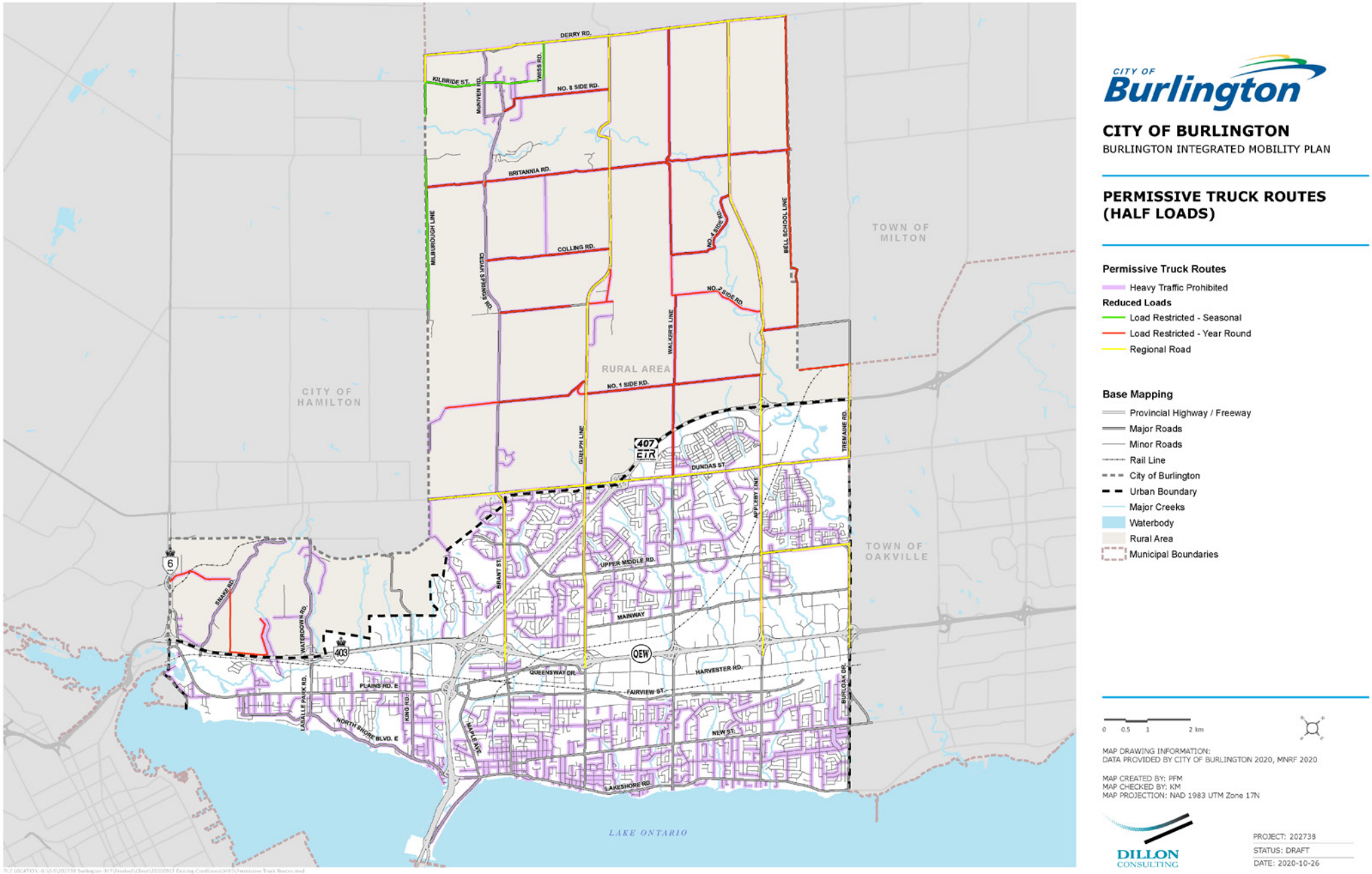
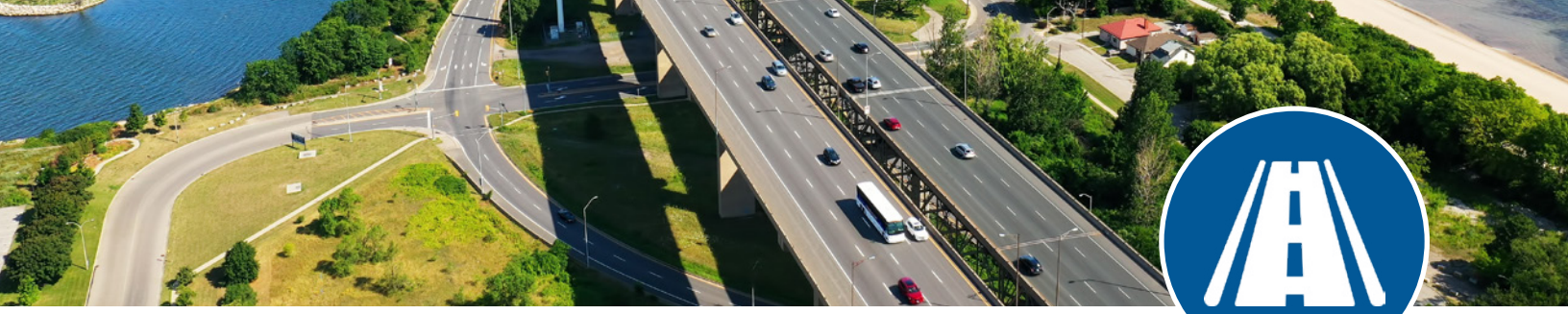
4.2.2.4 Goods Movement

Due to Burlington's location; at the junction of three major highways (Highway 403, Highway 407 and QEW) and two major rail lines (CNR and CPR), within an hour's drive of two major international airports and within three hours' drive of four Canada-US border crossings, the movement of commercial goods and other freight within and through Burlington is a key component of maintaining the economic health of the city. The on-road movement of these goods relies on a connected, convenient, and flowing network of higher-order roadways for larger trucks. **Figure 4-11** displays the existing permissive truck routes in Burlington.

As implied by the name, this network provides direction to truck drivers on where they are permitted to travel throughout the city. The regional roads do not have any load restrictions. Whereas the municipally-owned roads are categorized as heavy traffic prohibited, load restricted year-round, or load restricted seasonal.

Figure 4-11: Existing Permissive Truck Routes





4.2.2.5 Roads

Roads in Burlington play a significant role in defining the character and utility of various parts of the city. They define the shape of the city (in concert with the railways), take up much of the developed land, and allow residents to access various parts of the city and adjacent municipalities. The size of the roadways, along with the density of crossing points, the speed and volume of vehicles that use them, and the space to accommodate alternative modes can also define how easy it is for people who are not in cars to move about or enjoy the city.

The greatest portion of roads within Burlington (46%) are local roads serving residential developments with a connecting network made up of 18% collectors and 23% arterials. **Figure 4-12** displays the existing road network in Burlington by road classification as defined by the City of Burlington Official Plan, 2020.

Roads in Burlington are under the jurisdiction of three different levels of government. The Ministry of Transportation Ontario (MTO) owns and maintains the provincial and freeway highway network and leases Highway 407 Express Toll Route to a private consortium. Halton Region owns and maintains the major arterial road network, while the City of Burlington owns and maintains all other publicly-owned roads in the City. **Figure 4-13** shows the existing road network by ownership.

There are approximately 886 centreline kilometres of road in Burlington. They are broken down into the following road classifications (by ownership):

- 13% (114 km) of Freeway/Expressway owned by the Province;
- 6% (52 km) of Major Arterial owned by the Region of Halton;
- 17% (154 km) of Minor Arterial owned by the City of Burlington;
- 18% (159 km) of Collector owned by the City of Burlington; and
- 46% (406 km) of Local owned by the City of Burlington.

The presence of roadways under control of Halton Region presents a challenge for Burlington because solutions cannot be independently selected, designed, and prioritized according to the city's needs. A partnership with the Region is required for any recommendations that impact regional roads.

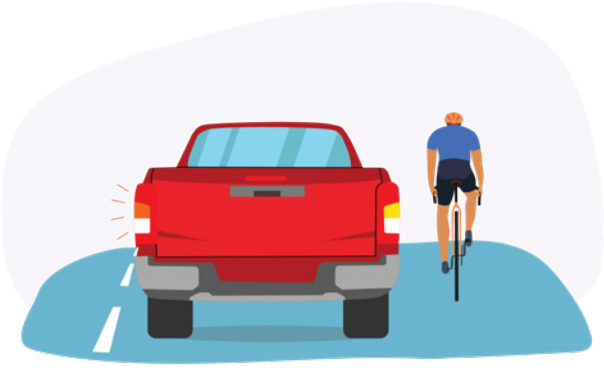
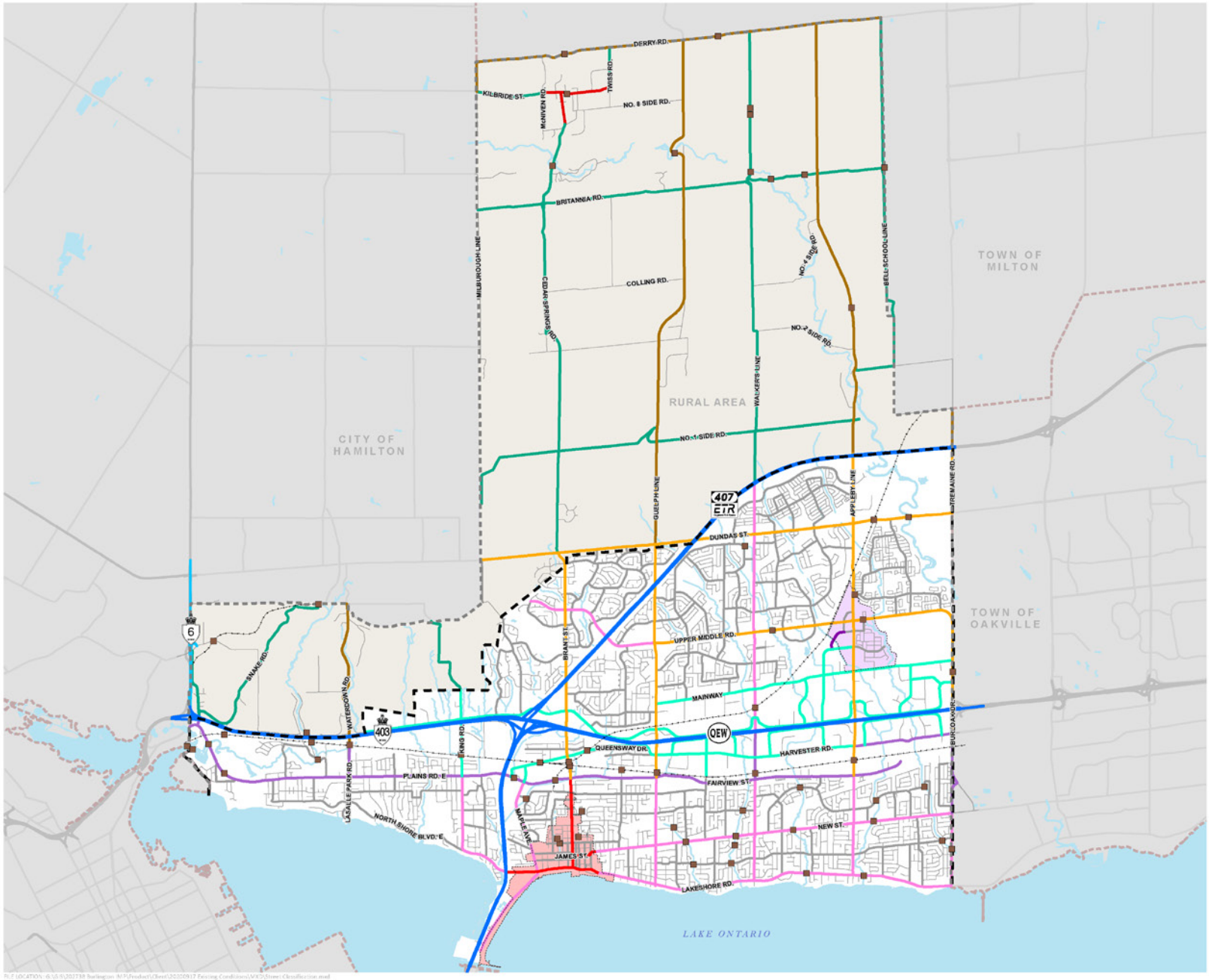


Figure 4-12: Existing Road Network by Street Classification



CITY OF BURLINGTON

BURLINGTON INTEGRATED MOBILITY PLAN

STREET CLASSIFICATION MAP

Road Network

Urban Area
- Provincial Freeway
- Provincial Highway
- Major Arterial
- Multi Purpose Arterial
- Urban Avenue
- Main Street
- Industrial Connector
- Neighbourhood Connector
- Local Street

Rural Area
- Provincial Freeway
- Provincial Highway
- Rural Major Arterial
- Rural Connector
- Rural Main Street
- Rural Local

Downtown Urban Centre
- Urban Avenue
- Main Street
- Neighbourhood Connector
- Local Street

Uptown Urban Centre
- Major Arterial
- Industrial Connector
- Industrial Street
- Neighbourhood Connector
- Local Street

Base Mapping
- Bridges
- Rail Line
- City of Burlington
- Urban Boundary
- Major Creeks
- Waterbody
- Downtown Urban Centre
- Uptown Urban Centre
- Rural Area
- Municipal Boundaries

0 0.5 1 2 km

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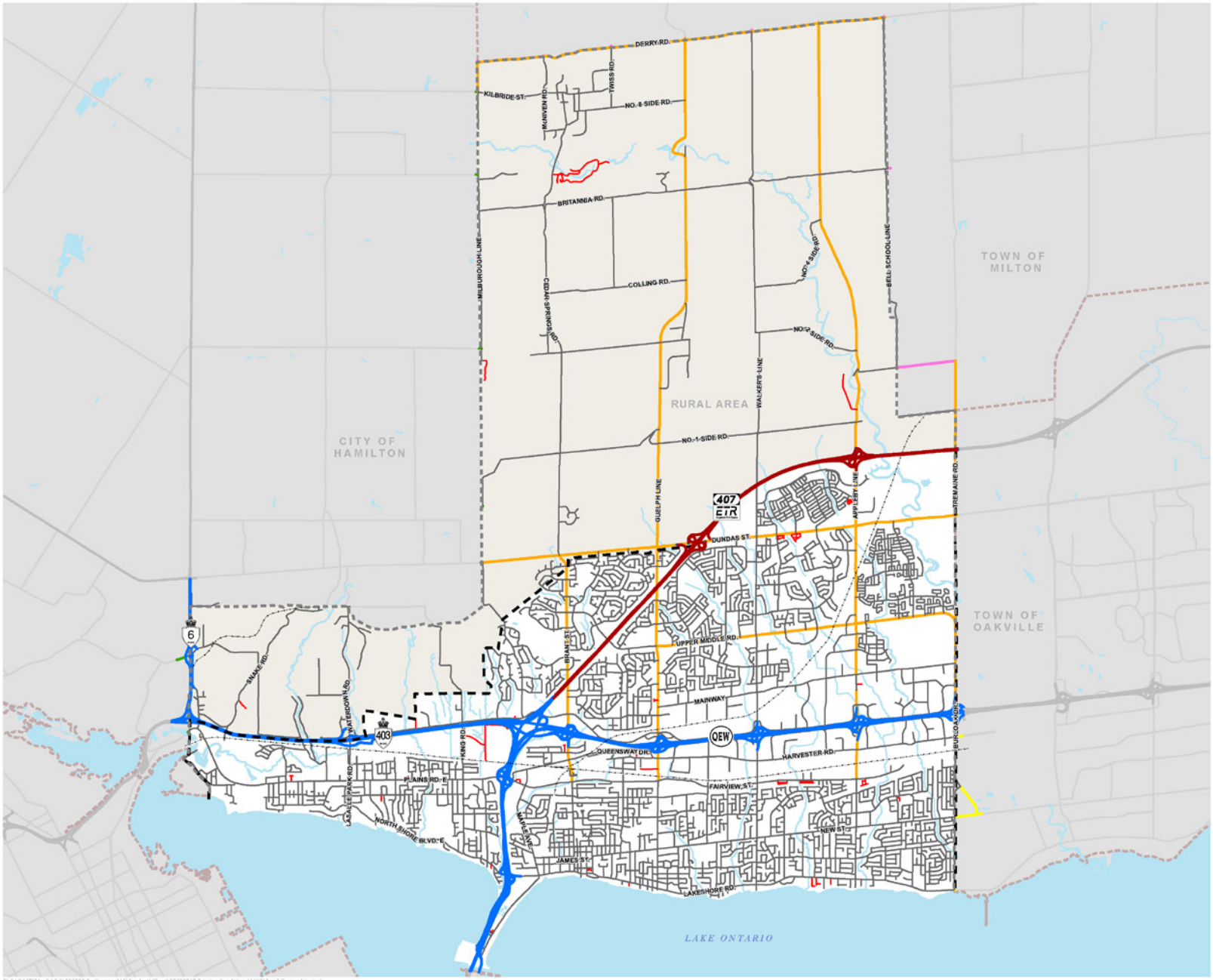
Figure 4-13: Existing Road Network by Ownership



CITY OF BURLINGTON

BURLINGTON INTEGRATED MOBILITY PLAN

ROAD OWNERSHIP

Road Network

Ownership

- City of Burlington
- Private
- Halton Region
- Town of Oakville
- Town of Milton
- City of Hamilton
- MTO
- Private Agency

Base Mapping

- Provincial Highway / Freeway
- Rail Line
- City of Burlington
- Urban Boundary
- Major Creeks
- Waterbody
- Rural Area
- Municipal Boundaries

0 0.5 1 2 km

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4.2.2.6 Rail

Rail lines have a significant presence in Burlington, criss-crossing adjacent to the intersection of Highway 407 and Highway 403, and in close proximity to the industrial lands. These lines are critical for the movement of people and goods regionally. **Figure 4-14** shows the rail network within Burlington.

There are 32 kilometres of rail corridor within the City of Burlington. Approximately three kilometres of track are owned by the Canadian Pacific Railway (CPR) and the remaining 29 kilometres of the track are owned by the Canadian National Railways (CNR). The CNR and CPR-owned tracks are used for goods movements. The CNR – Oakville rail line is also used for passenger rail services (GO Rail and VIA Rail).

There are 24 locations in the city where a rail line crosses a road. Two of the crossings are at-grade active rail crossings, and one of the crossings is a pedestrian bridge. Rail crossing protection is determined based on train volumes, vehicle volumes and location conditions.

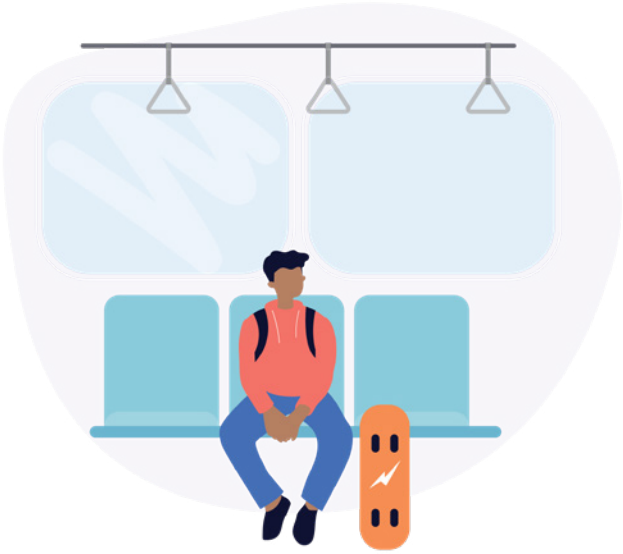
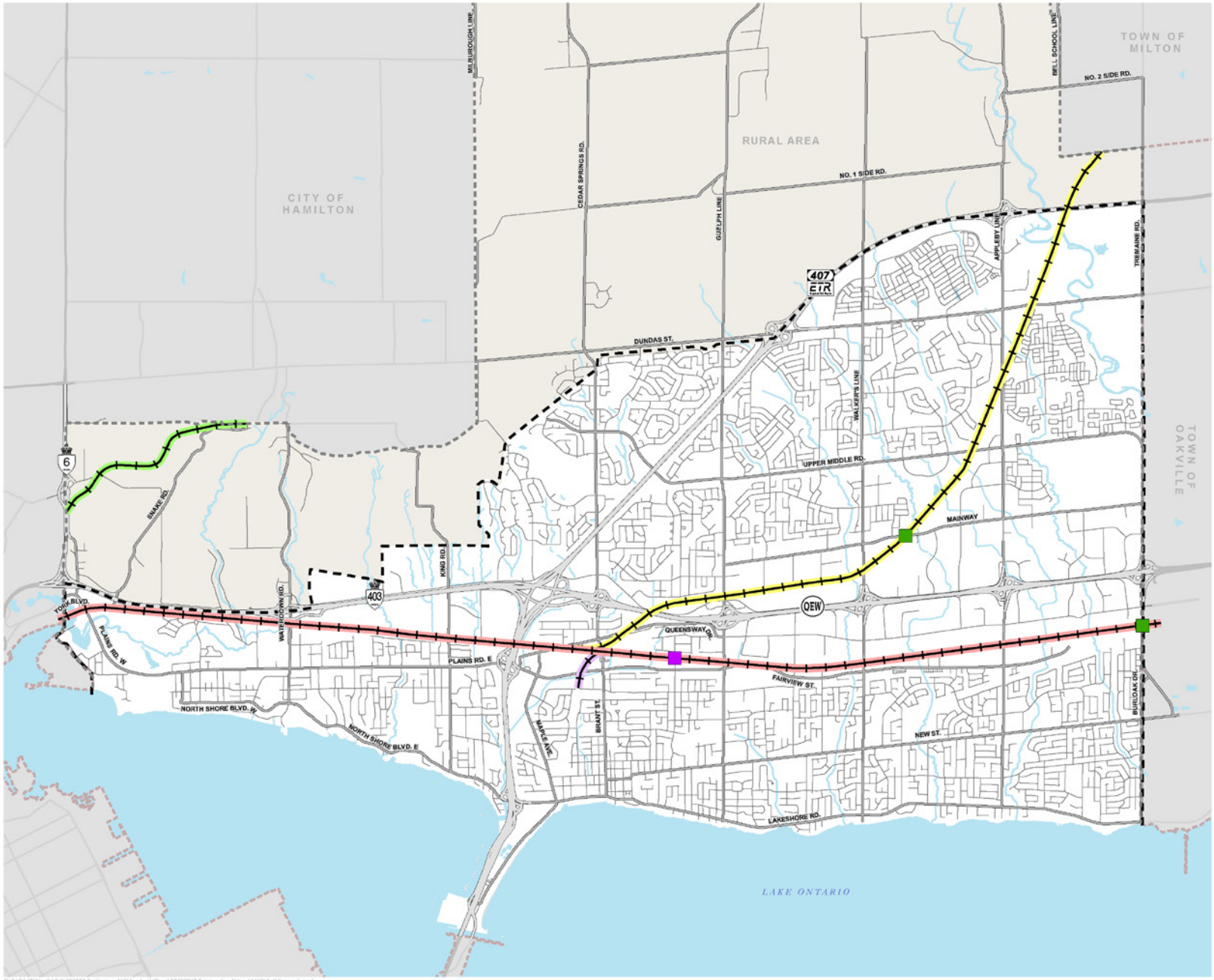


Figure 4-14: Existing Rail Network



CITY OF BURLINGTON

BURLINGTON INTEGRATED MOBILITY PLAN

RAIL NETWORK

Rail Crossings

- Pedestrian Bridge
- At-Grade Active Rail Crossing

Rail Network

- CNR - Oakville
- CNR - Beach
- CNR - Halton
- CPR - Goderich

Base Mapping

- Provincial Highway / Freeway
- Major Roads
- Minor Roads
- City of Burlington
- Urban Boundary
- Major Creeks
- Waterbody
- Rural Area
- Municipal Boundaries

0 0.5 1 2 km

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DILLON CONSULTING

PROJECT: 202738
STATUS: DRAFT
DATE: 2020-10-26

4.3 Future Conditions

4.3.1 Future Travel Demands

4.3.1.1 Travel Demand Model

A strategic Travel Demand Model was used to estimate future automobile traffic volumes on major roads in Burlington. The model allows for the testing of various scenarios including; changes in population, employment, mode shares and/or network infrastructure in order to understand future traffic volumes and network performance.

How it was Built

The Burlington Strategic Travel Demand Model (Burlington Model) was developed by extracting the City of Burlington and surrounding area from the Halton Region Strategic Travel Demand Model (Halton Model). The Burlington Model uses the general structure of the Halton Model, with improved detail within the City of Burlington. The Burlington Model includes updated baseline and planned future network infrastructure, refined 2031 population and employment forecasts, and updated trip rates and mode shares based on the 2016 Transportation Tomorrow Survey (TTS).

What it was Used For

Network Performance

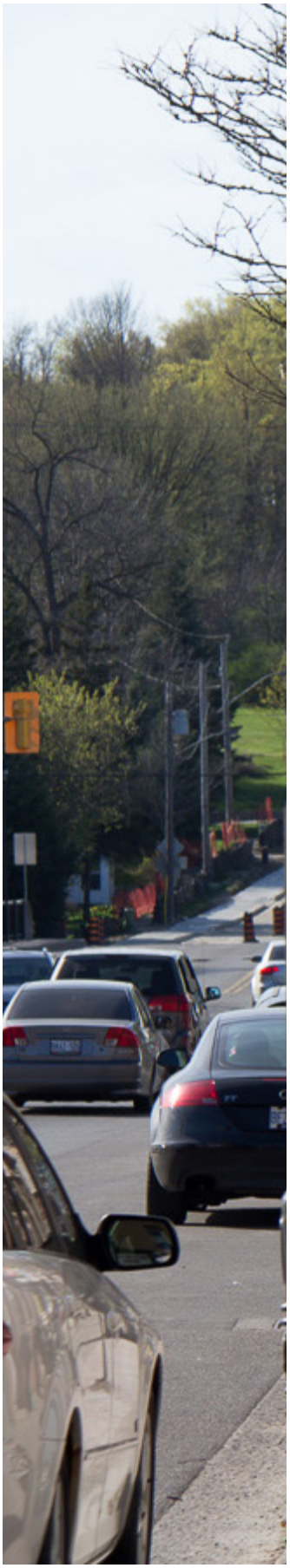
The IMP Vision, Values and Goals describe the desired transportation system in Burlington. The Burlington model was the analysis tool used to test strategic planning/policy options, including various future mode share target scenarios, and prove network performance is meeting its targets. The Burlington model was also used to estimate vehicular GHG emissions for the various future scenarios and the preferred solution.

Network Integration

The IMP identified an ideal network for each of the major modes of transportation in Burlington (pedestrians, bicycles, transit, trucks and cars). However, all of these networks overlap at various locations and there is only so much space within the street right-of-way. The Burlington model was the analysis tool used to test various options for the integration of these networks. Transit priority, for example, can be implemented at a range of levels from enhanced service to dedicated lanes; modeling of operational performance provided guidance on the appropriate level of enhanced transit service and implementation strategy.

What is its Legacy Value

The Burlington Strategic Travel Demand Model is an analysis tool that will support future transportation planning projects, including network planning and functional design studies. The Burlington model can also estimate vehicular GHG emissions for the purpose of scenario testing infrastructure modification and/or mode share changes.



4.3.1.2 Future Mode Shares

The sustainable approach adopted for the IMP is mode-share driven rather than corridor-capacity driven. At its core, the IMP sets mode share targets for the future and develops the plan to achieve them. The IMP requires a detailed approach to setting mode share targets not just at a global city-wide level, but at a neighbourhood level. To do this, the IMP went through three steps:

- **Step 1**: Determine global mode share targets for the entire city, considering existing mode shares, policy targets, and observed travel behaviours.
- **Step 2**: Assign mode share targets to different neighbourhood types, that together amount to the overall global mode share. This recognizes a neighbourhood's character (dominant land use and form, development density, and street layout) as impacting individual's transportation decisions.
- **Step 3**: Revise targets assigned to each neighbourhood based on local variations, such as existing mode shares, location of neighbourhood in the city, land use mix in the neighbourhood, proximity to major transit hubs, and trip length for trips originating in the neighbourhood.

Global Mode Share Target (2051)

The proposed 2051 Global (i.e., city-wide) daily mode shares for all trips originating in Burlington are presented in **Table 4-2**. Also presented are the existing mode shares and the targets set out in the City's 25-year Strategic Plan.

Table 4-2: Proposed Daily Global Mode Shares

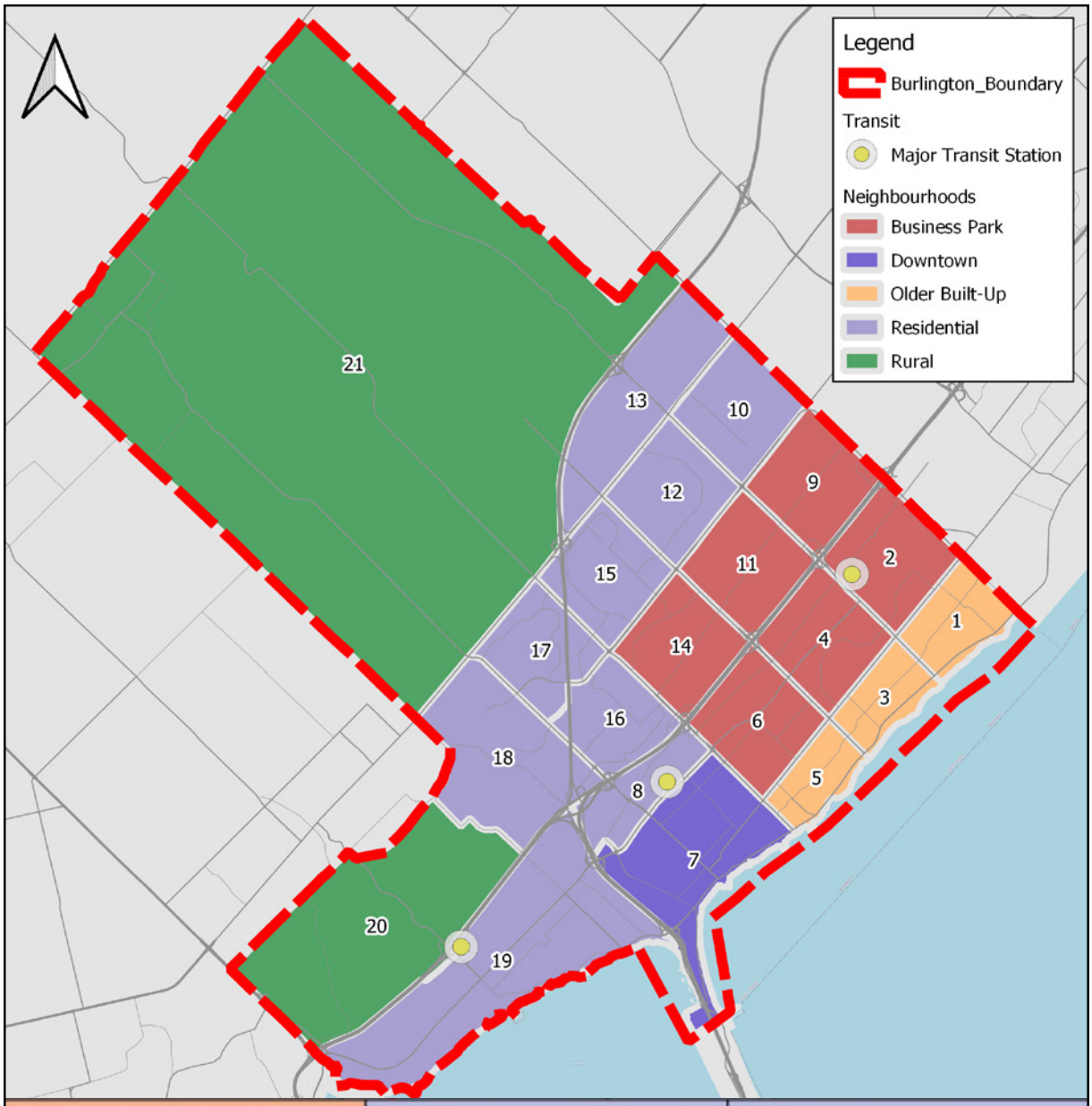
Travel Mode	Existing Daily Mode Shares (TTS)	Strategic Plan Target Mode Shares	Proposed 2051 Target Mode Shares
Walking	5.3%	15.0%	9.0%
Cycling	1.0%		6.0%
Transit	3.0%	15.0%	15.0%
Auto	90.7%	70.0%	70.0%

The proposed 2051 mode share targets reflect Burlington's sustainability goals to shift away from vehicle trips. The table above shows that walking, cycling and transit trips are projected to increase, while automobile mode share is projected to decrease to 70%.

Neighbourhood Character Type Mode Share Targets

This part of the analysis assigns mode share targets to different neighbourhood types (see **Figure 4-15**), that together amount to the overall global mode share. This recognizes a neighbourhood's character (dominant land use and form, development density, and street layout) as impacting an individual's transportation decisions.

Figure 4-15: Neighbourhood Types



1. Elizabeth Gardens	8. Plains	15. Headon Forest
2. Pinedale	9. Corporate	16. Mountainside
3. Shore Acres	10. The Orchard	17. Brant Hills
4. Longmoor	11. Tansley	18. Tyandaga
5. Roseland	12. Millcroft	19. Aldershot
6. Dynes	13. Alton Village	20. Aldershot North
7. Central	14. Palmer	21. Rural Burlington

Table 4-3 summarizes Burlington's neighbourhood character typology and **Table 4-4** presents the existing and proposed neighbourhood character daily mode shares for all trips originating in Burlington, emphasizing the required shift away from the auto mode share.

Table 4-3: Neighbourhood Character Typology

Character Type	Description
Downtown	This is the urban core of the city, generally the oldest part of town with the most diverse mix of land uses developed around a tight, walkable block pattern.
Residential	These areas lie further from the downtown and exhibit generally lower population densities and few land uses outside of residential. The housing in these areas is primarily single family detached dwellings with some townhouses. Where commercial land uses exist, they are typically suburban mall complexes along major arterials.
Rural / Developing	These areas currently exhibit a generally rural character with low densities for any land use. Residential uses are generally sparse and focused almost solely on single-family detached dwellings.
Older Built-Up Area	These southern residential areas generally exist adjacent to the downtown and along the appealing lakeshore, they have a denser road network with larger land lots, some commercial land use.
Business Park	There are specific concentrations of industrial employment and commercial lands along the Highway 403 and the QEW. These have been developed to accommodate industrial uses with larger lot sizes and fewer accommodations for walking, cycling, and transit.

Table 4-4: Proposed Target Mode Share for Daily Trip Origins in Burlington by Neighbourhood Character

Character Type	Existing Mode Share				Proposed Target Mode Share				Shift from Auto
	Auto	Transit	Bicycle	Walk	Auto	Transit	Bicycle	Walk	
Downtown	90.1%	3.5%	2.2%	4.2%	50.0%	20.0%	11.0%	19.0%	**-40.1%**
Residential	91.2%	2.9%	0.4%	5.4%	72.0%	15.0%	5.0%	8.0%	**-19.2%**
Rural / Developing	97.9%	1.7%	0.4%	0.0%	96.0%	3.0%	1.0%	0.0%	**-1.9%**
Older Built-Up Area	88.1%	3.3%	2.6%	6.0%	70.0%	15.0%	5.0%	10.0%	**-18.1%**
Business Park	90.6%	2.8%	0.9%	5.7%	75.0%	13.0%	5.0%	7.0%	**-15.6%**
Overall	90.8%	3.0%	1.0%	5.2%	70.0%	14.8%	5.9%	9.4%	**-20.9%**
Global Target Mode Share					**70.0%**	**15.0%**	**6.0%**	**9.0%**	**-20.8%**

Neighbourhood Mode Share Targets

The final and most detailed layer of analysis for Burlington's Future Mode Shares is a refinement of mode share targets for each individual neighbourhood. This refinement was based on a detailed review of the local conditions. A map denoting the neighbourhood boundaries and the location of major transit station areas is provided above in **Figure 4-15**. **Table 4-5** shows the proposed daily mode shares for each neighbourhood for all trips originating in Burlington.

Table 4-5: Proposed Target Mode Share for Daily Trip Origins in Burlington by Neighbourhood

Notes: A=Auto, T=Transit, B=Bicycle, and W=Walk

No.	Neighborhood	Character Type	Existing Mode Share				Mode Share Targets			
			A	T	B	W	A	T	B	W
1	Elizabeth Gardens	Older Built-Up	92%	3%	1%	5%	73%	15%	3%	9%
2	Pinedale	Business Park	89%	3%	1%	7%	71%	15%	5%	9%
3	Shore Acres	Older Built-Up	87%	4%	4%	5%	70%	15%	6%	9%
4	Longmoor	Business Park	85%	4%	1%	10%	70%	13%	5%	12%
5	Roseland	Older Built-Up	85%	3%	3%	8%	67%	15%	6%	12%
6	Dynes	Business Park	94%	3%	1%	3%	79%	13%	5%	3%
7	Central	Downtown	90%	3%	2%	4%	50%	20%	11%	19%
8	Plains	Residential	92%	5%	0%	3%	72%	17%	5%	6%
9	Corporate	Business Park	89%	3%	0%	7%	75%	11%	5%	9%
10	The Orchard	Residential	88%	4%	0%	8%	70%	15%	5%	10%
11	Tansley	Business Park	96%	1%	1%	2%	80%	13%	5%	2%
12	Millcroft	Residential	93%	2%	1%	4%	74%	14%	5%	7%
13	Alton Village	Residential	85%	3%	1%	11%	67%	15%	5%	13%
14	Palmer	Business Park	90%	2%	1%	7%	75%	13%	5%	7%
15	Headon Forest	Residential	87%	3%	1%	10%	69%	14%	5%	12%
16	Mountainside	Residential	97%	1%	0%	2%	77%	13%	5%	5%
17	Brant Hills	Residential	88%	4%	0%	8%	70%	15%	5%	10%
18	Tyandaga	Residential	96%	3%	0%	1%	77%	15%	5%	3%
19	Aldershot	Residential	95%	2%	1%	3%	72%	17%	5%	6%
20	Aldershot N	Rural	98%	1%	1%	0%	97%	2%	1%	0%
21	Rural Burlington	Rural	97%	3%	0%	0%	95%	4%	1%	0%
		Downtown	90%	3%	2%	4%	50%	20%	11%	19%
		Residential	91%	3%	0%	5%	72%	15%	5%	8%
		Rural / Developing	98%	2%	0%	0%	96%	3%	1%	0%
		Older Built-Up Area	88%	3%	3%	6%	70%	15%	5%	10%
		Business Park	91%	3%	1%	6%	75%	13%	5%	7%
		Global	91%	3%	1%	5%	70%	15%	6%	9%

4.3.1.3 Covid-19 Impacts on Travel Behaviour

Overall, the relevant observations and/or studies from across North America that compare travel behaviour before and after the Covid-19 pandemic suggest that the most North American jurisdictions (including Burlington) are tracking towards, or have already surpassed, pre-Covid traffic volumes and/or transit ridership. Similarly, a number of North American jurisdictions have also observed changes to the daily traffic profile.

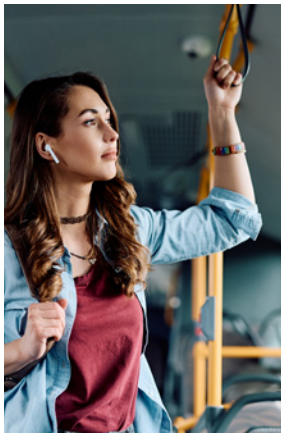
Traffic Profile

A report published by StreetLight Data[2] suggests that the daily traffic profile has changed, as more people have switched to flexible and hybrid work schedules. This shift has resulted in a drop in the traditional AM peak period and a rise in midday/afternoon travel that has resulting in a peak-spreading tendency in the PM peak period.

Traffic

As of January 2022 Burlington's traffic volumes were well on their way to returning to pre-pandemic levels. Specifically, the PM peak has surpassed pre-pandemic levels, while 24-hour volumes were only 2-3% lower than pre-pandemic levels. The AM peak was still tracking about 10-12% lower than pre-pandemic levels but this isn't surprising given the daily traffic profile trends being experienced across North America.

It should be emphasized that the aforementioned findings utilize January 2022 data, which is over a year old. At the time of writing, all Covid-19 restrictions in Ontario have been lifted and as such, it is likely that present day traffic volumes (AM peak, PM peak & 24-Hour) will have continued to grow.



Transit

As of April 2023, transit ridership in the City of Burlington exceeded pre-pandemic levels for the first time. Overall, individual route ridership (excluding Route 1) has remained relatively consistent when compared to pre-pandemic levels. This indicates that travel patterns have not changed considerably post-pandemic.

As a result of the aforementioned findings, it is evident that post pandemic travel behaviour has changed when compared to from pre-pandemic conditions, however these changes are incremental and continue to diminish.

2. StreetLight Data, Measuring a Year of Pandemic Travel: Where Next? 2021.

4.3.2 Future Networks

Transportation infrastructure projects often require many years from conception through to completion. As a result of this often lengthy timeline, there are a number of Regional transportation infrastructure projects within the City of Burlington that have been identified and committed to, but are at various stages of planning, design and construction. Planned Regional transportation infrastructure projects to 2031 are shown in **Table 4-6** and illustrated in **Figure 4-16**.

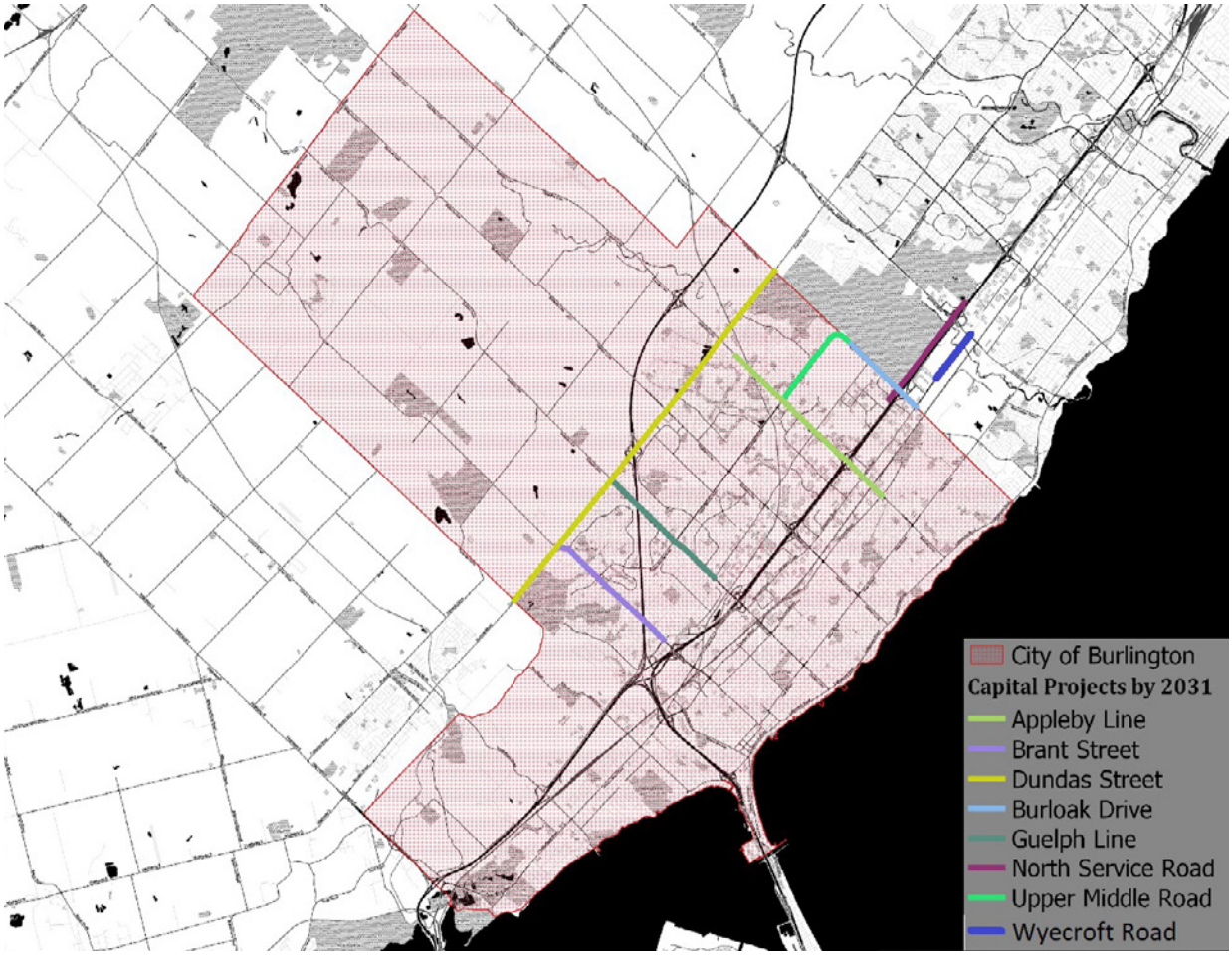
Table 4-6: Planned Regional Capital Projects by 2031

Notes: * Located in Oakville

Road Name	Location	Planned Improvement
Appleby Line	North of Taywood Drive to Fairview Street	Widening from four to six lanes (2 lanes for Transit/ High-Occupancy Vehicles)
Brant Street	Dundas Street to North Service Road	Widening from four to six lanes (2 lanes for Transit/ High-Occupancy Vehicles)
Burloak Drive	Harvester Road to Upper Middle Road	Widening from four to six lanes
Dundas Street	Hamilton/Halton Boundary to Tremaine Road	Widening from four to six lanes
Guelph Line	Dundas Street to Mainway	Widening from four to six lanes
North Service Road*	Burloak Drive to Bronte Road	Construction of new four lane road
Upper Middle Road	Appleby Line to Burloak Drive	Widening from four to six lanes
Wyecroft Road*	820 m east of Burloak Drive to Bronte Road	Construction of new four lane road

Source: Halton Region: Budget and Business Plan – Capital Report 2023

Figure 4-16: Planned Regional Capital Projects by 2031



Source: Halton Region: Budget and Business Plan – Capital Report 2023

5.0 Problem and Opportunity Statements

5.1 Overview

Phase 1 of the EA Planning process requires identification of Problem and Opportunity Statements, which are to be answered by the development and assessment of Alternative Solutions. The Problem and Opportunity Statements are outlined below, with a brief description to provide context for each statement. They have been organized according to the IMP's overarching goals to facilitate understanding of the origins of these statements.

5.2 Problem and Opportunity Statements

Goal 1: Burlington will eliminate transportation-related deaths and serious injuries

Statement: Burlington's streets need to be designed in a way to safely serve all transportation modes, including walking, cycling, and transit.

Historically, Burlington's transportation network has emphasized the comfort and efficiency of cars, while other modes of transportation have been provided for but not at the same level of service. To prioritize the safety and comfort of pedestrians, cyclists, and transit users, many streets and intersections in Burlington may require modifications that could potentially delay cars if space is limited. Thus, the City's planning and design tools and guidelines must be updated to consider the needs of all transportation modes.

Goal 2: Burlington's transportation system will be accessible and reliable for users regardless of factors like age, ability, income, or familiarity with the city

Statement: Burlington's streets need to be designed to serve the needs of a diverse group of people, of all ages and abilities.

Burlington's traditional street and intersection designs primarily prioritize the needs of the car, with some consideration for confident cyclists and physically capable pedestrians. However, to encourage more individuals to walk and cycle, it is essential to create street and intersection designs that are comfortable and accessible for a wider range of people. This calls for the City's street design guidelines to be updated with more inclusive approaches that take into account the needs of a wider range of individuals, including making provisions for travelers of all ages and abilities.

Statement: Burlington's transportation projects should prioritize improving multimodal access and connectivity for more residents.

Some Burlington residents, including those who are low-income, marginalized, or from rural areas, reside in neighbourhoods with limited access to well-connected active transportation routes and convenient public transit options. This lack of access can lead to unsafe travel conditions, such as walking on roads or cycling in poorly lit areas. Moreover, it disproportionately affects non-driving individuals by requiring them to take significantly longer bus trips than the quick drive that could have been possible. To address these issues, Burlington must prioritize capital investments that enhance multimodal travel options for a broader population, particularly for those living in previously underserved areas.

Goal 3: Burlington will provide high-quality transportation options to move people and goods wherever and whenever.

Statement: Burlington needs better walking and cycling connections to transit stops and hubs.

Walking or cycling connections to transit stops or hubs are essential components of every transit trip. Inadequate or missing connections can act as a barrier that deters individuals from choosing transit. Despite Burlington's efforts to enhance connectivity between walking, cycling, and transit networks, some transit stops, stations, and transfer hubs still lack high-quality walking and cycling connections.

Statement: Burlington needs safer crossings of the rivers, rail lines, and highways for people walking and cycling.

Burlington needs to increase the rate of walking and cycling as a means of transportation between neighbourhoods, including those separated by physical barriers such as the Provincial freeway system and the Federal rail system. However, traveling by foot or bike is relatively slow, and navigating interchange facilities is typically complex and hazardous to overcome the freeway barrier. To encourage more individuals to walk and cycle, barrier crossings should be located closer to one another. Through the Cycling Plan, the City has identified three new barrier crossings to address this issue.

Statement: Burlington needs to reduce transit travel times and enhance traveler convenience to most destinations, particularly between neighbouring areas of the City.

In Burlington, a transit trip between two neighbourhoods will inevitably take longer than a car trip because buses must frequently stop to pick up and drop off passengers. Despite Burlington's compact urban area and short trip distances, travel times between nearby neighbourhoods via transit are often substantially longer than those by car. This inconsistency excessively affects marginalized communities, who may have limited access to alternative travel options. The City needs to identify transit priority measures and route designs that address the issue of longer travel times for transit, in order to provide fair and equal access to efficient transportation for all.

Statement: Burlington needs robust (i.e., fast and direct) transit connections to current and future job opportunities.

Burlington must make transit a more appealing option for those commuting to and from work. Additionally, through the creation of a multi-modal network, the IMP aims to improve job accessibility for individuals who lack alternative travel options. However, the current transit network's connections to employment areas are often slow or indirect, hindering these objectives. Strengthening transit connections and first and last mile choices to job opportunities in the QEW Prosperity Corridor and upcoming Major Transit Station Areas (MTSAs) would encourage development in these areas while reducing reliance on personal vehicles.

Statement: Burlington needs to enhance transportation options for residents living in rural areas.

Residents of rural Burlington currently have no viable transportation alternatives to private vehicles. Burlington Transit does not serve these areas due to high costs and low ridership. However, the City is piloting an On Demand transit service, which may provide a more cost-effective solution to increase accessibility in rural areas and during off-peak hours. Active Transportation facilities are not well developed; solutions have been considered through the Rural Active Transportation plan and brought forward through the IMP.

Goal 4: Burlington will eliminate transportation-related carbon emissions

Statement: The percentage of trips made by car needs to be reduced in Burlington.

Currently, the primary mode of transportation in Burlington is cars, and as the population grows, the number of car trips is expected to increase. However, to meet environmental targets for the transportation sector, there must be a significant decrease in car use by encouraging more people to choose walking, cycling, and transit options. Additionally, reducing the overall demand for travel is also a key factor in achieving these targets.

Statement: Burlington's untapped potential for electric vehicles needs to be explored.

While some trips will always require vehicles, it is important to reduce their greenhouse gas (GHG) impact by shifting away from fossil fuels. The City's ongoing efforts to electrify Burlington Transit and City-owned vehicle fleets are positive steps in this direction. However, more policies, actions, and incentives are needed to support and increase the adoption of alternative fuel vehicles in Burlington.

Goal 5: Burlington's streets will support the intended roles of the communities they run through and help these communities be vibrant and prosperous

Statement: The redesigning of streets in key growth areas to prioritize walking, cycling, and transit is necessary for Burlington.

The City's Official Plan designates Primary Growth Areas and MTSA Special Planning Areas as dynamic regions with increased density and diverse land uses to support Burlington's ongoing growth. The mixed-use and higher density development will facilitate short trips that can be easily accomplished by walking or cycling. For longer journeys, transit will be encouraged. However, the potential for increased traffic congestion will pose a challenge to intensifying land use in these areas. Therefore, street design within these intensification zones must consider the impacts of growth while providing safe and comfortable travel options by walking, cycling, or transit to realize the full potential of intensification.

Statement: Road designs in Burlington need to be updated to reflect the unique priorities of different areas and current thinking on urban street design.

Burlington's current street design standards (which guide design decisions) categorize streets based on the amount of daily vehicular traffic they carry, which can result in streets looking similar regardless of the surrounding environment, whether it's a low-density residential area, an industrial area, or a natural heritage feature. However, each environment may require different street features to be prioritized. For example, street trees and benches may be essential in one setting, while cycling facilities and natural landscapes could be more critical in others. As such, the City's street design practices should be updated to ensure that discussions around different areas' priorities are guided appropriately.

Goal 6: Burlington will actively plan for the transportation changes of tomorrow while continuing to deliver great service today

Statement: Burlington's transportation system's resiliency requires improvement.

Societal reliance on cars and the historically auto-centric approach to street design has left Burlington's transportation system underprepared to adapt to short and long-term shifts in mobility. Lessons from the Covid-19 pandemic and the ever-increasing impacts of climate change emphasize the need for transportation systems to be resilient. Resilient systems have diversity (multiple options for travel), redundancy (multiple routes between destinations) and the ability to easily adapt to meet changing conditions.

Statement: Burlington needs to make better preparations for the future of mobility.

New modes of travel and innovative transportation technologies are on the horizon. The needs of these new forms of travel will be different than existing modes and they will create both challenges and opportunities for achieving the goals of the IMP. The City should allocate resources towards monitoring and preparing for emerging modes and transportation technologies.

Statement: The capital planning in Burlington needs to be connected and leveraged with asset management.

One way to cost-effectively implement street transformations is through road resurfacing and reconstruction capital projects. By coordinating the capital program and asset management program, the City can leverage renewal projects to achieve the objectives of the IMP. All asset management projects should be preceded by a strategic evaluation of needs and opportunities for all modes (i.e. a Complete Street Design Review).

6.0 Preferred Solution

6.1 Overview

At a Master Plan level, the Alternative Solutions refer to different network strategies, philosophies, or approaches for designing future transportation networks that the City can consider in response to the Problem and Opportunity Statements. To be considered a viable solution, a network strategy must align with the vision and goals of the IMP. Essentially, these solutions serve as potential options for developing transportation networks that are in line with the IMP's overarching objectives.

Burlington has recognized that widening roads solely to increase car capacity is not a feasible solution to its traffic congestion issues. The City acknowledges that relying on a car-centric approach for the past six decades has resulted in a transportation network that fails to serve the needs of people who want or need to travel using other modes of transportation, especially in rural and employment areas. Additionally, the current network does not support the City's growth strategy, which prioritizes intensifying land uses in primary growth areas such as Major Transit Station Areas (MTSAs), Downtown, and Uptown. The network also has had, and continues to have, negative impacts on the natural environment and atmospheric climate by contributing to greenhouse gas levels. Therefore, to address these issues and achieve its transportation goals, the City must adopt **a sustainable and integrated network** approach that will involve prioritizing the needs of all modes of transportation.

6.1.1 Key Attributes / Characteristics of a Sustainable and Integrated Network

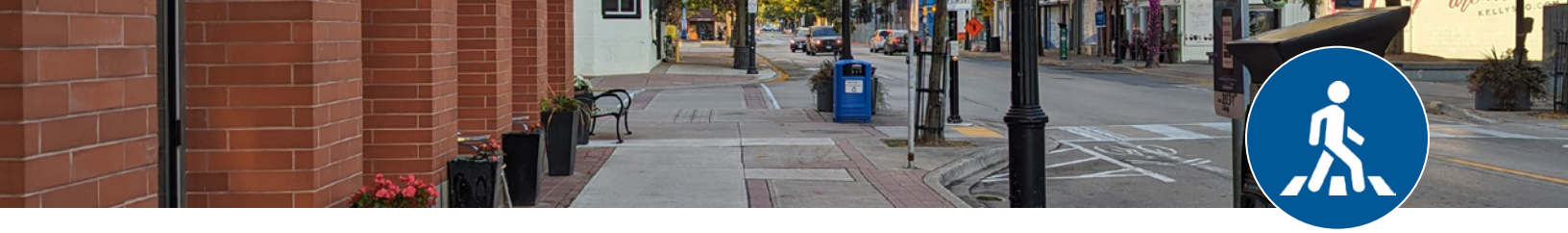
The following list outlines key elements of a sustainable and integrated network, including measures to rebalance the right-of-way on existing streets, extend multi-modal corridors, develop transit infrastructure, create dedicated transit corridors, and improve the cycling and pedestrian environment. These elements aim to improve access, safety, and comfort for all modes of transportation while minimizing the environmental impact of transportation infrastructure. Sustainable and integrated networks:

- Do not widen streets to increase car capacity; only widen when required to improve conditions for walking, cycling or transit users, or to resolve safety concerns. Any proposed future widenings will need to be supported through appropriate environmental studies;
- Rebalance the right-of-way on a select number of existing streets to change the priority afforded to the travel modes;
- Extend new multi-modal corridors into growth areas of the City, where required, to provide multi-modal access to development parcels;
- Develop a transit infrastructure network, improve transit service and reduce transit delays within frequent transit corridors;
- Consider conversion of existing general purpose traffic lanes, or, in limited circumstances, consider widening existing streets in order to create dedicated transit corridors;
- Develop a spine network of high-quality cycling facilities designed to serve cyclists of all ages and abilities by building new and improving existing cycling infrastructure;
- Improve the pedestrian environment within employment areas and the future MTSA's and rural areas; and
- Create new walking and cycling connections across barriers (freeways and rail lines) where supported by appropriate environmental studies.

6.2 Mode Plan Summaries

A strategic review of the mode plans for current modes of travel including pedestrian, cycling, transit, and trucks (goods movement) was conducted as a part of this planning process. The goal was to identify the networks, programs, and policies needed for each of the modes in Burlington in alignment with the vision, values, and goals in the Burlington IMP. The strategic reviews considered each mode in isolation and will need to be integrated.

The following sections present the network recommendations and key findings that emerged from the mode plans.



6.2.1 Pedestrians

The Mode Share Profile has set a target of increasing the walking mode share from 5% to 9% by 2051. The Mode Share Profile has also set a target of increasing transit mode share from 3% to 15% by 2051. Most transit passengers are pedestrians at the start and end of their trips; development of a strong pedestrian network is a key action towards achieving this objective.

Walking will be particularly important in intensification areas where the number of trips will be high and road capacity to serve significant growth in auto demand cannot be provided. The Pedestrian Priority Network (PPN) was developed based on Burlington's Growth Strategy with emphasis on:

- Primary Growth Areas/ MTSA;
- Secondary Growth Areas; and
- Employment Growth Areas.

New Active Transportation crossings of major linear infrastructure (e.g., highways, rail corridors) were also an important element of the Pedestrian Priority Network, particularly crossings that significantly reduced the walking time to major transit and employment hubs. A number of new crossings were identified in the Cycling Master Plan; these crossings were adopted into the Pedestrian Priority Network and the IMP Cycling Network.

These actions are aimed at making walking more convenient, encouraging more walking for daily commutes, and promoting the desired shifts in mode share. The Pedestrian Priority Network will prioritize the following design elements:

- Sidewalk widths that target Level of Service A, where possible, as per the Ontario Traffic Council Multimodal Level of Service Guidelines (February 2022);
- Limited block sizes;
- Midblock crossings, where appropriate;
- Limited use of dual left and channelized right turn lanes at intersections;
- Buffers between the pedestrian walkways and road;
- Quality street furniture;
- Street trees; and
- High-quality pedestrian lighting.

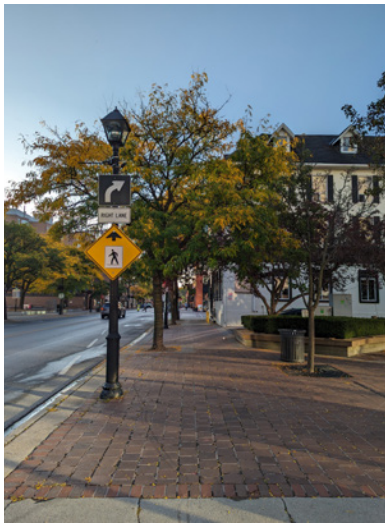
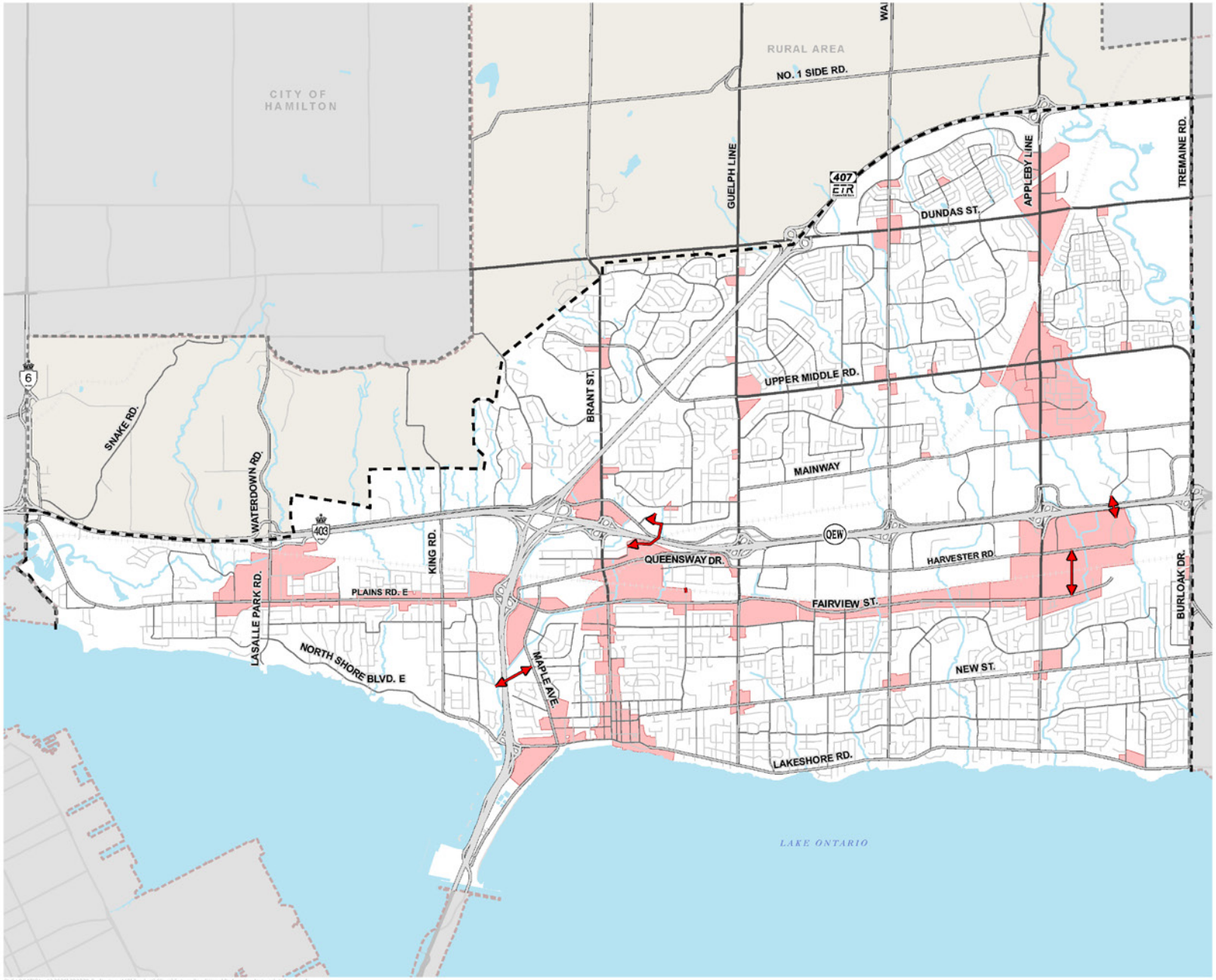


Figure 6-1 presents the ideal network plan for pedestrians. The Pedestrian priority network identifies the areas where higher order pedestrian facilities are required and indicates the proposed new Active Transportation crossings of the significant physical barriers (highways and rail lines).

Figure 6-1: Pedestrian Priority Network



6.2.2 Cycling

The Mode Share Profile has set a target of increasing the cycling mode share from 1% to 6% by 2051. The Mode Share Profile has also set a target of increasing transit mode share from 3% to 15% by 2051. Cycling is an important connection to transit; implementing the cycling network will support progress towards transit mode share objectives.

The City of Burlington completed a Cycling Plan (CP) in 2021; the ideal Cycling Network adopted for the IMP used the Spine Network from the CP as its foundation. A Rural Active Transportation Strategy was completed parallel to the IMP; the ideal rural active transportation network was adopted from that study.

Cycling will also be important in intensification areas where the number of trips will be high and road capacity to serve significant growth in auto demand cannot be provided.

New Active Transportation crossings of major linear infrastructure (e.g., highways, rail corridors) were also an important element of the cycling network, particularly crossings that significantly reduced the cycling time to major transit and employment hubs. A number of new crossings were identified in the Cycling Plan; these crossings were adopted into the PPN and the IMP Cycling Network.

The spine network aims to serve people of all ages and abilities by utilizing physically separated protected bikeways, multi-use trails, and on-street connections on roads with low traffic speeds and volumes. The City should consider undertaking a mixture of quick-build projects and align the implementation of the network with planned capital works projects.

Burlington needs to implement intersection modifications along corridors with bikeways to improve connectivity, user experience, and safety as recommended in the Cycling Plan. Bicycle priority features at intersections could include the following treatments:

- Protected intersection;
- Signal separation;
- Combined cross-ride;
- Separated cross-ride;
- Mixed cross-ride;
- Two-stage left turn box;
- Jug handle; and
- Raised crossing.

Figure 6-2 shows the Urban Cycling Spine Network and **Figure 6-3** shows the Rural Active Transportation Network.

Figure 6-2: Urban Cycling Spine Network

CITY OF BURLINGTON

BURLINGTON INTEGRATED MOBILITY PLAN

URBAN CYCLING SPINE NETWORK

- Intersection Improvements
- Barrier Crossings
- On-Road Spine Network
- Off-Road Spine Network
- Street Needing Future Design Review

Base Mapping

- Provincial Highway / Freeway
- Regional Road / Major Arterial
- Arterial
- Collector
- Local
- Rail Line
- City of Burlington
- Urban Boundary
- Major Creeks
- Waterbody
- Rural Area
- Municipal Boundaries

SCALE 1:50,000

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MAP DRAWING INFORMATION:
DATA PROVIDED BY CITY OF BURLINGTON 2020, MNRF 2020, ALTA 2021

MAP CREATED BY: GAM
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MAP PROJECTION: NAD 1983 UTM Zone 17N

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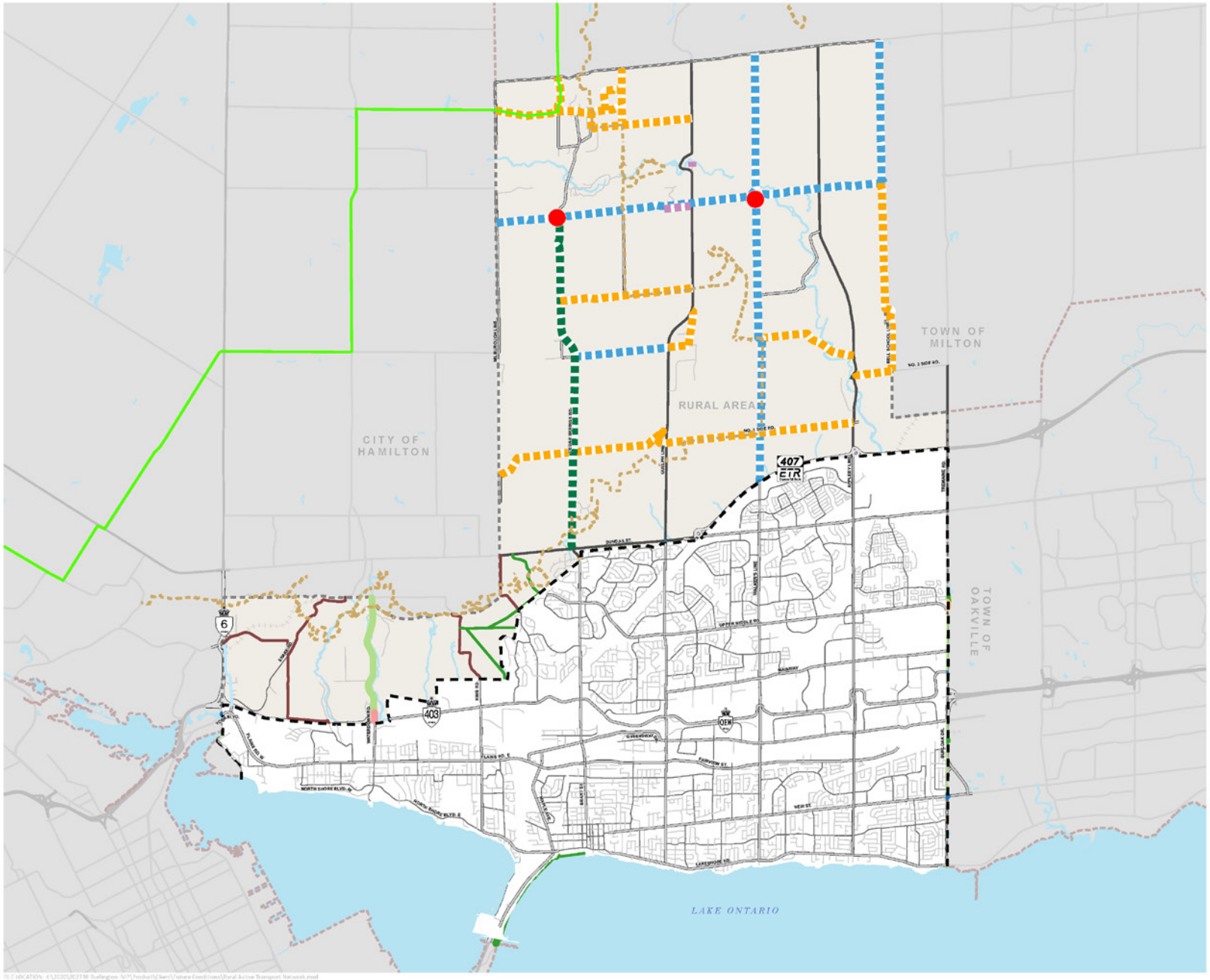
DATE: 2023-06-09

Figure 6-3: Rural Active Transportation Network



CITY OF BURLINGTON

BURLINGTON INTEGRATED MOBILITY PLAN

RURAL ACTIVE TRANSPORTATION NETWORK

Proposed Rural Active Transportation Improvements
- Spot Improvement
- Multi-Use Path
- Paved Shoulders
- Sidewalk
- Speed Management Measure

Proposed Spine Network
- Multi-Use Path
- Highway Interchange Crossing

Proposed Connector Network
- Multi-Use Trail
- Painted Buffered Bike Lane
- Paved Shoulder

Existing Features
- Bruce Trail
- Greenbelt Cycling Route

Base Mapping
- Provincial Highway / Freeway
- Regional Road / Major Arterial
- Arterial
- Collector
- Local
- Rail Line
- City of Burlington
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- Waterbody
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6.2.3 Transit

To increase transit mode share from 3% to 15% by 2051 as identified by Mode Share Profile (12% for local trips and 20% for inter-municipal trips), Burlington needs to continue to enhance local transit service and emphasize high-quality connections to GO Transit and adjacent municipalities. Building local transit includes investing in direct high-frequency transit routes and exploring opportunities for transit priority and Bus Rapid Transit.

There are several agencies involved in delivering transit in Burlington; the IMP transit plan integrates and builds on the key network elements of the governing strategies for each of them:

Metrolinx	• Regional Express Rail will be implemented on the Lakeshore West GO line, bringing 2-way all-day 15 minute service to the line • Dundas Street West is currently undergoing a detailed design study to implement Bus Rapid Transit lanes
Halton Region	• Transit Priority corridors are proposed for a number of road corridors through the 2018 Defining Major Transit Requirement Study
City of Burlington	• Frequent Transit corridors are identified in the 2020 Burlington Official Plan (OP Schedule B-2)

Additional key transit corridors were identified considering the transit mode share targets, the IMP goals for an Accessible and Balanced transportation system.

Figure 6-4 and **Figure 6-5** present the ideal network plan for transit. **Figure 6-4** shows the Growth Framework and Long-Term Frequent Transit Corridors (Schedule B-2 of the 2020 City of Burlington Official Plan) and **Figure 6-5** shows the Transit Infrastructure Network.

The City will stage the implementation of the transit infrastructure network, with progressively more dedicated elements constructed only when and if the need for them emerges, according to the following guidelines:

- **Stage 1:** Increase frequency of service and/or optimize performance for all routes on the Transit Infrastructure Network
- **Stage 2:** Implement transit priority measures where buses continue to experience significant delays (more than five minutes late), even with Stage 1 implemented. Transit Priority Measures are subject to appropriate environmental assessment studies.
- **Stage 3:** Convert general traffic lanes to dedicated transit lanes (either at peak times or all-day) on existing four-lane streets and/or widen existing two-lane streets to four lanes to create dedicated transit lanes where delay and ridership warrants. Lane conversions and widenings are subject to relevant technical and environmental assessment studies.

Figure 6-4: Growth Framework and Long-Term Frequent Transit Corridors

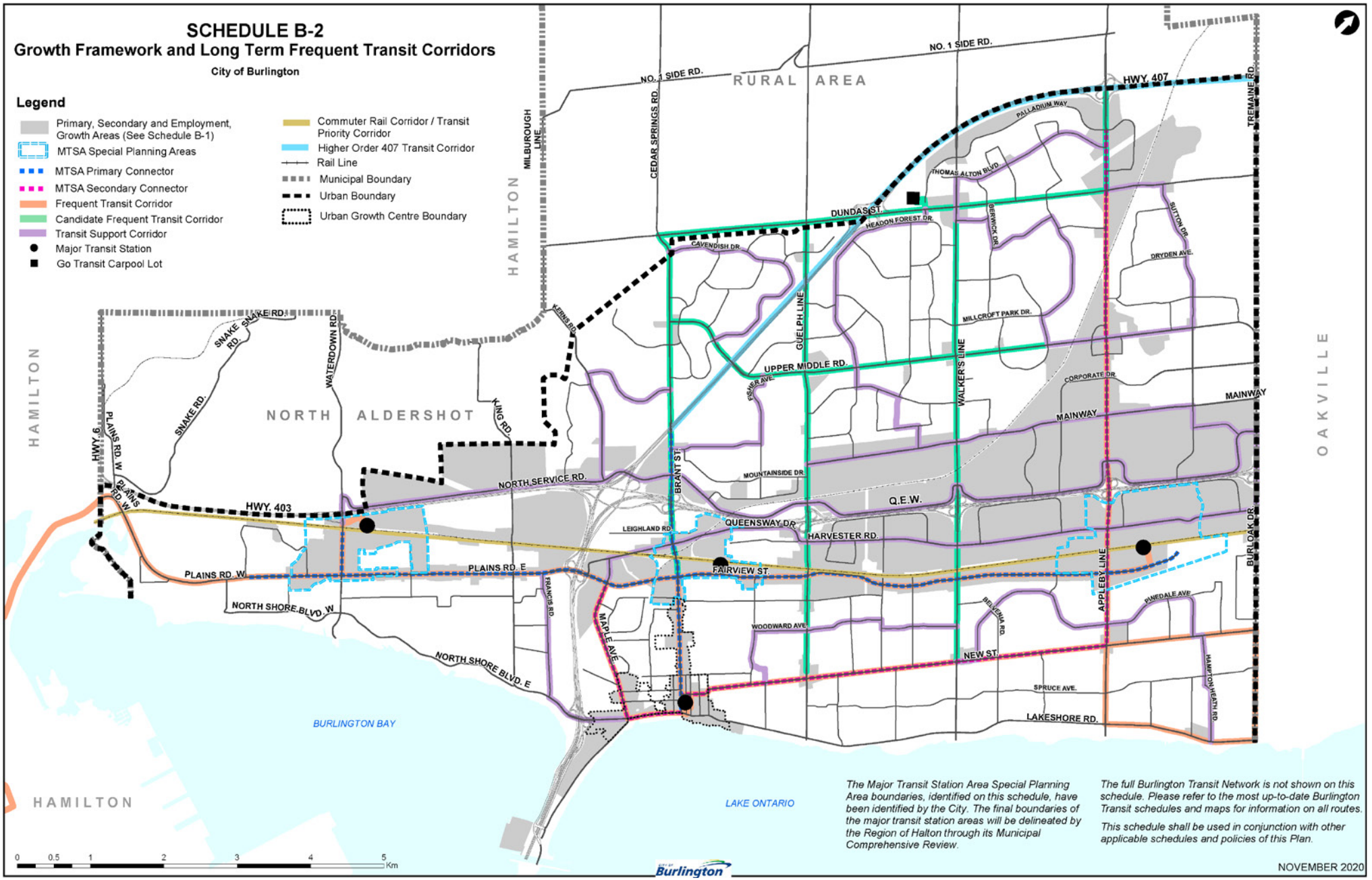
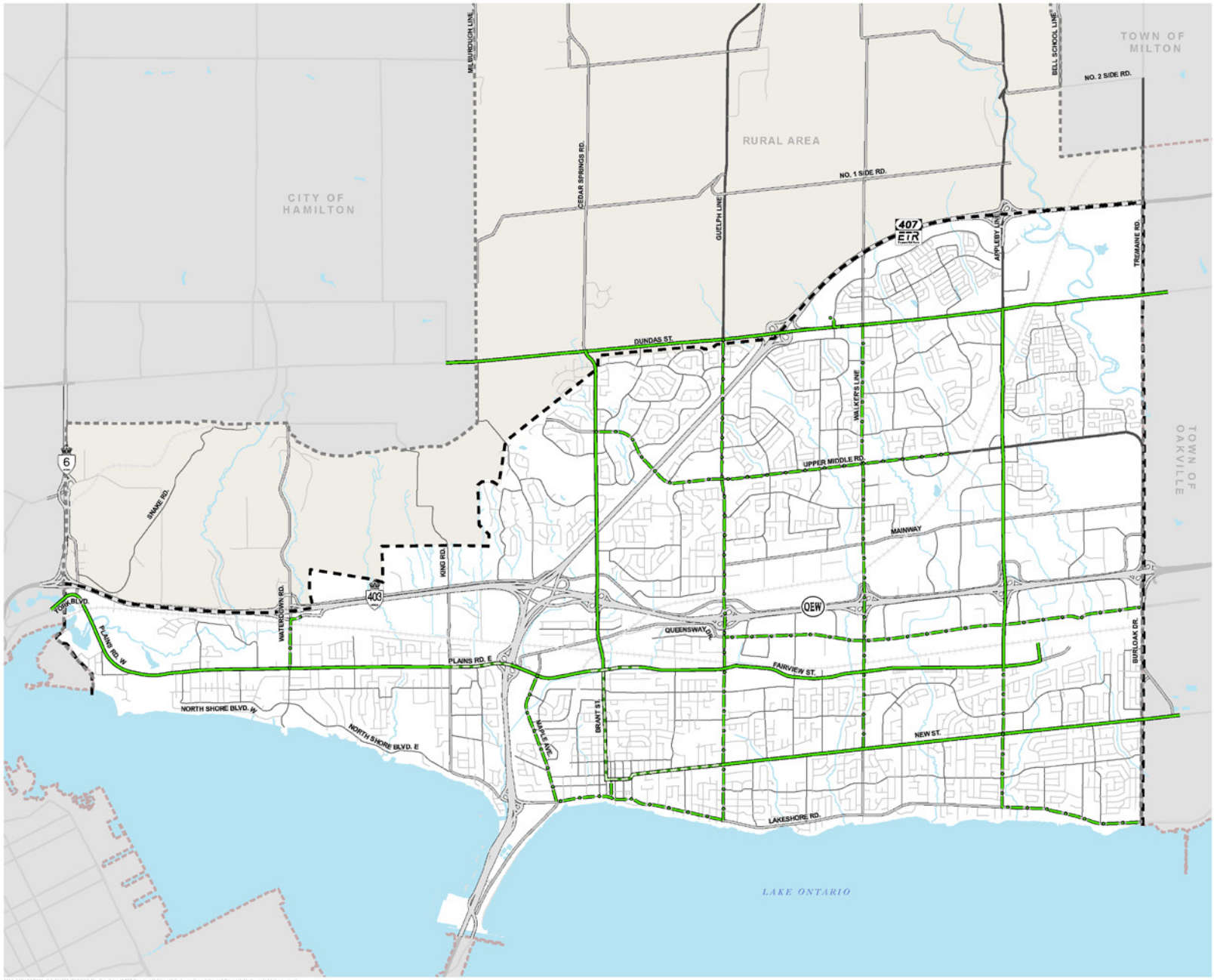


Figure 6-5: Transit Infrastructure Network



CITY OF BURLINGTON

BURLINGTON INTEGRATED MOBILITY PLAN

TRANSIT INFRASTUCTURE NETWORK

- Bus Rapid Tranist with Dedicated Lanes
- Bus Rapid Transit with Optimized Performance
- Transit Priority Corridor

Base Mapping

- Provincial Highway / Freeway
- Regional Road / Major Arterial
- Arterial
- Collector
- Local
- Rail Line
- City of Burlington
- Urban Boundary
- Major Creeks
- Waterbody
- Rural Area
- Municipal Boundaries

0 0.5 1 2 km

MAP DRAWING INFORMATION:
DATA PROVIDED BY CITY OF BURLINGTON 2020, MNRF 2020

MAP CREATED BY: GAM
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PROJECT: 202738
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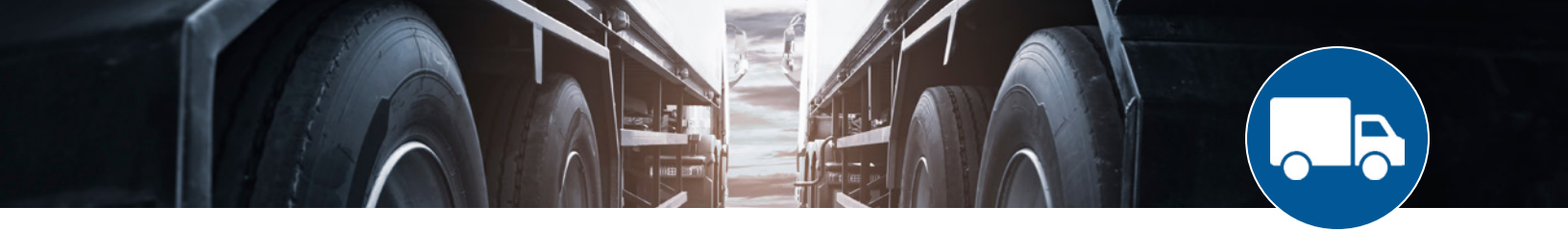
DATE: 2022-12-06



6.2.4 Trucks

The Goods Movement Network coordinates with the Region's strategic goods movement network and neighbouring jurisdictions to ensure that the City's network provides access from the provincial network (i.e., provincial highways).

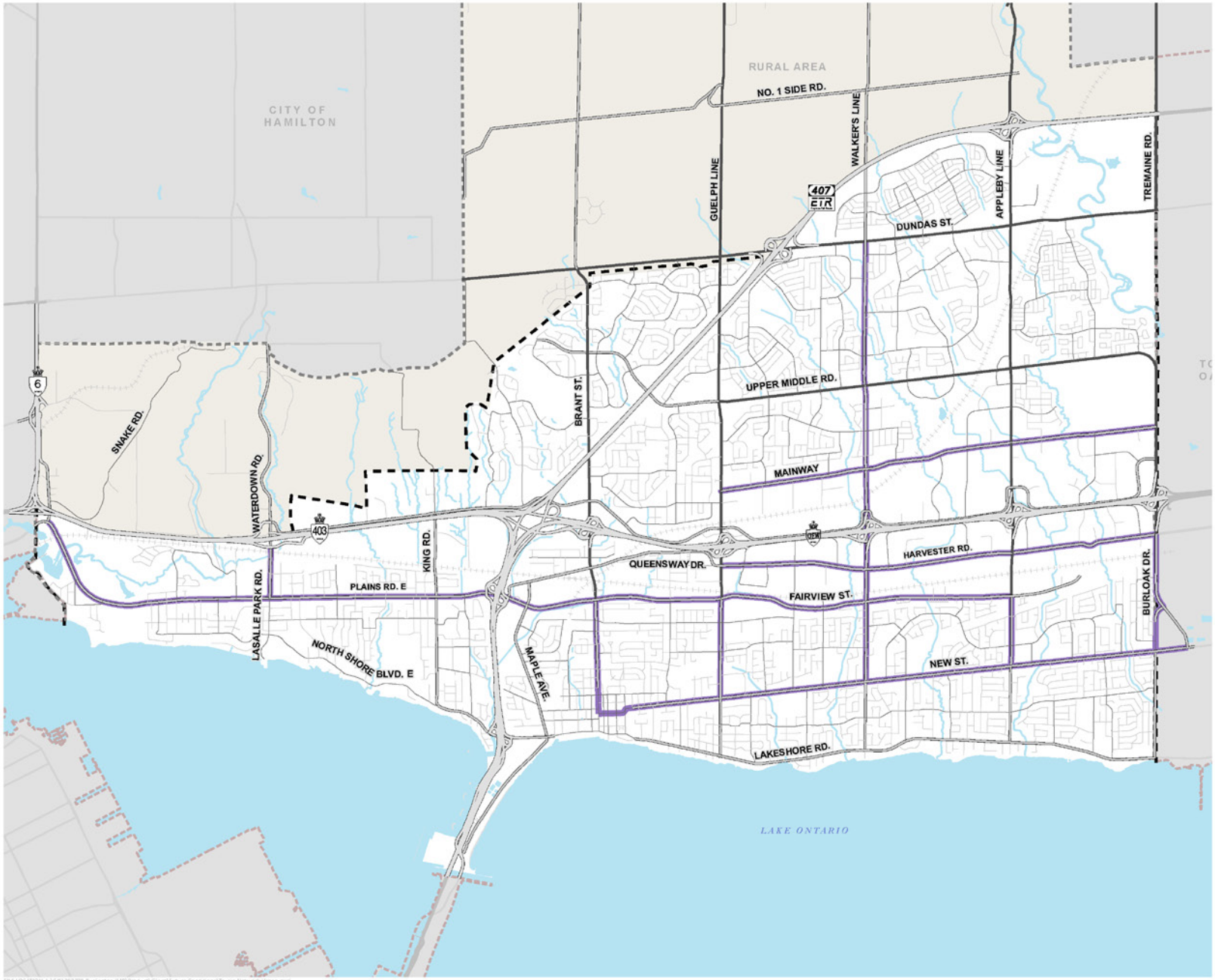
The City's Goods Movement Network also includes any roads that go through lands outlined in Schedule B of the Official Plan, Comprehensive Land Use Plan – Urban Planning Area that are identified as:

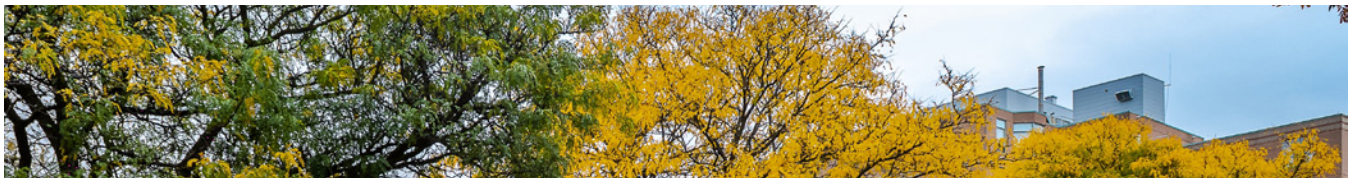
- General Employment;
- Business Corridor;
- Employment Commercial; and
- Regional Commercial.

Additional key routes that provide access to these areas were included.

Figure 6-6 presents the ideal network plan for trucks/ goods movement.

Figure 6-6: Truck Priority Network





6.3 Integrating the Networks

The last stage of defining the integrated IMP network, involved screening the recommended networks for their operational compatibility, feasibility, conflicts, access, and balance.

6.3.1 Operations

The screening process started by looking at potential operational impacts of implementing dedicated transit lanes on all Transit Infrastructure Network corridors by the end of the 2051 horizon. Transit infrastructure was limited to transit priority features and only implemented in areas where strategic transportation model projected high traffic congestion during peak hours (V/C ratio above 1.2).

6.3.2 Feasibility

The second component considered the feasibility of implementing a cross-section with the ideal active transportation elements for the street/road segment within the City of Burlington's designated width. The screening test took into account the following:

- Cycling spine routes as per the Cycling Plan;
- Street/road classifications specified in the 2020 Burlington Official Plan;
- Typical complete street cross-sections sourced from other local municipal TMP's; and
- The Deemed Width, as obtained from the Official Plan.

Also, corridors were sorted into two categories:

- Bike facilities can be implemented as conceived if Deemed Width > Cross-section ROW; or
- Corridors tagged as "Needs a Corridor Review" if Deemed Width < Cross-section ROW.

6.3.3 Conflicts

The third screening test looked for conflicts between the truck network and the cycling network. Dedicated, separated cycling facilities were established as the required cycling treatment in corridors on the truck priority network to improve safety for all users.

6.3.4 Access

The fourth component of the screening process for the recommended network involved identifying areas that required new multimodal corridors to facilitate access to key growth or intensification areas. Consequently, four new corridors were identified:

South Service Road Extension (Aldershot GO Station to King Road)

The proposed South Service Road extension from Aldershot GO Station and King Road, just south of Highway 403, is required to facilitate the development of a 49-hectare parcel of land (1200 King Road) that proposes various employment and commercial uses. In addition to serving the development, the proposed multimodal corridor will enhance the overall transportation system. By providing an additional access point to Aldershot GO Station, the project will reduce traffic on Waterdown Road (between North Service Road and Plains Road) and Plains Road (between Waterdown Road and King Road), as commuters accessing the GO station from the east will be able to use the new and more direct South Service Road extension. Furthermore, the project will establish an additional active transportation and transit link to Aldershot GO Station, offering more route options for transit and providing cyclists with a safer route to and from the station, bypassing the Waterdown Road/Highway 403 interchange.

It should be mentioned that the City has identified various significant natural environmental obstacles in the area surrounding the proposed route for the South Service Road Extension. Therefore, the project would require a future Environmental Assessment study.

Cumberland Avenue Extension (Harvester Road to Mainway)

The proposed extension of Cumberland Avenue, stretching from Harvester Road to Mainway (Guelph Line to Walkers Line), offers numerous advantages to the transportation system. Specifically, it:

- Provides an additional multimodal crossing of the QEW, thereby unlocking the employment lands that are situated between Guelph Line and Walkers Line;
- Offers alternative routes to the Guelph Line/QEW and Walkers Line/QEW interchanges;
- Provides an additional active transportation link across the QEW, which avoids the need to use the Guelph Line/QEW or Walkers Line/QEW interchanges; and
- Offers a new transit link across the QEW that reduces deadhead and provides more flexibility for Burlington Transit, which is located at 3332 Harvester Road.

Due to a number of identified property constraints that need to be addressed, the proposed extension would be subject to an Environmental Assessment study in the future.

North-South Link east of Appleby Line (Fairview Street to Harvester Road)

The proposed new North-South link, located east of Appleby Line, from Fairview Street and Harvester Road, replaces the previous extension of Fairview Street that went through Sherwood Forest Park. This new link is required to facilitate the future development of the Appleby GO MTSA. It offers many benefits to the transportation system as a whole by providing an additional crossing of the GO rail corridor.

The additional multimodal crossing of the GO rail corridor will provide more flexibility for individuals accessing the area by offering additional route choices. This will help to distribute auto demands more evenly, ultimately reducing peak period auto demands through the Appleby Line/Harvester Road and Appleby Line/Fairview Street intersections.

Furthermore, this new link will provide an additional active transportation and transit link across the GO rail corridor. This will provide additional transit route flexibility and offer cyclists a safer option to cross the GO rail corridor without having to travel on Appleby Line.

Considering that the City has identified a number of property constraints that need to be addressed, the proposed extension would be subject to an Environmental Assessment study in the future.

North-South Link east of Brant Street (Fairview Street to Plains Road)

The proposed new North-South link, located east of Brant Street, from Fairview Street to Plains Road is required to facilitate the future development of the Burlington GO MTSA. It offers many benefits to the transportation system as a whole by providing an additional crossing of the GO rail corridor.

The additional multimodal crossing of the GO rail corridor will provide more flexibility for individuals accessing the area by offering additional automobile route choices. This will help to distribute auto demands more evenly, ultimately reducing peak period auto demands through the Brant Street/Plains Road and Brant Street /Fairview Street intersections.

Furthermore, this multimodal corridor connection will also benefit the overall transportation system by providing an additional Active Transportation and Transit link across the GO Rail line and directly to the Burlington GO Station, thus providing additional route flexibility for transit and cyclists.

Considering that the City has identified a number of property and physical constraints that need to be addressed, the proposed extension would be subject to an Environmental Assessment study in the future.

6.3.5 Balance

The final component of the screening process involved analyzing the corridors that were part of the mode priority networks to determine which ones require functional design studies. These studies will investigate strategies for rebalancing the right-of-way (ROW) in order to better accommodate various competing needs. Through this step, two corridors were identified:

Harvester Road (Guelph Line to Burloak Drive)

The current design and configuration of the Harvester Road corridor from Guelph Line to Burloak Drive do not align with its role and function, and as such, it needs to be rebalanced. The Harvester Road corridor is classified as an Industrial Collector that is primarily dominated by autos (including heavy trucks). However, due to its commercial/industrial nature, the corridor is home to a significant number lower-wage jobs that require lower-cost transportation options for travel to/from work.

Currently, the corridor is congested during the peak periods and lacks adequate active transportation facilities which are necessary to facilitate trips being made by bicycle and first/last mile transit trips. The proposed Harvester Road rebalancing would be subject to a future Environmental Assessment study as it is likely to require a number of operational and infrastructure improvements.

Maple Avenue (Fairview Street to Lakeshore Road)

The Maple Avenue corridor from Fairview Street to Lakeshore Road needs to be rebalanced as its current design/configuration does not match the role and function of the corridor. The Maple Avenue corridor is classified as an Urban Avenue that is a Mobility Hub and Urban Growth Centre connector.

Due to its five-lane cross section (and resulting excess auto capacity), the corridor experiences predominantly auto-centric travel that often travels at high rates of speed. The corridor lacks adequate active transportation facilities which are necessary to facilitate trips being made by bicycle and first/last mile transit trips.

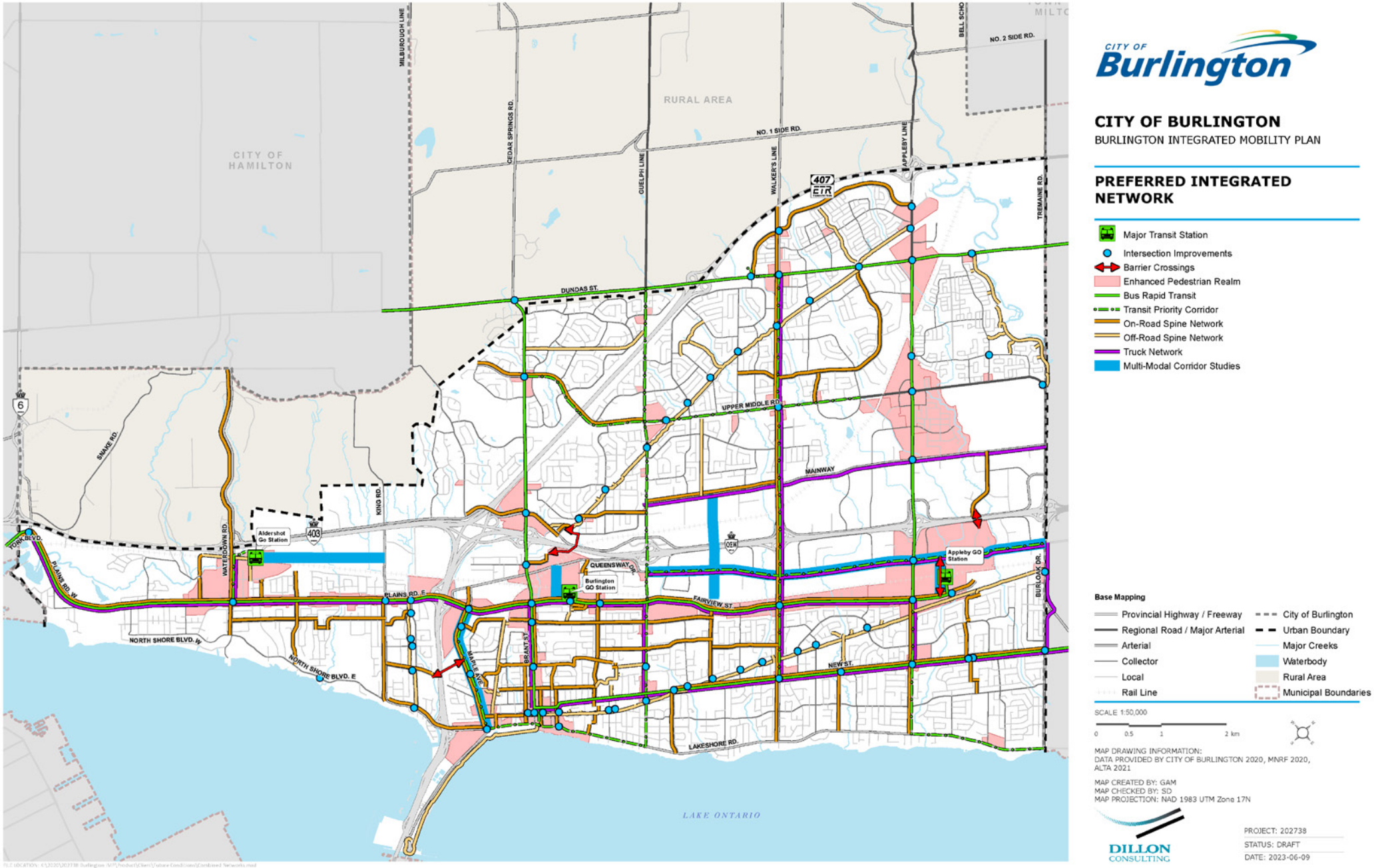
As it is likely auto capacity will be removed in favour of capacity for active modes, the proposed Maple

Avenue rebalancing would be subject to a future Environmental Assessment study.

6.4 Preferred Integrated Network

Figure 6-7 shows the preferred integrated network.

Figure 6-7: Preferred Integrated Network



7.0 Policies

The policy framework is a collection of directions, positions, procedures, and documents that establish the actions the Burlington will take to achieve the IMP objectives. They are standards that outline how staff will make decisions on a day-to-day basis.

The IMP has identified policies for each mode of transportation (pedestrian, cycling, transit, and goods movement) and integrated planning. An introduction to the policies for each mode is provided in this chapter. A comprehensive list of the IMP policies can be found in **Appendix A**.

7.1 Walking / Pedestrian

Everyone is a pedestrian at some point in their trip, if only between their bus stop or parking place and their front door. This makes walking or using a mobility device a critical activity, both as a stand-alone mode and as a connection to other modes of transportation. In 2016, the City-wide mode share for walking was 5.3%. The IMP sets the walking mode share target at 9.0% by 2051. Achieving this target will require improvements to pedestrian facilities and environments across the city.

Burlington's pedestrian network consists of sidewalks, multi-use pathways and paved shoulders within road rights-of-way and multi-use pathways and trails in dedicated corridors. The network features a Pedestrian Priority Network (PPN), defined as a network of wide sidewalks and high-quality walking environments in areas of highest pedestrian activity in the city. This includes all of the Downtown, the intensification corridors and the intensification mixed-use nodes.

The City will maintain a Pedestrian Master Plan that:

1. Identifies an implementation strategy for a complete and connected pedestrian network;
2. Identifies policies to build a walkable environment; and
3. Identifies programs and policies that improve pedestrian safety and promote walking.

7.1.1 Policy Directions

The key IMP policy directions for pedestrians are to:

- Create a complete and connected pedestrian network, including establishing dedicated rights-of-way or connections on private property through agreements with landowners;
- Enhance the pedestrian level of service (experience);
- Build a walkable environment; and
- Improve pedestrian safety and promotion.

7.1.2 Key Actions

The key IMP actions most strongly aligned to pedestrians are to:

- prepare and maintain a Pedestrian Master Plan;
- review winter maintenance standards for pedestrian facilities;
- prepare a Pedestrian Priority Network Design Manual;
- work with public and private sector partners to improve safety for pedestrians and promote walking; and
- Create a Pedestrian Infrastructure Assessment Guideline for Renewal and Reconstruction Projects.

7.2 Cycling

Cycling is a popular activity in Burlington that has numerous benefits for both riders and the community which leads to a better quality of life for residents. Its infrastructure can be used by both bikes and micro-mobility devices, such as e-scooters, e-bikes, and skateboards. Building capacity for cycling supports cycling and micro-mobility as practical modes of transportation and recreation throughout the city, thus this chapter references and contains policies for both types of mobility.

In 2016, the City-wide mode share for cycling was 1%. The IMP sets a cycling mode share target of 6% by 2051. Rebalancing the mode share will reduce pressure on the road network. Achieving this mode share will require improvements to the off-road and on-road cycling facilities across Burlington.

The City maintains a Cycling Plan and a Rural Active Transportation Plan that:

1. Identifies an implementation strategy for a complete and connected cycling network;
2. Identifies policies to build an attractive environment for cycling; and
3. Identifies programs and policies that improve cyclist safety and promote cycling.

7.2.1 Policy Directions

The key IMP policy directions for cyclists are to:

- Create a complete and connected cycling network, including establishing dedicated rights-of-way or connections on private property through agreements with landowners;
- Enhance the cyclist level of service (experience);
- Build a cycling network that attracts new cyclists and broadens the community of cyclists in Burlington;
- Explore micro-mobility and support its expansion where practical;
- Create attractive connections to transit;
- Create attractive trip-end facilities; and
- Improve safety and promote cycling.

7.2.2 Key Actions

The key IMP actions most strongly aligned to cycling are to:

- maintain a Cycling Plan and a Rural Active Transportation Plan;
- undertake a Rapid Deployment Study for the Spine Network to identify a connected network of facilities that can be implemented quickly without significant impact on the operation of the street network;
- review winter maintenance standards for cycling facilities and identify a Winter Cycling Network;
- update the Traffic By-law, as necessary, to include accommodation for micro-mobility devices;
- develop a guideline for marshalling, storing, parking and/or charging micro-mobility devices at strategic locations around Burlington;
- review the Zoning By-law and update minimum provisions for on-site bicycle parking and storage for bicycles and other micro-mobility devices for new developments; and
- work with public and private sector partners to improve safety for cyclists and promote cycling.

7.3 Transit

The Burlington Official Plan indicates that the City's transportation system will be planned and managed to offer a balance of transportation choices that reduce reliance upon any single mode, and promote transit, as well as cycling and walking. The 2016 City-wide mode share for transit was 3%. The City of Burlington is targeting to increase transit mode share to 15% by 2051. Rebalancing the mode share will require the City to make transit more attractive than automobile use for an even greater number of residents. Ongoing efforts to improve the availability, reliability, speed, accessibility and comfort of transit service will improve the transit user experience and make transit a more viable transportation choice.

The City maintains a Five-Year Transit Business Plan that:

1. Prepares the five year transit strategies, projects and activities which align to the long term objectives of the IMP;
2. Addresses the five year growth projections for ridership and the service requirements to accommodate growth, including innovating on how services are planned and delivered;
3. Identifies the fleet, human resources and infrastructure requirements to support the plan;
4. Identifies capital and operating costs and associated funding requirements for transit; and
5. Aligns with other corporate, regional and provincial plans.

7.3.1 Policy Directions

The key IMP policy directions for transit are:

- Build and maintain the Frequent Transit Network (FTN) to provide 15-minute service or better;
- Stage the implementation of supporting infrastructure elements for the FTN when and if the need emerges;
- Enhance the transit passenger level of service;
- Explore on-demand transit and consider expansion of the program to rural areas;
- Increase cross boundary transit trips; and
- Promote transit.

7.3.2 Key Actions

The key IMP actions most strongly aligned to transit are to:

- maintain a Five-Year Transit Business Plan;
- monitor ridership and performance metrics in all FTN corridors;
- initiate the required planning and design studies for Stage 2 network modifications when conditions demonstrate they are needed;
- collaborate with Halton Region and Metrolinx to ensure that the delivery of partner agency infrastructure projects;
- expand first and last mile choices at all transit stations;
- implement an equity lens into regular transit service reviews;
- establish a design guideline and prioritize improvements for passenger amenities at stops on the FTN corridors; and
- explore on-demand alternative service delivery strategies to connect GO Rail service to all areas of Burlington.

7.4 Goods Movement

The City recognizes the importance of safe and efficient movement of goods to Burlington's economic livelihood and regional competitiveness. Burlington's goods movement policies consider the connection of Burlington's industries and businesses to the surrounding region and the overall North American freight movement system to facilitate the safe and efficient movement of raw materials and finished products. They also consider the operation of trucks and trains on the Burlington transportation system; looking to offset negative impacts of heavy vehicles on other modes while allowing for the safe delivery and pick up of materials.

The City will maintain a Goods Movement Plan that:

1. Identifies an implementation strategy for a complete and connected goods movement network, primarily centered around trucking; and
2. Identifies policies to build a safe and efficient truck network.

7.4.1 Policy Directions

The key IMP policy directions for goods movement are to:

- Build and maintain a quality goods movement network;
- Enhance efficient goods movement with trucks; and
- Enable efficient goods movement with rail.

7.5 Integrated Planning

The 2016 City-wide mode share for cars is 90.7%. The City of Burlington is targeting to decrease car mode share to 70% by 2051. Adjusting the mode share through various tools and strategies will help manage congestion pressure on the road network and improve equity, accessibility, and quality of life for Burlington residents. The following sections provide some of those tools and strategies.

7.5.1 Policy Directions

The key IMP policy directions for integrated transportation planning are to:

- Build a sustainable and integrated road network;
- Actively manage mode share;
- Protect new and established neighbourhoods from undesirable road impacts;
- Maximize road safety for all users;
- Prioritize reduction of energy consumption and environmental impacts;
- Enhance city parking facilities and services;
- Manage congestion;
- Plan for strategic road projects;
- Improve the monitoring and reporting process; and
- Align existing and future tools and plans with the IMP vision.

7.5.2 Key Actions

The key IMP actions most strongly aligned to integrated network planning and design are to:

- undertake functional design and planning studies of the three new Active Transportation bridges; the four new multimodal street corridors and the two key corridors flagged for design review;
- develop a flex zone/curbside use prioritization guideline;
- adopt Multimodal Level of Service Guidelines;
- prepare Transportation Impact Study (TIS) and Transportation Demand Management Guidelines;
- develop a Complete Streets Design Guide;
- adopt a Vision Zero approach to transportation system planning, operations and design;
- implement a Community Road Safety Strategy;
- review and update the Electric Mobility Strategy for Burlington at regular intervals;
- consider greenhouse gas (GHG) emissions during the decision-making process, as it relates to transportation;
- prepare a Parking Master Plan;
- manage and deliver a data collection program to support monitoring of the transportation system; and
- prepare a scorecard tool to improve the monitoring and reporting process and to support decision making, evaluation and prioritization of the IMP.

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8.0 Programs

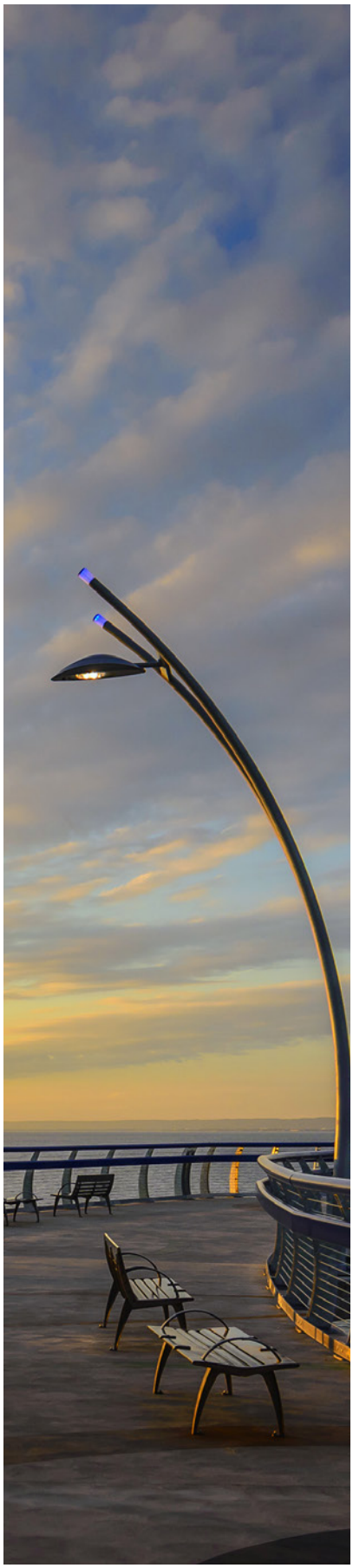
Programs are a collection of actions and smaller projects that are organized around a common objective that support the city's pursuit of the IMP goals. The IMP has identified six key programs. An introduction to each program is provided in this chapter. The comprehensive IMP programs can be found in **Appendix A**.

8.1 Strategic Transportation Planning Program

Strategic Transportation Planning is the process of designing the transportation network, facilities, and services to align with the Vision and Goals of the IMP. Strategic Transportation Planning requires a strong understanding of social and economic aspects that impact how, when, and why people move.

An enhancement of Burlington's existing Transportation Planning Program is proposed. The program's mandate/ key responsibilities include:

- Develop/ maintain integrated strategies and network plans for all modes;
- Develop/ align network planning and design guidelines and policies;
- Monitor and report on progress towards IMP Vision and Objectives; and
- Partner with other departments and external agencies to manage strategic transportation planning issues.



The program's mandate/ key responsibilities could include the following actions:

Develop/maintain integrated strategies and network plans for all modes

- Periodically review and update all mode plans and the IMP to ensure alignment with City of Burlington Transportation Vision and Goals.
- Prepare a Pedestrian Plan that includes a pedestrian charter.
- Prepare a comprehensive Goods Movement Strategy.
- Prepare a Winter Cycling Network and Strategy.
- Lead Environmental Assessment and Functional Design studies required to implement the IMP and rebalance the allocation of street right-of-way and improve safety for vulnerable road users.
- Maintain the City's Strategic Travel Demand Model.

Develop/align network planning and design guidelines and policies

- Prepare and/or update a number of strategic guidelines to align with the Transportation Goals and support the implementation of the IMP policies, including:
  - Multimodal Level of Service Guidelines;
  - Complete Streets Design Guidelines;
  - Flex Zone Management Guidelines; and
  - Transportation Impact Assessment Guidelines.
- Prepare Guidelines for identifying and prioritizing stand-alone pedestrian and cycling projects to further the implementation of the Preferred Transportation Network and improve safety for all travelers, particularly vulnerable road users.
- Prepare Transportation Equity Guidelines for Burlington to guide planning, operations and design activities.
- Develop an IMP Dashboard based on the IMP Key Performance Indicators (KPI) for reporting and tracking progress on IMP objectives.

Monitor and report on progress towards IMP Vision and Objectives

- Develop and implement a strategic data collection program that includes big data to support the dashboard.
- Continue to be the City's Centre of Excellence for transportation planning.

Partner with other departments and external agencies to manage strategic transportation planning issues and review development applications

- Provide input into city policies such as master plans, Official Plan amendments, zoning by-law, and secondary plans to support the goals of the IMP.
- Review development applications to ensure compatibility with the adjacent street network, active transportation network, safety regulations and design guidelines.

8.2 Transportation Demand Management (TDM) Program

Transportation Demand Management (TDM) is a term used to describe a suite of initiatives that aims to reduce traffic, particularly in the commuter peak hours. TDM could include education, marketing and outreach to improve the overall efficiency of the transportation network and influence how, when, and where people travel. These types of initiatives are relatively low-cost and can have a substantial impact on demand. TDM can also apply to developments. Requiring new developments to include elements like bike parking, showers, car-sharing spaces, transit stop amenities, and more in new developments can make sustainable transportation options more attractive and convenient for people living or working there. An effective TDM program can reduce congestion and shift more trips to sustainable options like walking, cycling, and taking the bus.

Creation of a city-wide TDM Program is proposed for Burlington. The program's mandate / key responsibilities include:

- Developing measures and tools to manage demand for travel for all transportation modes, targeting factors like cost, convenience, and all factors that affect mode choice.

The program's mandate / key responsibilities could include the following actions:

- Prepare and maintain a TDM Strategy and Action Plan for Burlington.
- Prepare a micro-mobility plan/ strategy that is linked to the Complete Streets Design Guide and connected to Traffic By-laws.
- Form partnerships and support community collaborations.

8.3 Strategic Parking Management Program

Strategic Parking Management refers to a set of tools and strategies that can be used to improve the effectiveness of parking in a city and align supply and pricing with the city's strategic transportation objectives. Optimizing parking management can reduce environmental nuisances and traffic volume, shift the modal split to more sustainable modes, and diminish mobility costs and stress for users.

A new Strategic Parking Management Program is proposed for Burlington. The program's mandate will include the following action:

- Develop measures and tools to manage parking supply for all modes.

The program's mandate / key responsibilities could include the following actions:

- Review on-street and off-street parking locations and supply to ensure the city-wide parking system is in alignment with the goals and objectives of this plan.
- Maintain and update the traffic, parking and zoning bylaws.
- Develop the city's first Downtown Parking Master Plan.
- Consider public-private partnerships to expand the parking supply.
- Assess parking enforcement strategies and efforts.
- Develop a city-wide parking plan for non-auto modes to support the targeted shift in mode share.
- Develop a flex zone/curbside use prioritization guideline.

8.4 Active Transportation (AT) Program

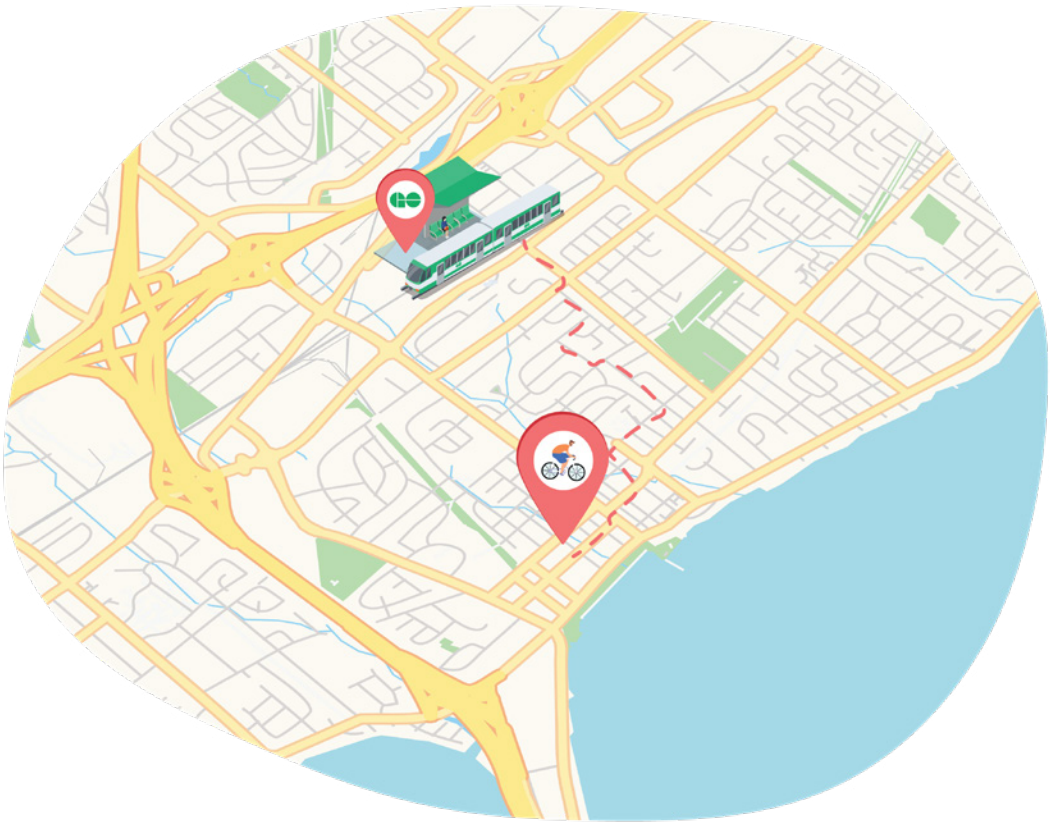
Active Transportation requires a person to move themselves to a destination through non-motorized means. Examples of active transportation include, walking, cycling, scootering, and rollerblading. By definition, Active Transportation also includes electric-powered bicycles, e-scooters and other micro-mobility devices that require human power to move them.

An enhanced Active Transportation Program is proposed for Burlington. The program's mandate will include the following action:

- Designs and implements Active Transportation (AT) projects (retrofit, connector network, connections to transit stops) outside of the pedestrian and cycling Priority Networks.

The program's mandate / key responsibilities could include the following actions:

- Increase connectivity through eliminating gaps within the active transportation network.
- Provide input into capital design projects to facilitate implementation of the active transportation networks recommended through the IMP.
- Monitor progress toward implementation of the Priority Networks.



8.5 Transportation Systems Management (TSM) Program

Transportation Systems Management (TSM) is a term used to describe a suite of operational initiatives aimed at aligning the transportation network with the City's long range mobility objectives. TSM includes measures such as transit signal priority at intersections, signal coordination and optimization, and use of dedicated lanes for high-occupancy vehicles.

An enhanced Transportation Systems Management Program is proposed for Burlington. The program's mandate will include the following action:

- Plans and implements measures to optimize vehicle flows in key corridors and at intersections.

The program's mandate / key responsibilities could include the following actions:

- Develop a TSM Strategy and Action Plan that considers traffic flow optimization, access management, transit signal priority, intelligent transportation systems and smart signals, and enhanced data collection.
- Implement traffic flow improvements on key arterial corridors.
- Prepare strategies to manage traffic spillover from events on Provincial facilities.
- Implement adaptive traffic signal control.
- Create a centralized traffic management centre.
- Prepare, manage and maintain a traffic signals management plan.
- Prepare an Intelligent Transportation Systems strategy.
- Stay informed and assess feasibility of implementation of new and emerging technologies.
- Design and deliver a data collection program that supports operational analysis.
- Continue to be the city's Centre of Excellence for traffic operations; collaborate with others to implement measures aimed at rebalancing the transportation network and reducing emissions from transportation sources.

8.6 Vision Zero Program

All road users are impacted by the safety of the transportation system. Vision Zero refers to the strategies, tools, and measures cities can use to prevent collisions resulting in injuries and deaths.

A new Vision Zero Program is proposed for Burlington. The program's mandate will include the following action:

- Develops, designs, recommends and implements measures to eliminate fatal and injury collisions and protect vulnerable road users to achieve Vision Zero.

The program's mandate / key responsibilities could include the following actions:

- Achieve Council-endorsement to formally adopt the Vision Zero approach to transportation safety.
- Increase efforts dedicated to proactive analysis and identification of problems.
- Review, create and update various transportation guidelines including but not limited to traffic calming, speed management, street and trail lighting.
- Develop metrics, mapping tools, dashboards and reports that measure safety performance and assist with analysis.
- Review, develop and pilot new and innovative street and intersection design with a focus on safety for all users.
- Review the applicability and implementation of automated enforcement tools.
- Become the Centre of Excellence for Vision Zero.

9.0 Action Plan for Rural Burlington

Rural Burlington makes up approximately 46 per cent of our city by area. Though Rural Burlington is not expected to experience significant growth by 2051, the City is committed to maintaining the area's rural character and a large portion of the rural area is protected natural heritage. Rural Burlington will continue to make up a significant portion of the city's land area by 2051.

The rural area of Burlington is home to preserved natural areas, agriculture, and a number of Burlington residents. For those living in Rural Burlington, the nature of the rural area means that many destinations – such as retail, services, schools, employment, or even the homes of friends and family – are located far away from each other and often too far to walk, roll, or cycle.

Traditional public transit models also often don't work in the rural context because of the spread-out nature of homes, lower densities, and lower overall populations. This makes driving the only available and reasonable mobility option for most people.

Rural roads are also designed differently than streets in urban areas – they don't have sidewalks, they typically have higher speed limits, they often only have two lanes (one in each direction), and they may not all be paved (since they tend to carry fewer vehicles each day). But just like residents of the urban area, rural area residents also seek opportunities to walk, roll or cycle for recreation or to visit their neighbours.

The IMP includes a number of network, program and policy actions to improve rural mobility. These actions are already included in the network, program and policy recommendations summarized in Chapters 5, 6 and 7, but they are highlighted here again for easy reference.

9.1 Networks

The Burlington Rural Active Transportation (AT) Plan provides a framework for how the City can support people accessing and moving through the rural area by walking and cycling. The Covid-19 pandemic saw more people than ever looking for opportunities to explore the areas around them, and a bike boom where people are cycling more and more. Improving access for people using active transportation will help to reduce dependence on cars, providing a more equitable transportation system.

The plan considers the different types of users who use active transportation in the rural area, including people of all ages and abilities as well as recreational users, to develop recommendations to suit both kinds of users. This will enable new opportunities for people who may not currently feel safe or comfortable to access the rural area. It will also support and improve conditions for the people who are already using the area.

This section is organized by transportation facility types in rural Burlington – multi-use path, paved shoulders, sidewalks, traffic calming and other measures, and intersection improvements.

9.1.1 Multi-use Path

Multi-use paths are two-way facilities that are physically separated from, but directly beside the roadway. They are for pedestrians, cyclists, and other nonmotorized low-speed users, and should be at least 3.0 metres wide. They are ideal for high-volume roads with medium-high speeds. In the recommended rural active transportation network, a multi-use path is proposed for Cedar Springs Road, which is the major spine that connects urban and rural Burlington.

9.1.2 Paved Shoulders

Paved shoulders are located to the right of the traffic lanes. Their width should range from 1.5 m to 3.0 metres (beyond the white edge line), depending on the speed limit and traffic volumes. A buffer strip should be provided between the vehicle lane and the shoulder to provide greater separation between users for roads with greater speed limits and traffic volumes. Paved shoulders can be used by cyclists (one-way) and pedestrians (two-way) alike. Paved shoulders are proposed for major recreational links, such as Britannia Road and Walker's Line.

9.1.3 Sidewalks

Sidewalks are intended for pedestrians and people using mobility aid devices and should have a minimum width of 1.8 metres. Sidewalks are recommended on roads with medium-high volumes of vehicles, where vehicle speeds exceed 30 km/h, or to provide a connection to a key destination. In the recommended rural active transportation network, sidewalks are proposed for certain roads in the hamlets of Kilbride and Lowville.

9.1.4 Traffic Calming and Other Speed Management Measures

Traffic calming is the term used to describe a range of measures to slow traffic on roads. Wider rural roads that are long and straight are common conditions where drivers feel more comfortable traveling at higher vehicle operating speeds. Measures need to go beyond lowering speed limits to design the road for the speeds that vehicles are expected to travel at. In rural areas the types of measures that might be used include a combination of:

- Pavement marking and signage
- Road narrowing
- Vertical and horizontal deflection
- Access restriction
- Enforcement and education

9.1.5 Intersection Improvements

These are specific locations where changes to the roadway can be made to make them safer or function better. In addition to these facility types, appropriate intersection improvements and other site-specific improvements should be made to provide a safer environment for active transportation users. In the recommended network, intersection improvements are proposed at Walker's Line and Britannia Road and Cedar Springs Road and Britannia Road.

The Rural AT Network is presented in **Figure 6-3**.

9.2 Policies

This section is organized by policy actions to improve rural mobility by mode of transportation (pedestrian, cycling, and transit) and integrated planning.

9.2.1 Walking

Key Actions

- prepare and maintain a Pedestrian Master Plan;
- review winter maintenance standards for pedestrian facilities; and
- work with public and private sector partners to improve safety for pedestrians and promote walking.

9.2.2 Cycling

Key Actions

- maintain a Cycling Plan and a Rural Active Transportation Plan;
- review winter maintenance standards for cycling facilities and identify a Winter Cycling Network;
- update the Traffic By-law, as necessary, to include accommodation for micro-mobility devices; and
- work with public and private sector partners to improve safety for cyclists and promote cycling.

9.2.3 Transit

Key Actions

- maintain a Five-Year Transit Business Plan;
- collaborate with Halton Region and Metrolinx to ensure that the delivery of partner agency infrastructure projects;
- expand first and last mile choices at all transit stations;
- implement an equity lens into regular transit service reviews; and
- explore on-demand alternative service delivery strategies to connect GO Rail service to all areas of Burlington.

9.2.4 Integrated Networks

Key Actions

- adopt Multimodal Level of Service Guidelines;
- prepare Transportation Impact Study (TIS) and Transportation Demand Management Guidelines;
- develop a Complete Streets Design Guide;
- adopt a Vision Zero approach to transportation system planning, operations and design;
- implement a Community Road Safety Strategy;
- consider greenhouse gas (GHG) emissions during the decision-making process, as it relates to transportation;
- manage and deliver a data collection program to support monitoring of the transportation system; and
- prepare a scorecard tool to improve the monitoring and reporting process and to support decision making, evaluation and prioritization of the IMP.

9.3 Programs

All recommended Programs serve rural Burlington.

10.0 Implementation

The IMP is a community-driven action plan for Burlington that aligns its transportation investments over the next 30 years with its community goals. The IMP is a combination of capital projects, active programs and progressive policies that together will make mobility in Burlington safe, accessible, sustainable, balanced and liveable.

This Chapter of the IMP outlines the recommended implementation strategy for the 30 year plan by discussing:

- Priorities, EA planning requirements and funding considerations for the capital projects;
- Short term actions required to drive the recommended programs; and
- Short term actions required to transform Burlington's transportation policies.

10.1 Capital Projects

A list of capital projects was identified based on the Preferred Integrated Network for Burlington (**Figure 6-7**). Roads / corridors were broken down in to multiple projects to align with changing conditions and/or to manage the projects size. **Table 10-1** and **Table 10-2** displays the IMP capital projects.

Table 10-1: IMP Capital Projects – Pre-Approved

Notes: * indicates a tie

Road Name	From	To	Project Type	Prioritization (Score/Rank)
Plains Road	York Boulevard	Daryl Drive	Protected Bikes, Bus Rapid Transit (BRT) Dedicated Lanes	7.7 / 47
Plains Road	Daryl Drive	Shadeland Avenue	Protected Bikes, Pedestrian Realm, BRT Dedicated Lanes	11.0 / 8*
Plains Road	Shadeland Avenue	King Road	Protected Bikes, Pedestrian Realm, BRT Dedicated Lanes	9.0 / 32*
Plains Road	King Road	QEW northbound Off Ramp/ Plains Road East	Protected Bikes, Pedestrian Realm, BRT Optimized	10.3 / 12
Fairview Street	QEW northbound Off Ramp / Plains Road East	Brant Street	Protected Bikes, Pedestrian Realm, BRT Dedicated Lanes / Optimized	11.1 / 6*
Fairview Street	Brant Street	Drury Lane	Protected Bikes, Pedestrian Realm, BRT Dedicated Lanes / Optimized	13.0 / 1*
Fairview Street	Drury Lane	Guelph Line	Protected Bikes, Pedestrian Realm, BRT Dedicated Lanes	13.0 / 1*
Fairview Street	Guelph Line	Walkers Line	Protected Bikes, Pedestrian Realm, BRT Dedicated Lanes	10.0 / 14*
Fairview Street	Walkers Line	Appleby Line	Protected Bikes, Pedestrian Realm, BRT Dedicated Lanes	10.0 / 14*
Fairview Street	Appleby Line	Road End	Protected Bikes, Pedestrian Realm, BRT Dedicated Lanes	7.6 / 48
James Street	Brant Street	Martha Street	Pedestrian Realm, BRT Optimized	10.0 / 14*
New Street	Martha Street	Guelph Line	Pedestrian Realm, BRT Optimized	9.0 / 32*

Road Name	From	To	Project Type	Prioritization (Score/Rank)
New Street	Guelph Line	Walkers Line	Protected bikes, Pedestrian Realm, BRT Dedicated Lanes	6.9 / 61
New Street	Walkers Line	Appleby Line	Protected bikes, Pedestrian Realm, BRT Dedicated Lanes	8.2 / 41
New Street	Appleby Line	Burloak Drive	Protected bikes, Pedestrian Realm, BRT Dedicated Lanes	9.1 / 30*
Lakeshore Road	825 m south of North Shore Boulevard East	North Shore Boulevard East	Pedestrian Realm	11.0 / 8*
North Shore Boulevard East	King Road	QEW northbound Off-Ramp	Protected bikes	5.9 / 73
North Shore Boulevard East	QEW northbound Off-Ramp	Maple Avenue/ Lakeshore Road	Protected bikes, Pedestrian Realm	13.0 / 1*
Lakeshore Road	Maple Avenue / Lakeshore Road	Brant Street	Buffered Bikes, Pedestrian Realm, Transit priority corridor	12.0 / 5
Lakeshore Road	Brant Street	Martha Street	Buffered Bikes, Transit priority corridor	10.0 / 14*
Lakeshore Road	Martha Street	Guelph Line	Sidewalks / Pedestrian Realm, Transit priority corridor	9.5 / 26*
Lakeshore Road	Appleby Line	Burloak Drive	Pedestrian Realm, Transit priority corridor	6.1 / 68
Harvester Road	Appleby Line	Burloak Drive	Buffered Bikes, Sidewalks / Pedestrian Realm, Transit priority corridor	8.5 / 40
Upper Middle Road	Havendale Boulevard	Brant Street	Protected bikes, Pedestrian Realm	5.3 / 75
Upper Middle Road	Brant Street	Guelph Line	Protected bikes, Pedestrian Realm, Transit priority corridor	6.0 / 69*
Waterdown Road	Mountain Brown Road	Highway 403 eastbound Off-Ramp	Multi-Use Path / Protected bikes, Sidewalks	6.7 / 62

Road Name	From	To	Project Type	Prioritization (Score/Rank)
Waterdown Road	Highway 403 eastbound Off-Ramp	Plains Road	Protected bikes, Sidewalks / Pedestrian Realm, Transit priority corridor	10.5 / 10
King Road	Plains Road	Northshore Road	Protected bikes	7.0 / 53*
Maple Avenue	Fairview Street	Lakeshore Road	Protected bikes, Pedestrian Realm, Transit priority corridor	8.9 / 38
Brant Street	Fairview Street	Lakeshore Road	Protected / Buffered Bikes, Pedestrian Realm, BRT Optimized	8.1 / 42*
Guelph Line	Fairview Street	New Street	Buffered Bikes, Pedestrian Realm, Transit priority corridor	9.8 / 23
Guelph Line	New Street	Lakeshore Road	Buffered Bikes, Pedestrian Realm, Transit priority corridor	5.2 / 76
Walkers Line	Highway 407	Dundas Street	Protected bikes, Pedestrian Realm	5.5 / 74
Walkers Line	Dundas Street	Upper Middle Road	Protected bikes, Pedestrian Realm, Transit priority corridor	6.5 / 64*
Walkers Line	Upper Middle Road	Mainway	Protected bikes, Pedestrian Realm, Transit priority corridor	6.2 / 67
Walkers Line	Mainway	Harvester Road	Protected bikes, Transit priority corridor	6.5 / 64*
Walkers Line	Harvester Road	Fairview Street	Protected bikes, Pedestrian Realm, Transit priority corridor	7.3 / 49*
Walkers Line	Fairview Street	New Street	Protected bikes, Pedestrian Realm, Transit priority corridor	9.2 / 28*
Walkers Line	New Street	Lakeshore Road	Protected bikes	5.0 / 79*
Appleby Line	Fairview Street	New Street	Protected bikes, Pedestrian Realm, Transit priority corridor	10.2 / 13
Appleby Line	New Street	Lakeshore Road	Protected bikes, Pedestrian Realm, Transit priority corridor	7.1 / 52
Burloak Drive	Harvester Road	New Street	Buffered Bikes, Pedestrian Realm	7.2 / 51

Road Name	From	To	Project Type	Prioritization (Score/Rank)
Palladium Way	Dundas Street	Walkers Line	Protected Bikes, Pedestrian Realm	5.1 / 77*
Palladium Way	Walkers Line	Appleby Line	Protected Bikes, Pedestrian Realm	5.1 / 77*
Mainway	Guelph Line	Walkers Line	Protected Bikes	7.0 / 53*
Mainway	Walkers Line	Appleby Line	Protected Bikes, Sidewalks / Pedestrian Realm	8.1 / 42*
Mainway	Appleby Line	Burloak Drive	Protected Bikes, Sidewalks / Pedestrian Realm	6.6 / 63
North Service Road	Kerns Road	Brant Street	Sidewalks / Pedestrian Realm	7.0 / 53*
North Service Road	Brant Street	Industrial Street	Sidewalks / Pedestrian Realm	8.8 / 39
South Service Road	Harvester Road	Century Drive	Pedestrian Realm	7.0 / 53*
Harvester Road	Guelph Line	Walkers Line	Buffered Bikes, Transit priority corridor	9.0 / 32*
Harvester Road	Walkers Line	Appleby Line	Buffered Bikes, Sidewalks / Pedestrian Realm, Transit priority corridor	11.1 / 6*
Maple Avenue	Plains Road E	Fairview Street	Protected Bikes, Pedestrian Realm	10.4 / 11
Sutton Drive	Mainway	North Service Road	Protected Bikes, Sidewalks	4.0 / 106
Howard Road	Lemonville Road	Plains Road	Local Bikeway, Sidewalks / Pedestrian Realm	10.0 / 14*
Gallagher Road	Road End	Plains Road	Local Bikeway, Sidewalk	8.0 / 44*
Shadeland Avenue	Plains Road	Townsend Avenue	Local Bikeway, Sidewalk	8.0 / 44*
Townsend Avenue	LaSalle Park Road	Eagle Drive	Local Bikeway, Sidewalk	7.0 / 53*
Surrey Lane / Warwick Drive	King Road	Francis Road	Local Bikeway	6.0 / 69*
Greenwood Drive	King Road	Francis Road	Local Bikeway, Sidewalk	7.0 / 53*
Maple Crossing Boulevard	Maple Avenue	Multi-Use Trail	Local Bikeway	9.0 / 32*

Road Name	From	To	Project Type	Prioritization (Score/Rank)
Caroline Street	Multi-Use Trail	Brant Street	Local Bikeway, Pedestrian Realm	9.2 / 28*
Caroline Street	Brant Street	Drury Lane	Local Bikeway, Pedestrian Realm	9.1 / 30*
Thorpe Road / Stephenson Drive	Maple Avenue	Grahams Lane	Local Bikeway	9.0 / 32*
Grahams Lane	Stephenson Drive	Brant Street	Local Bikeway, Sidewalks / Pedestrian Realm	13.0 / 1*
Prospect Street	Brant Street	Guelph Line	Protected Bikes, Pedestrian Realm	7.0 / 53*
Prospect Street	Guelph Line	Cumberland Avenue	Protected Bikes, Pedestrian Realm	7.0 / 53*
Woodward Avenue / Rexway Drive	Guelph Line	Walkers Line	Local Bikeway	5.0 / 79*
Headon Road	Multi-Use Trail	Jordan Avenue	Local Bikeway	5.0 / 79*
Jordan Avenue	Headon Road	Walkers Line	Local Bikeway	5.0 / 79*
Millcroft Park Drive	Walkers Line	Dundas Street	Local Bikeway	5.0 / 79*
William O'Connell Boulevard	Millcroft Park Drive	Upper Middle Road	Local Bikeway, Pedestrian Realm	6.4 / 66
Leighland Road	Brant Street	Truman Street	Local Bikeway, Sidewalks / Pedestrian Realm	10.0 / 14*
Mountainside Drive	Multi-Use Trail	Guelph Line	Local Bikeway, Pedestrian Realm	7.3 / 49*
Wedgewood Drive	Pinedale Avenue	New Street	Local Bikeway	5.0 / 79*
Rossmore Boulevard	New Street	Lakeshore Road	Local Bikeway, Sidewalk	6.0 / 69*
Cumberland Avenue	Fairview Street	Prospect Street	Painted bikes, Pedestrian Realm	10.0 / 14*
Ontario Street	Maple Avenue	Multi-Use Trail	Pedestrian Realm	9.0 / 32*
Elgin Street	Maple Avenue	Brant Street	Local Bikeway, Pedestrian Realm	9.7 / 24

Road Name	From	To	Project Type	Prioritization (Score/Rank)
Locust Street	Caroline Street	Lakeshore Road	Local Bikeway, Pedestrian Realm	10.0 / 14*
John Street	Caroline Street	Lakeshore Road	Pedestrian Realm, Transit Priority Corridor	9.5 / 26*
Elizabeth Street	Caroline Street	Lakeshore Road	Local Bikeway	10.0 / 14*
Martha Street	Caroline Street	Lakeshore Road	Local Bikeway, Pedestrian Realm	9.6 / 25
Cedar Springs Road	Dundas Street	No. 1 Side Road	Multi-Use Path	5.0 / 79*
Cedar Springs Road	No. 1 Side Road	No. 2 Side Road	Multi-Use Path	5.0 / 79*
Cedar Springs Road	No. 2 Side Road	Britannia Road	Multi-Use Path	5.0 / 79*
Britannia Road	Milburough Line	Cedar Springs Road	Paved Shoulder	5.0 / 79*
Britannia Road	Cedar Springs Road	Guelph Line	Paved Shoulder, Sidewalk	5.0 / 79*
Britannia Road	Guelph Line	Walkers Line	Paved Shoulder	5.0 / 79*
Britannia Road	Walkers Line	Appleby Line	Paved Shoulder	5.0 / 79*
Britannia Road	Appleby Line	Bell School Line	Paved Shoulder	5.0 / 79*
Walkers Line	Highway 407	No. 1 Side Road	Paved Shoulder	5.0 / 79*
Walkers Line	No. 1 Side Road	No. 2 Side Road	Paved Shoulder	5.0 / 79*
Walkers Line	No. 2 Side Road	Britannia Road	Paved Shoulder	5.0 / 79*
Walkers Line	Britannia Road	Derry Road	Paved Shoulder	5.0 / 79*
Bell School Line	Britannia Road	Derry Road	Paved Shoulder	5.0 / 79*
Snake Road	Old York Road	Thomson Drive / Main Street South (Waterdown)	Paved Shoulder	5.0 / 79*
King Road	North Service Road	Burlington / Hamilton Boundary	Paved Shoulder	6.0 / 69*

Table 10-2: IMP Capital Projects – EA Required

Notes: * indicates a tie

Road Name	From	To	Project Type	EA Required	Prioritization (Score/Rank)
South Service Road Extension	Waterdown Road	King Road	New Road, Protected Bikes, Sidewalks / Pedestrian Realm, Transit / Transit priority corridor	Schedule C	7.8 / 46
Cumberland Ave Extension	Mainway	Fairview Street	New Road, Painted bikes, Sidewalks, Transit	Schedule C	5.0 / 79*
New Collector Road (east of Brant Street)	Fairview Street	Plains Road	New Road, Painted bikes, Sidewalks, Transit	Schedule C	8.0 / 44*
New Collector Road (east of Appleby Line)	Fairview Street	Harvester Road	New Road, Painted bikes, Sidewalks, Transit	Schedule C	7.0 / 53*
AT overpass/ underpass of QEW (@ Maple Park)	Greenwood Drive	Maple Avenue	New AT overpass/ underpass, Multi-Use Path	Schedule C	6.0 / 69*
AT overpass/ underpass of QEW/ 403 (east of Brant Street)	Truman Street	Industrial Street	New AT overpass/ underpass, Multi-Use Path, Pedestrian Realm	Schedule C	6.0 / 69*
AT overpass/ underpass of QEW/ 403 (east of Appleby Line)	Century Drive	Sutton Drive	New AT overpass/ underpass, Multi-Use Path, Pedestrian Realm	Schedule C	7.8 / 46

10.1.1 Prioritization

The approach used to prioritize capital project reflects the IMP Values and Goals and the ease to which the project can be implemented. This methodology provides an objective, quantitative and unbiased evaluation. Each project was evaluated to as to what degree it supports each value:

Safe: The movement of people and goods in Burlington will be **safe for users of all modes**. Special attention will be paid to ensuring the safety of vulnerable users- pedestrians and cyclists – as they are most likely to get seriously injured or killed in an incident. We will not accept transportation-related deaths and serious injuries as a normal part of our daily lives; our transportation system will be designed to minimize the risk of transportation-related deaths and serious injuries from occurring on our streets.

Accessible: Getting around Burlington will be accessible to **people of all ages and abilities**. There will be **no infrastructure or service gaps in the networks of any mode**, so each traveler can make a comfortable trip from point A to point B in Burlington, when they want, by their travel mode of choice. Our transportation system will allow our community members to travel comfortably within Burlington and to nearby communities to make sure that all residents of Burlington can fully participate in society, **by the travel mode of their choice**.

Sustainable: The transportation network will **prioritize efforts to encourage transit, cycling, walking**, and other non-car modes in order to encourage their use. By doing this, we will prioritize our community's health, improve the vibrancy of our city, and reduce pollution. We will also electrify our transportation network to reduce the emissions of all vehicles and to make modes like scooters or bikes more accessible for people with reduced mobility.

Balanced: We will **rebalance** the transportation system to incentivize travel by non-car modes. Our streets will allow **comfortable travel for users of every mode**.

Liveable: Streets in Burlington will be designed to fit within their surroundings. The **design of our streets will support the environment and character we want to create** in surrounding neighbourhoods and communities.

Each project was assigned a score out of 18 points based on their ability to address six (6) criteria: Safe, Accessible, Sustainable, Balanced, Liveable, and Ease of Implementation. The higher the score the better the alternative aligns with the objectives of the criteria. The criteria were constructed in such a way as to not over-emphasize the role of any one criteria group.

It should be noted that all IMP projects are safe, and as such, this is not a differentiator. “Safe” for project prioritization looks at how the implementation of a project improves safety at locations where existing Potential for Safety Improvements (PSI)[3] are the highest.

The overall Project Prioritization including the total scores and ranks are displayed in **Table 10-1** and **Table 10-2**..

10.1.2 EA Planning Requirements

The Municipal Engineers’ Association (MEA) MEA updated its Class EA process for transportation projects in 2023. As the IMP was initiated in 2020, the City of Burlington has exercised its right to complete the IMP under the 2015 Class EA process.

The significant majority of the projects are modifications to existing streets to improve sustainable transportation (walking cycling and/or transit) level of service; these projects are pre-approved and do not require further EA planning studies. Functional design review will be undertaken prior to the project being implemented.

Seven (7) of the capital projects (the “catalyst” projects) are new streets/ bridges and will require EA studies during the functional design stage.

3. Potential for Safety Improvements (PSI) values are calculated by City Staff using custom safety performance functions for intersections and mid-block locations within the City of Burlington.

10.2 Implementation Process

10.2.1 Funding Considerations

There are capital and operating costs to implementing this plan. These costs change with fluctuations in market prices, property values, available external funding opportunities and policy changes to tax and development charge rates. This section outlines the approach recommended to monitor and fund the recommendations of this plan.

Use the City Budget to manage the affordability of this plan

The City will annually review the capital budget forecast and recommend capital projects that implement the IMP and advance toward achieving the desired mode share target while also aligning with infrastructure renewal and strategic priorities.

The City will consult the prioritization methodology developed by this plan and informed by community engagement to inform new projects to add for consideration to the capital budget forecast.

The City's operating budget forecast for maintaining transportation infrastructure will be compared to actuals on a regular basis to update and refine the operating costs of maintaining the transportation network.

The City will regularly monitor staff capacity and make recommendations for increasing staff resources as required to implement the programs and capital plans of the IMP through the multi-year operating budget process.

Explore All Available Funding Tools to Advance the Plan's Recommendations

The City will use conventional and consider emergent funding tools to advance the recommendations of the IMP.

Conventional tools may include:

- Partnerships with senior levels of government through grant programs;
- Partnerships with private developers through development approvals process;
- Development Charges;
- Gas and fuel taxes;
- Property taxes;
- Parking space levies;
- Parking fees and revenues;
- Transit fees and revenues;
- Land value capture and Density Bonusing;
- Special assessments;
- Municipal land transfer taxes; and
- Vehicle registration fees.

Emergent tools include:

- Dynamic road pricing;
- New mobility licensing/ pricing;
- GHG pricing; and
- Sponsorship of the built environment.

10.3 Policy and Program Actions

The IMP requires more than just infrastructure in order to achieve its vision and goals. **Table 10-3** shows the IMP Policy and Program Actions.

Table 10-3: Policy and Program Actions

Action	Timeframe (years)	
Prepare / Update Mode Plans		
Integrated Mobility Plan Update		**6 to 10**
Pedestrian Master Plan	**0 to 5**	
Cycling Plan Update		**6 to 10**
Rural Active Transportation Plan Update		**6 to 10**
Five-Year Transit Business Plan Update	**0 to 5**	
Goods Movement Master Plan / Strategy	**0 to 5**	
Parking Master Plan	**0 to 5**	
Electric Mobility Strategy Update		**6 to 10**
Prepare Guidelines		
Transit Service Guidelines	**0 to 5**	
Transportation Impact Study Guidelines	**0 to 5**	
Multimodal Level of Service Guidelines	**0 to 5**	
Flex Zone Management Guidelines		**6 to 10**
Complete Streets Design Guidelines	**0 to 5**	
Pedestrian Priority Network Design Manual	**0 to 5**	
Downtown Streetscape Guideline Update		**6 to 10**
Transportation Equity Guidelines		**6 to 10**
Pedestrian Infrastructure Assessment Guideline for Renewal and Reconstruction Projects	**0 to 5**	
Rapid Deployment Study for the Spine Cycling Network	**0 to 5**	

Action	Timeframe (years)	
Programs and Required Actions		
Strategic Transportation Planning Program • Develop an action plan	**0 to 5**	
Transportation Demand Management Program • Develop an action plan	**0 to 5**	
Strategic Parking Management Program • Develop an action plan	**0 to 5**	
Active Transportation Program • Develop an action plan	**0 to 5**	
Transportation System Management Program • Develop an action plan	**0 to 5**	
Vision Zero Program • formally adopt a Vision Zero approach to transportation system planning, operations and design • Develop an action plan	**0 to 5**	

10.4 Monitoring Plan

The Monitoring Plan measures progress towards achieving the vision and goals of the IMP. The performance of indicators signals to the city when it should refine initiatives, shift funding or respond to evolving opportunities and challenges.

Key Performance Indicators (KPI) were identified for each of the six (6) IMP goals. For each IMP goal, KPI were developed with the goal of balancing transportation mode and whether the KPI was 'effort' or 'result' focused. **Table 10-4** displays the IMP Key Performance Indicators associated with each of the IMP's goals.

Table 10-4: Key Performance Indicators

Key Performance Indicator (KPI)	IMP Goal	Category	Frequency
1. Number of collisions by mode (per capita)	1	Road Safety	Annually
2. Injury and fatality rates by mode	1	Road Safety	Annually
3. Number of protected Intersections	1	Road Safety	Annually
4. Percentage of the spine bicycle network completed	2	Active transportation	Annually
5. Parking utilization rates by sub-region	2	Parking	Annually
6. Percent of bus stops and On-Demand pick-up / drop-off points that are fully accessible	2	Transit	Annually
7. Percentage of rural Active Transportation network completed	3	Active transportation	Annually
8. Percentage of residents and employees within 500m, of a transit stop or On Demand pick-up / drop-off point within the Urban Transit Service Boundary (Burlington Transit)	3	Transit	Annually
9. Number of intersections where signal timing has been optimised	3	Automobile	Annually
10. Vehicle ownership per capita	4	Automobile	Every 5 years
11. Number of residential units that are being built in Urban Growth Centres	4	Land Use	Annually
12. Percent of zero-emission vehicles in the municipal fleet	4	Transit & Automobile	Annually
13. Percentage of residents within 500m of a bicycle route by neighbourhood type	5	Active transportation	Annually
14. Percentage of streets with sidewalks by neighbourhood type	5	Active transportation	Annually
15. 100% installation of transit shelters in locations that meet shelter warrant within 1 year	5	Transit	Annually
16. Commuting duration by mode	6	Travel choices & perceptions	Every 5 years
17. Longest continuous cycling facility	6	Active transportation	Annually

Key Performance Indicator (KPI)	IMP Goal	Category	Frequency
18. Transit revenue vehicle-hours per capita	6	Transit	Annually
19. Household and population growth by sub region	Other	Land use	Every 5 years
20. User perception of walking, bicycling and taking transit as a transportation option	Other	Travel choices & perceptions	Every 2 years
21. Mode share of transportation to work by sub-region	Other	Travel choices & perceptions	Every 5 years
22. Length of new bicycle facilities, sidewalks and Local bikeways	Other	Active transportation	Annually
23. Transit ridership (boardings) per capita	Other	Transit	Annually

It should be noted that some of the key performance indicators (KPIs) presented in **Table 10-4** will have to be changed or replaced over time to ensure their usefulness and in response to the ever-evolving availability of data.

10.4.1 Monitor and Track Mode Share

The City will continue to participate in the Transportation Tomorrow Survey every five (5) years to collect local and regional data on transportation behaviours, patterns and trends to be used in conjunction with local population and employment growth forecasts and distribution forecasts in order to model and project transportation mode share and network capacity.

The City will seek opportunities for enhanced multi-modal transportation data collection methodologies to inform mode share trends on an annual basis, if possible, to assist with tracking and informing capital investment decisions that best advance the City toward meeting the mode share target goals of this plan.

The City will pursue a collaboration with a Big Data provider. This will provide the city with self-service access to query various mobility questions related to travel modes, traffic counts, Origin-Destination, etc. and get the answers within minutes.

Appendix A

Policies and Programs Report

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Burlington Integrated Mobility Plan (IMP)

Policies and Programs Report

August 2023 – 20-2738

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Glossary of Terms

- A -

Active Transportation – Human-powered travel, including but not limited to, walking, cycling, inline skating and travel with the use of mobility aids, including motorized wheelchairs and other power-assisted devices moving at a comparable speed. For the purposes of the Integrated Mobility Plan, Active Transportation includes:

- Walking | Wheeling (including power-assisted personal devices);
- Cycling, including e-bikes and cargo bikes; and
- Personal micro-mobility devices, such as e-scooters and skateboards.

Active Transportation Network – On-road and off-road infrastructure network for pedestrians, cyclists and other active transportation modes.

Alternative Service Delivery (ASD) – Provision of transit service through different transit service options, such as on-demand transit or partnerships with private and/or not-for-profit sectors. ASD is typically used to deliver transit services to unserved or under serviced areas of the city due to low ridership potential.

- C -

Capital Projects – A project that helps maintain or improve an existing City asset or provide a new asset/ facility. This includes new construction, expansion, renovation, or replacement projects for an existing facility or facilities, the purchase of major equipment, or a major maintenance or rehabilitation project for existing facilities.

Complete Communities – A community that meets the basic needs of all its residents through integrated mixed and efficient land use planning and an urban form that is well connected and supports diverse transportation options.

Complete Street – A street designed, built and operated to enable safe access for all users, in that pedestrians, cyclists, transit-users, and motorists of all ages and abilities are able to safely move along and across the right of way. Complete streets foster livability while enhancing the public realm and encouraging sustainable growth patterns.

Complete Streets Design Guide – The Complete Streets Design Guide provides direction on how to design streets that reflect the integrated network plan and the context of the street. The Guide provides ideal cross-sections for the street hierarchy identified in the Burlington Official Plan. The Guide will work with the Multi-Modal Level of Service Guidelines and the Pedestrian Priority Network Design Manual to direct street design in Burlington.

Cycling Spine Network – A network of cycling routes with high-quality on-street cycling facilities that connect all areas of the City. These spine routes represent the core of the City's larger cycling network. The Cycling Spine Network will be designed to support and encourage cycling by people of all ages and abilities. The Spine Cycling Network will be complemented by connecting cycling links to key destinations like schools, parks, and areas of high activity.

- D -

Downtown Streetscape Manual –The Downtown Streetscape Guidelines are a part of a long-term strategy to revitalize how downtown streets look, function and feel for pedestrians who move through the area. Following the completion of the IMP, the Downtown Streetscape Manual will be integrated into the Pedestrian Priority Network Design Manual and the Complete Streets Design Guide.

- F -

Flexible Street - Flexible Streets are streets designed to adapt to the varying conditions and roles that a street plays in a community. When planning flexible streets, we recognize that the role a particular street takes on may change depending on the day, time of year, season, or many other different factors, in this case, a pandemic. Flexible streets feature design elements that can be changed quickly to reinforce different roles for streets including, but not limited to, bollards, flexible on-street parking configurations, pavement materials, and enhanced streetscapes or modified curbs.

Frequent Transit - A public transit service that runs at least every fifteen (15) minutes in both directions, typically seven (7) days per week throughout the day and early evening, with variations in service depending on local conditions.

Frequent Transit Corridors –A priority component of the city-wide public transit network. The long-term frequent transit corridors consist of the following two

components, as identified on Schedule B-2: Growth Framework and Long Term Frequent Transit Corridors, of the Official Plan:

1. Frequent Transit Corridors have existing and/or planned land uses, and street design conditions to enable a frequent service.
2. Candidate Frequent Transit Corridors have some of the existing and/or planned land uses and street design conditions which may enable a frequent service in the future.

- G -

Goods Movement Strategy – A comprehensive plan to help determine the transportation infrastructure improvements, policies, regulatory tools and programs needed to help the support the goods movement industry.

- H -

Higher Order Transit – Transit that generally operates in partially or completely dedicated right-of-way, outside of mixed traffic, and therefore can achieve levels of speed and reliability greater than mixed-traffic transit. Higher Order Transit can include heavy rail (such as subways and inter-city rail), light rail and buses in dedicated rights-of-way.

- I -

Intelligent Transportation Systems – A combination of information and communication technologies used in transportation and traffic management to improve the safety, efficiency, and sustainability of transportation networks, manage traffic congestion, and enhance drivers' experiences.

Intensification Area – Lands identified within the Urban Area of the Official Plan that are intended to be the focus for accommodating growth through intensification.

Intensification Corridor –Intensification Areas identified along major roads, arterials or higher order transit corridors that have the potential to provide a focus for higher intensity mixed-use development consistent with planned transit service levels.

- L -

Low-Impact Development (LID) – A planning and engineering approach to stormwater management to minimize stormwater runoff and filter, store and return rainwater and snow melt to the ground.

- M -

Major Transit Station Areas (MTSA) – The area including and around any existing or planned higher-order transit station (such as regional rail or bus rapid transit routes) within a settlement area, or the area including and around a major bus depot in an urban core. Station areas are generally defined as the area within an approximate 500 meter radius of a transit station, representing about a 10-minute walk. They are usually planned to be higher-density, mixed-use and transit-supportive neighbourhoods that provide access to local amenities, jobs, housing and recreation opportunities.

Major Transit Station Area (MTSA) Primary Connector – A major street that has the ability to provide direct connections between MTSAs, as well as being a strong pedestrian destination on its own.

Major Transit Station Area (MTSA) Secondary Connector – An important street that provides a viable alternative for linking MTSAs and has the potential to become a strong active transportation and transit corridor in the future.

Micro-mobility – A term that refers to the growing suite of small, human- or electric powered low-speed transportation modes such as bicycles, scooters, skateboards, low-speed neighborhood devices and mopeds. These devices may be personally owned or part of a shared mobility service (such as bike share, scooter share, etc.).

Mobility-as-a-Service (MaaS)– An emerging user-oriented philosophy that takes advantage of digital platforms and real-time data to get a person from point A to point B in the most convenient and personalized way possible for one single fee. MaaS leverages modern transportation options to optimize personal mobility. When planning a route, MaaS platforms can link transit, ride-hailing, car-sharing, micro-mobility, walking, and more to create one seamless trip for the user of this service.

Modes – Different types of travel such as public transit, automobile, rail, cycling, or walking.

Mode Share –The percentage of person-trips or of freight movements made by one travel mode, relative to the total number of such trips made by all modes.

Multi-modal Level of Service (MMLOS) - is a qualitative measure used to determine how well a transportation facility such as an intersection or road segment is operating

for all modes of transportation. Levels of service are usually categorized from A to F, with A being the best and F being the worst.

Multimodal Level of Service (MMLOS) Guidelines – A guide that provides policy and design guidance on the planning, design, and operation of roadways and intersections to help implement the City's Official Plan vision for complete streets. It provides guidance on how to assess the **levels of service** for various modes of transportation and their impacts, and what the specific target service levels for each mode should be given the location and context of the transportation project.

- O -

Official Plan – A regulatory policy tool that sets out the City's vision and goals for the future, and describes policies on how land in the City should be used. In Ontario, every municipality is required to have an approved Official Plan to ensure that future planning and development will meet the specific needs of the community.

- P -

Park-and-Ride facilities – Parking lots with public transport connections that allow commuters and other people to leave their vehicles and transfer to a bus, rail system, or carpool for the remainder of the journey.

Peak Period – The time periods during the day with the greatest travel volumes, generally the two-or three-hour periods during a weekday specifically defined by the City from time to time.

Pedestrian Priority Network – A network of wide sidewalks and high-quality walking environments in areas of highest pedestrian activity in the city. This priority network is designed to support and encourage walking for people of all ages and abilities. It is complemented by the general sidewalk network and Burlington's extensive trail network.

Planned corridors - Means corridors or future corridors which are required to meet projected needs, and are identified through provincial plans, preferred alignment(s) determined through the Environmental Assessment Act process, or identified through planning studies where the Ontario Ministry of Transportation, Metrolinx, Ontario Ministry of Energy, Northern Development and Mines or Independent Electricity System Operator (IESO) or any successor to those ministries or entities is actively pursuing the

identification of a corridor. Approaches for the protection of planned corridors may be recommended in guidelines developed by the Province.

- R -

Retrofit projects – Projects that improve an existing asset's function or efficiency through the addition of new technology or features.

- S -

Smart signals – Traffic signals at intersections that detect traffic conditions and automatically adjust operations to optimize flow.

- T -

Transportation Impact Studies – Transportation Impact Studies (TIS), sometimes called "traffic impact studies", identify on-site and off-site measures to be undertaken by a developer to align the transportation system's performance with City goals once the development is built.

Transportation Demand Management (TDM) – A set of strategies that result in more efficient use of the transportation system by influencing travel behavior by mode, time of day, frequency, trip length, regulation, route or cost.

Transit Priority Measures (TPM) – Measures to permit transit vehicles to have priority over other vehicular traffic, thereby making transit travel times shorter and more consistent, which makes transit more attractive. Transit priority measures may include, but are not limited to, queue jump lanes, bus only lanes, green light signal priority, bus activated signals, and exemptions to prohibit turns and limiting or reducing on–street parking during part of the day.

Transit-Supportive – Planning and development practices which make transit viable, optimize investments in transit infrastructure and improve the quality of the experience of using transit. It often refers to compact, mixed use development that has a high level of employment and residential densities, including air rights development, in proximity to transit stations, corridors and associated elements within the transportation system. Transit-supportive development shall be consistent with Ontario's Transit Supportive Guidelines.

Transit Business Plan – A strategic planning document that defines policies, programs and infrastructure improvements required to address public transit and growth needs in Burlington and support the visions and principles of Burlington Transit.

Truck Priority Network – A network of streets that permit truck traffic for more than just local service. It is designed to allow large vehicles to travel through the city efficiently while safely interacting with people who are walking or cycling on the same streets.

- V -

Vision Zero – A traffic safety initiative that is based on the philosophy that no loss of life is acceptable on our roadways. It is based on a safe systems approach to eliminate all traffic fatalities and severe injuries, while increasing safe, healthy, equitable mobility for all.

Policies

1.0 Integrated Planning Policies

This section of the Integrated Mobility Plan (IMP) presents the policies related to integrated multimodal transportation network planning.

Relevant goals that align with integrated transportation network policies:

Goal 1: Burlington will eliminate transportation-related deaths and serious injuries.

Goal 2: Burlington's transportation system will be accessible and reliable for users regardless of factors like age, ability, income, or familiarity with the city.

Goal 3: Burlington will provide high-quality transportation options to move people and goods wherever and whenever, while maintaining a high quality of life for residents.

Goal 4: Burlington will eliminate transportation-related carbon emissions.

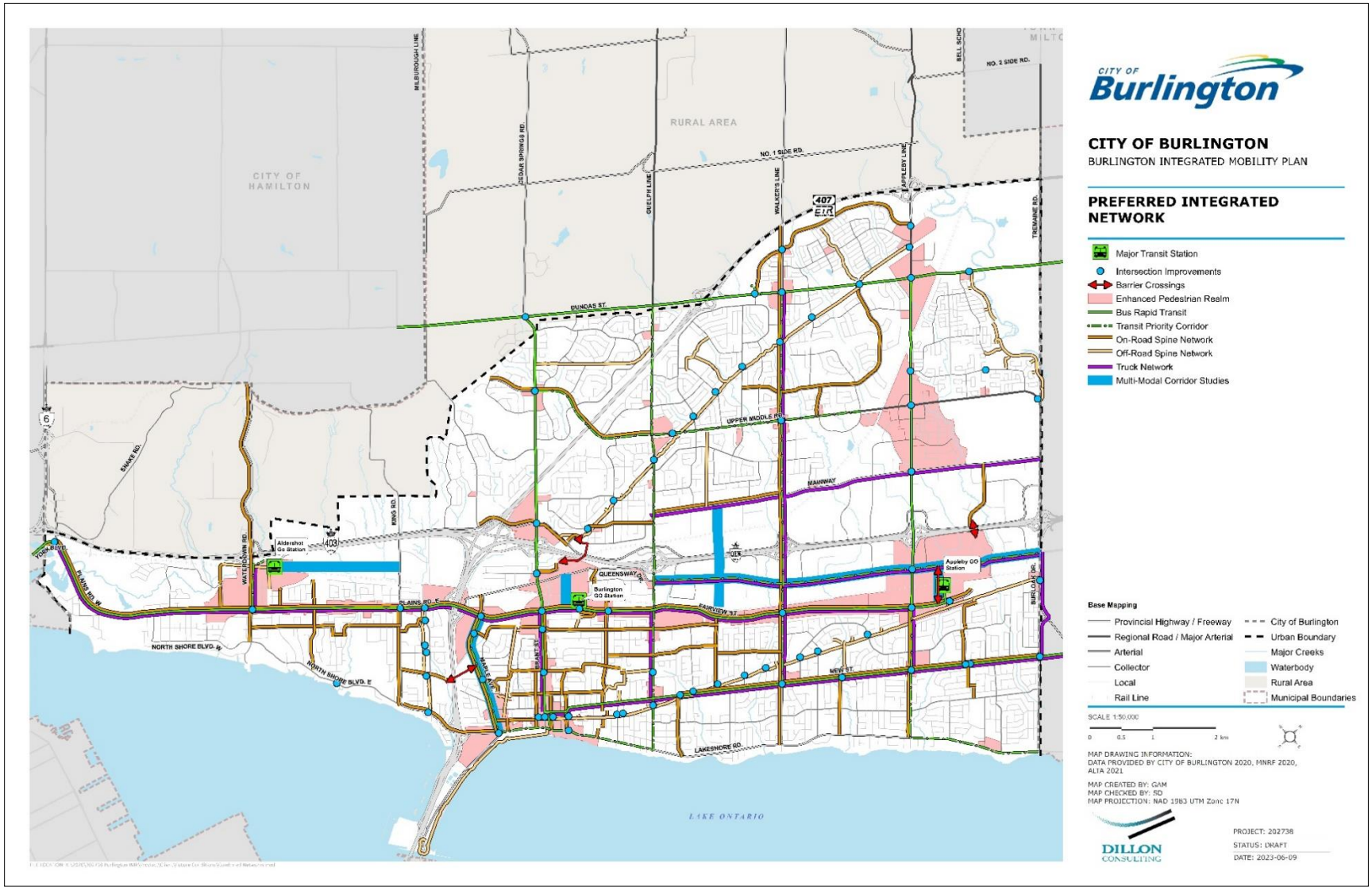
Goal 5: Burlington's streets will support the intended roles of the communities they run through and help these communities be vibrant and prosperous.

Goal 6: Burlington will actively plan for the transportation changes of tomorrow while continuing to deliver great service today.

The 2016 City-wide mode share for cars is 90.7%. The City of Burlington is targeting to decrease car mode share to 70% by 2051. Adjusting the mode share through various tools and strategies, will help manage congestion pressure on the road network, and improve equity, accessibility, and quality of life for Burlington residents. The following sections provide some of those tools and strategies.

Figure 1 shows the integrated multimodal transportation network.

Figure 1: Preferred Integrated Network



1.1 Plan for strategic road projects

Roads link people and communities to each other and to goods, services and employment. They are the key component of the transportation network and one of the municipality's largest public infrastructure investments. Roads not only facilitate the movement of vehicles; they can support multiple interconnected and sustainable transportation modes.

It has become clear that continued expansion and improvement of the arterial and collector road network is not prudent from a financial, societal and environmental perspective. The IMP approach prioritizes a shift away from conventional investment in road expansion, towards more sustainable transportation modes (i.e. transit and active transportation) and strategic, focused road enhancements.

1.1.1 The City will undertake multi-modal studies of the key corridors noted on **Figure 1**. The design of the existing corridors that are flagged will be reviewed to determine if the current cross-sections align with the recommendations of the preferred integrated multimodal network. The feasibility and potential impacts of the new corridors that are flagged will be reviewed through the Environmental Assessment process.

1.1.2 The City will undertake localized road widenings and connections as-needed, considering the broader IMP goals and the needs of all modes of travel. The feasibility and potential impacts of the local modifications will be reviewed through the Capital Project Review process.

1.1.3 The City will complete a flex zone/curbside priorities analysis to understand the trade-offs of how land use impacts areas where curb space is limited and sets priority for flex zone use by function.

1.2 Manage traffic flows

The Burlington IMP prioritizes rebalancing the existing street network to promote the needs of sustainable transportation modes. This will place pressure on the system; pressure that needs to be actively managed through the Transportation Systems Management (TSM) program.

1.2.1 The City will develop a TSM Strategy and Action Plan. The TSM Strategy will consider:

a) Traffic Flow Management
b) Access Management
c) Transit Signal Priority
d) Intelligent Transportation Systems and smart signals
e) Data collection needs/processes and the potential of big data

1.2.2 The City will continue to coordinate and develop partnerships with various stakeholders regarding traffic flow management, including but not limited to, the Ministry of Transportation and Halton Region.

1.2.3 The City will adopt Multimodal Level of Service Guidelines that consider level of service for all modes of transportation in all design and operating decisions for the transportation network, in accordance with the priority networks recommended by the IMP.

1.2.4 The City may require submission of a Transportation Impact Study (TIS) before development applications are approved to assess the impact of a proposed development on current travel patterns and/or future multimodal transportation requirements.

1.2.5 The City will require the submission of a TDM Plan and Implementation Strategy for developments within Primary, Secondary and Employment Growth Areas prior to occupancy. Minor developments such as small additions or small townhouse developments may be exempted from this requirement.

1.2.6 The City may require the submission of a TDM Plan and Implementation Strategy for developments in other areas of the city prior to occupancy, excluding Residential Low-Density areas.

1.3 Protect new and established neighbourhoods from undesirable road impacts

Motor vehicle use in neighbourhoods can have undesirable effects including excessive traffic volumes and speeds, aggressive driver behaviour and the creation of hostile conditions for walking and cycling. The City works to preserve neighbourhood quality of life by mitigating these problems in a way that addresses the needs of residents and businesses, while also respecting the obligations, rights and desires of road users.

How will adverse impacts of road projects be addressed?

1.3.1 The City will require noise impact studies as part of environmental assessment studies for any road widening or new roads. Noise impact studies may also be required as part of supporting documentation for approvals of new development.

1.3.2 The City will continue to ensure any impacts on the Natural Heritage System and cultural heritage resources are addressed in the design process for road capital projects in accordance with the provisions of the Official Plan.

1.3.3 The City will continue to have regard for and, when necessary, require measures to mitigate any negative impacts on cultural heritage resources, especially the character of landscapes, streetscapes, tree lines, bridges, views and points of scenic interest and the prevailing pattern of settlement when considering the construction of new roads and road improvements, including road re-alignment and road widening.

1.3.4 The City will have regard for best practices or mitigating impact on habitat / feeding and migration patterns of wildlife when undertaking capital projects.

1.4 Actively manage mode share

Managing mode share is one of the most important actions that the City will take to insure success of the IMP. The required shift in mode share will not take place without measures and tools to influence mode choice; the targeted mode share shift is key to managing congestion and reducing GHG.

How will a Transportation Demand Management Program be developed?

1.4.1 The City will develop a Transportation Demand Management (TDM) program. The TDM program will develop strategies, measures and tools to influence the decisions related to travel for all transportation modes.

1.4.2 The City will develop a TDM Strategy and Action Plan. The TDM Strategy will consider:

a) measures that shift travel choices towards more sustainable modes, such as:
   - secure, conveniently located, weather protected on-site bicycle storage facilities and associated amenities such as showers, change rooms and clothing lockers;
   - reserved, priority car-pool parking spaces;
   - carpooling and ridesharing programs;
   - bike-sharing and/or car-sharing programs;
   - provision of Provincial, Regional or City Transit Passes to building occupants or residents;

b) measures that shift travel times from peak to off-peak periods;

c) measures that inform and educate residents, employees and students of Burlington about travel choices, such as:
   - workplace TDM programs.

How will neighbourhood mode share targets be finalized?

1.4.3. The City will prepare mode share targets for urban neighbourhoods across Burlington that are consistent with the City-wide mode share targets established in the IMP.

1.5 Design a sustainable and integrated street network

The commitment to limiting road widenings for the purpose of increasing car capacity has both minimized the capital cost of the transportation network and directed investments towards projects that increase available travel options and improve service to a broader group of travelers. Integrated Mobility Plans, by definition, are rooted in a Complete Streets philosophy and are driven by managing mode share, rather than expanding road capacity for automobiles. The IMP rebalances the transportation network to be more complete and then sets mode share targets to align travel demand with the rebalanced network.

How will the City create design tools that align with the goals of the IMP?

1.5.1 The City will develop a **Complete Streets Design Guide** to inform all future street design. The **Complete Streets Design Guide** will:

a) Reflect the functional street classifications in the Official Plan (see Table 1: Classification of Transportation Facilities in the City of Burlington Official Plan)
b) Integrate the Mode Priority Networks and guide the designer in making trade-offs where right-of-way is limited.
c) Develop typical designs for streets and intersections that are innovative in terms of multimodal treatments, reduced environmental impacts and safety for all users.
d) Develop typical designs for streets in growth/ intensification areas that balance the right-of-way required for transportation elements with desired building setbacks and public realm features.
e) Be guided by policies and guidelines found in the following resources, which will continue to evolve over time:
    - 2020 City of Burlington Current Street Design Standards and Cross-Sections
    - 2020 City of Burlington Official Plan (under appeal)
    - 2019 City of Burlington Downtown Streetscape Guidelines
    - 2017 City of Burlington Official Plan
    - 2016 City of Burlington Accessibility Design Standards
    - Development Engineering Manual;
    - Linear Infrastructure Standards; and
    - Current industry guidelines (e.g. Ontario Traffic Manual, Transportation Association of Canada).

1.5.2 The City will utilize the Official Plan Public Right-of-Way Widths (Table 2) including any modifications made as a result of area-specific planning to support sustainable mode infrastructure on existing roads.

1.6 Prioritize energy reduction and minimize environmental impacts

How will the City promote low or zero emission vehicle technologies?

1.6.1 The City will explore opportunities to support consumer adoption of low or zero emission vehicles.

1.6.2 The City will review and update the Electric Mobility Strategy for Burlington at regular intervals, to keep up to date with emerging technologies and practices.

1.6.3 The City will continuously review the effectiveness of the existing public electric vehicle charging station network and identify needs and opportunities for growth of the network.

How will greenhouse gas emissions and energy use continue to be reduced?

1.6.4 The City will continue to implement urban design and development standards to reduce climate change impacts and enhance climate resiliency for public works and infrastructure including roads, bridges, stormwater systems and energy distribution systems.

1.6.5 The City will continue to consider greenhouse gas (GHG) emissions during the decision-making process, as it relates to transportation.

1.6.6 The City will continue to be a leader when prioritizing energy reduction and minimizing environmental impacts.

1.7 Enhance city parking facilities and services

Given the significant costs associated with parking and its influence on mode choice, parking management is increasingly important in municipalities. Effective parking management should strike a balance between supply and demand for various types (e.g. short-term, long-term, and accessible), while limiting the oversupply of parking spaces. Improved parking efficiency can reduce the amount of space needed for parking, providing opportunities to develop more community-oriented spaces and supporting the potential reallocation of on-street parking space for other uses such as active transportation and transit infrastructure. This section addresses the parking needs for Burlington.

How will the City manage and improve parking conditions?

1.7.1 The City will develop and operate a Strategic Parking Management Program. The Strategic Parking Management Program will be a collection of tools and strategies to align parking supply with the range of City of Burlington objectives (transportation, land use, revenue generation, etc.).

1.7.2 The Strategic Parking Management Program will develop an Action Plan that considers measures and tools to manage parking supply for all modes, including:

a) updates the traffic, parking and zoning bylaws;
b) public-private partnerships to expand the parking supply;
c) parking enforcement strategies and efforts; and
d) a city-wide parking plan for non-auto modes to support the targeted shift in mode share

1.7.3 The City will continue to play an active role in the supply of off-street parking Downtown, in MTSA and in Growth Areas. The City will continue to provide parking to meet the needs of businesses, residents and visitors.

1.7.4 The City will prepare a Parking Master Plan to align with the IMP goals to reduce auto mode share. The Parking Master Plan will consider on street and off-street parking supply and demand. Recommendations of the study will inform future updates to the traffic, parking and zoning bylaws.

1.7.5 The Parking Master Plan will recommend best practices for on-street curbside parking prioritization and management that support the goals of this plan and proposed networks, including:

a) Compatibility with the proposed Cycling Spine Network;
b) Consideration of accessibility and transit access needs;
c) Supply management that balances existing and projected demand with the mode share target set out by this plan;
d) Integrated management of on-street stalls for loading and short-term stopping needs;
e) Consideration of temporary stopping stalls to support automated vehicles or ride-share programs; and
f) Consideration of specialized uses such as electric vehicle or fleet charging locations.

1.7.6 The City will continue to specify off-street parking requirements and may establish maximum parking requirements in the Zoning By-law, where appropriate.

1.7.7 The City may acquire, develop and operate parking facilities outside of the downtown, if necessary.

1.7.8 The City will consider cash-in-lieu of required parking in accordance with the *Planning Act*.

1.7.9 The City will develop new methods and tools to manage parking prices throughout Burlington, such as implementing dynamic pricing in city-owned lots.

1.7.10 The City will accommodate the parking needs of sustainable modes, including electric vehicle (EV) parking stations.

1.8 Maximize safety for all users

Without additional preventative safe mobility measures, undesirable conditions and behaviours could lead to property damage, injury and death. These risks can be mitigated through multidisciplinary Vision Zero strategies.

How will the City increase focus on safety in planning, design, and operational decisions?

1.8.1 The City will develop a Vision Zero Program. The Vision Zero Program will develop, design, recommend and implement measures to eliminate fatal and injury collisions and protect vulnerable road users to achieve Vision Zero.

1.8.2 The Vision Zero Program will develop an Action Plan that considers measures and tools to eliminate fatal and injury collisions and protect vulnerable road users, including:

a) efforts to proactively analyze and identify problems;
b) various transportation guidelines including traffic calming, speed management, street and trail lighting;
c) metrics, mapping tools, dashboards and reports that measure safety performance and assist with analysis;
d) new and innovative street and intersection design with a focus on safety for all users; and
e) consideration of the applicability and implementation of automated enforcement tools.

1.8.3 The City Council will formally adopt Vision Zero approach to transportation system planning, operations and design, and will continue to be implemented and updated as necessary.

1.8.4 The City will continue to review the need for safety improvements and grade-separations of existing at-grade rail crossings for vehicles and/or active transportation that meet or exceed Transport Canada requirements.

1.9 Improve the monitoring and reporting process

Data is fundamental to transportation planning, monitoring and evaluation. The ability to make evidence-based decisions is directly influenced by the quality and quantity of available data. To ensure that changes to the transportation system are on the right trajectory, data is used to support key indicators of change, which are measured and reported back regularly to the community.

1.9.1 The City will manage and deliver a data collection program to support monitoring of the transportation system.

1.9.2 The City will prepare a scorecard tool to improve the monitoring and reporting process and to support decision making, evaluation and prioritization of the IMP.

1.9.3 The City will seek opportunities for enhanced multimodal transportation data collection methodologies to inform mode share trends on an annual basis, if possible, and to with inform capital investment decisions that best advance the City toward meeting the mode share target goals of this plan.

1.10 Align existing and future tools and plans with the IMP vision

Existing plans were reviewed and assessed when developing the IMP vision to ensure consistent messaging across the board. Burlington will continue this practice of aligning any future tools and plans with the IMP vision. The City will commit to the following policies:

1.10.1 The City will maintain and update an Integrated Mobility Plan.

1.10.2 The City will update existing and prepare new planning and design Guidelines, including but not limited to Transportation Impact Study Guidelines, Multimodal Level of Service Guidelines, Flex Zone Management Guidelines and Complete Streets Design Guidelines.

1.10.3 The City will finalize Charters and prepare Action Plans for key Programs.

2.0 Pedestrian Policies

This section of the Integrated Mobility Plan (IMP) presents the policies related to pedestrian movement.

Relevant goals that align with the pedestrian policies:

Goal 1: Burlington will eliminate transportation-related deaths and serious injuries.

Goal 2: Burlington's transportation system will be accessible and reliable for users regardless of factors like age, ability, income, or familiarity with the city.

Goal 3: Burlington will provide high-quality transportation options to move people and goods wherever and whenever, while maintaining a high quality of life for residents.

Goal 4: Burlington will eliminate transportation-related carbon emissions.

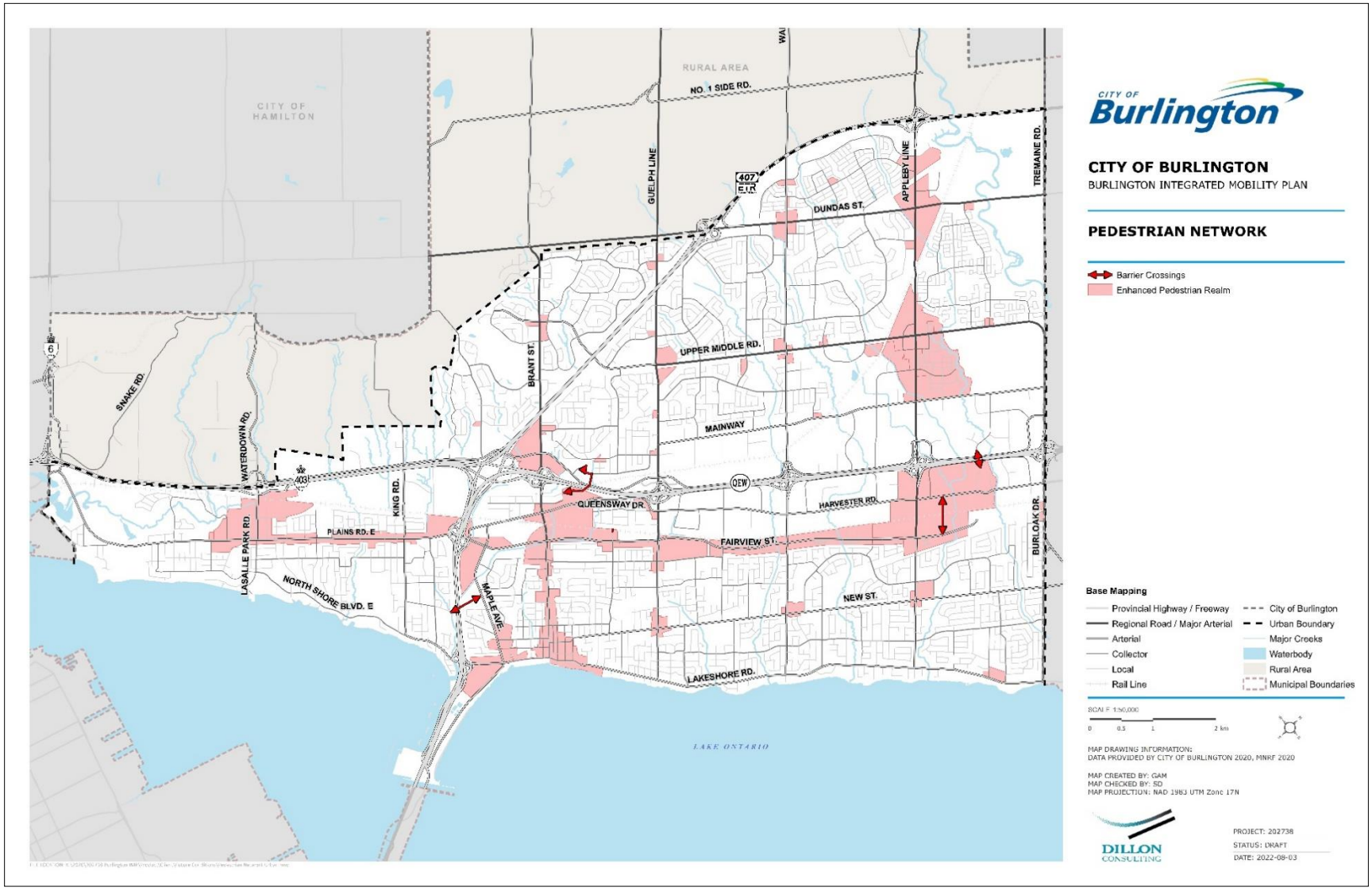
Goal 5: Burlington's streets will support the intended roles of the communities they run through and help these communities be vibrant and prosperous.

Goal 6: Burlington will actively plan for the transportation changes of tomorrow while continuing to deliver great service today.

Everyone is a pedestrian at some point in their trip, if only between their bus stop or parking place and their front door. This makes walking or using a mobility device a critical activity, both as a stand-alone mode and as a connection to other modes of transportation. In 2016, the City-wide mode share for walking is 5.3%. The IMP sets the walking mode share target at 9.0% by 2051. Achieving this target will require improvements to pedestrian facilities and environments across the city.

Burlington's pedestrian network consists of sidewalks, multi-use pathways and paved shoulders within road rights-of-way and multi-use pathways and trails in dedicated corridors. The network features a **Pedestrian Priority Network (PPN)**, defined as a network of wide sidewalks and high-quality walking environments in areas of highest pedestrian activity in the city. This includes all of the Downtown, the intensification corridors and the intensification mixed-use nodes. **Figure 2** shows the Burlington PPN.

Figure 2: Pedestrian Priority Network



The City maintains a Pedestrian Master Plan that:

a) Identifies an implementation strategy for a complete and connected pedestrian network;
b) Identifies policies to build a walkable environment; and
c) Identifies programs and policies that improve pedestrian safety and promote walking.

The IMP summarizes the key elements below.

2.1 Create a complete and connected pedestrian network

Creation of a complete and connected pedestrian network will require that the City look at every opportunity to fill in gaps in the existing pedestrian system and work with partners to extend the pedestrian network to new areas when the opportunity is presented.

Where will pedestrian facilities be constructed?

2.1.1 The City will require and prepare street designs that include pedestrian facilities on both sides of the street for all streets, with the following exceptions:

a) Rear laneways, where no sidewalks will be required;
b) Roads where a rural cross-section is being maintained and paved shoulders cannot be provided;
c) Adjacent to the Natural Heritage System where a trail with a high level of service may be provided instead of a sidewalk; or
d) Cul-de-sacs-with an overall length of 120 metres or less.

2.1.2 The City will review operating conditions and speed management strategies on existing local streets where the road right-of-way does not permit the construction of sidewalks with the goal of creating safe conditions for pedestrians.

2.1.3 The City will ensure that the pedestrian network includes key connections. Where necessary, the City will establish dedicated ROW or enter into agreements with landowners to provide these connections. Key connections include:

a) Direct connections to bus stops and other major walking destinations, including GO stations, strategic growth areas identified in the Official Plan, employment areas;

b) Direct connections between the trails and sidewalk network;
c) Direct connections to schools;
d) Connections to link neighbourhoods that are separated by physical barriers; and
e) Pedestrian connections between subdivisions, cul-de-sacs and developments, where appropriate.

2.1.4 The City will provide direct connections between the sidewalk and trail networks. The City will create controlled crossings where the street and trail networks intersect where practical and supported by the guidelines in OTM Book 15.

How will the pedestrian network be implemented?

2.1.5 The City will implement and expand the pedestrian network by using four different approaches, as applicable:

a) As part of new development, through the development review process;
b) As part of street construction/ reconstruction projects;
c) As **retrofit projects**, to fill in "missing links" of the existing pedestrian network; and
d) As other **capital projects**.

2.1.6 The City will use the Pedestrian Infrastructure Assessment Guideline for Renewal and Reconstruction Projects to determine the recommended approach to incorporating pedestrian facilities into street reconstruction/ renewal projects.

2.2 Enhance the pedestrian level of service (experience)

The Burlington IMP targets a significant increase in the number of people choosing to walk at all times of the day and for all purposes – work, school, shopping, and/or recreation. Mode choices are largely made based on relative competitiveness, convenience and comfort. Modes to be encouraged will be given a competitive advantage (e.g. time, comfort, distance, cost, etc.) where trade-offs are required.

How will the pedestrian level of service be improved?

2.2.1 The City will adopt Multimodal Level of Service Guidelines that consider pedestrian levels of service in all design and operating decisions for the multi-modal transportation network, in accordance with the priority networks recommended by the IMP.

2.2.2 The City will create a Pedestrian Priority Network (**Figure 2**) with an enhanced pedestrian realm in areas where moderate to high pedestrian activity is expected (e.g., MTSA, Downtown and targeted growth areas). The Pedestrian Priority Network will prioritize the following design elements:

a) Limited block sizes;
b) Midblock crossings, where appropriate;
c) Limited use of dual left and channelized right turn lanes at intersections;
d) Buffers between the pedestrian walkways and road;
e) Quality street furniture;
f) Street trees; and
g) High quality pedestrian lighting.

2.2.3 The City will continue to meet or exceed appropriate Municipal Maintenance Standards of surface conditions, width, and lighting on pedestrian facilities.

2.2.4 The City will review winter maintenance standards for pedestrian facilities on the Pedestrian Priority Network and connecting to the Frequent Transit Network to ensure that the level of winter maintenance is aligned with high levels of pedestrian activity.

2.3 Build a walkable environment

Increasing the number of people who walk will also require improving the walking environment. Building and maintaining an accessible and walkable environment requires attention from multiple activities that the City undertakes, such as zoning, development review, community design plans, road designs and maintenance. It requires attention to factors such as public spaces, buildings, and transportation infrastructure. The design of pedestrian spaces should be inclusive, intuitive and inviting for all people to use.

How will the quality of the pedestrian environment design be enhanced?

2.3.1 The City will augment the Downtown Streetscape Guideline with the Pedestrian Priority Network Design Manual, the Complete Streets Design Guide and the Multi-Modal Level of Service Guidelines. The three guidelines will work together to create great pedestrian environments as follows:

a) The Complete Streets Design Guide will establish the fundamental design elements of Burlington Streets, including the preferred type of pedestrian and bicycle facilities for each street class considering the design context. The Complete Streets Design Guide will also provide ideal dimensions for pedestrian facilities within cross-sections.
b) The Multi-Modal Level of Service Guideline will establish the ideal level of service (LOS) for pedestrians at intersections and on segments based on street context and planning objectives. The LOS targets will, in turn, indicate ideal design parameters for pedestrian elements of intersections and street segments. The Multi-Modal Level of Service Guidelines also indicate when and how to compromise on ideal design parameters, where necessary.
c) The Pedestrian Priority Network Design Manual will provide guidance on materials, urban design treatments and greenscaping for boulevards in the Pedestrian Priority Network.

2.4 Improve pedestrian safety and promotion

This section provides an integrated, holistic review of how the City will work to promote walking and make it safer and more comfortable for pedestrians.

How will the City promote pedestrian safety?

2.4.1 The City will implement a Community Road Safety Strategy as a tool to improve pedestrian safety city-wide.

2.4.2 The City will work with a range of public and private sector partners to improve safety for pedestrians and promote walking. Potential partners include Halton Region, MTO, adjacent municipalities, police agencies, neighbourhood associations, school boards and advocacy groups.

How will the City promote walking as a mode of travel?

2.4.3 The City will continue to promote walking and the use of personal mobility devices as a practical mode of transportation, and as a fitness and recreational activity all year round.

2.4.4 The City will develop and implement a **Transportation Demand Management (TDM)** program to influence when, where and how people walk around Burlington.

3.0 Cycling Policies

This section of the Integrated Mobility Plan (IMP) presents the policies related to cycling and micro-mobility movement.

Relevant Goals that Align with the Cycling Policies:

Goal 1: Burlington will eliminate transportation-related deaths and serious injuries.

Goal 2: Burlington's transportation system will be accessible and reliable for users regardless of factors like age, ability, income, or familiarity with the city.

Goal 3: Burlington will provide high-quality transportation options to move people and goods wherever and whenever, while maintaining a high quality of life for residents.

Goal 4: Burlington will eliminate transportation-related carbon emissions.

Goal 5: Burlington's streets will support the intended roles of the communities they run through and help these communities be vibrant and prosperous.

Goal 6: Burlington will actively plan for the transportation changes of tomorrow while continuing to deliver great service today.

Cycling is a popular activity in Burlington that has numerous benefits for both riders and the community which leads to a better quality of life for residents. Its infrastructure can be used by both bikes and micro-mobility devices, such as e-scooters, e-bikes, and skateboards. Building capacity for cycling supports cycling and micro-mobility as practical modes of transportation and recreation throughout the city, thus this chapter references and contains policies for both types of mobility.

In 2016, the City-wide mode share for cycling was 1%. The IMP sets a cycling mode share target of 6% by 2051. Rebalancing the mode share will reduce pressure on the road network. Achieving this mode share will require improvements to the off-road and on-road cycling facilities across Burlington.

Burlington's cycling network consists of:

- Multi-use trails;
- Multi-use paths;

- Protected bikeways (on-road protected bike lanes and cycle tracks);
- Buffered bike lanes;
- Painted bike lanes;
- Local street bikeways;
- Shared use lanes;
- Paved shoulders; and
- Grade-separated connectors.

Figure 3 shows the Urban Cycling Spine Network, developed in the Burlington Cycling Plan to identify key corridors for cycling and micro-mobility in urban Burlington. **Figure 4** shows the Rural Active Transportation (AT) Network that completes the core cycling system.

Figure 3: Urban Cycling Spine Network

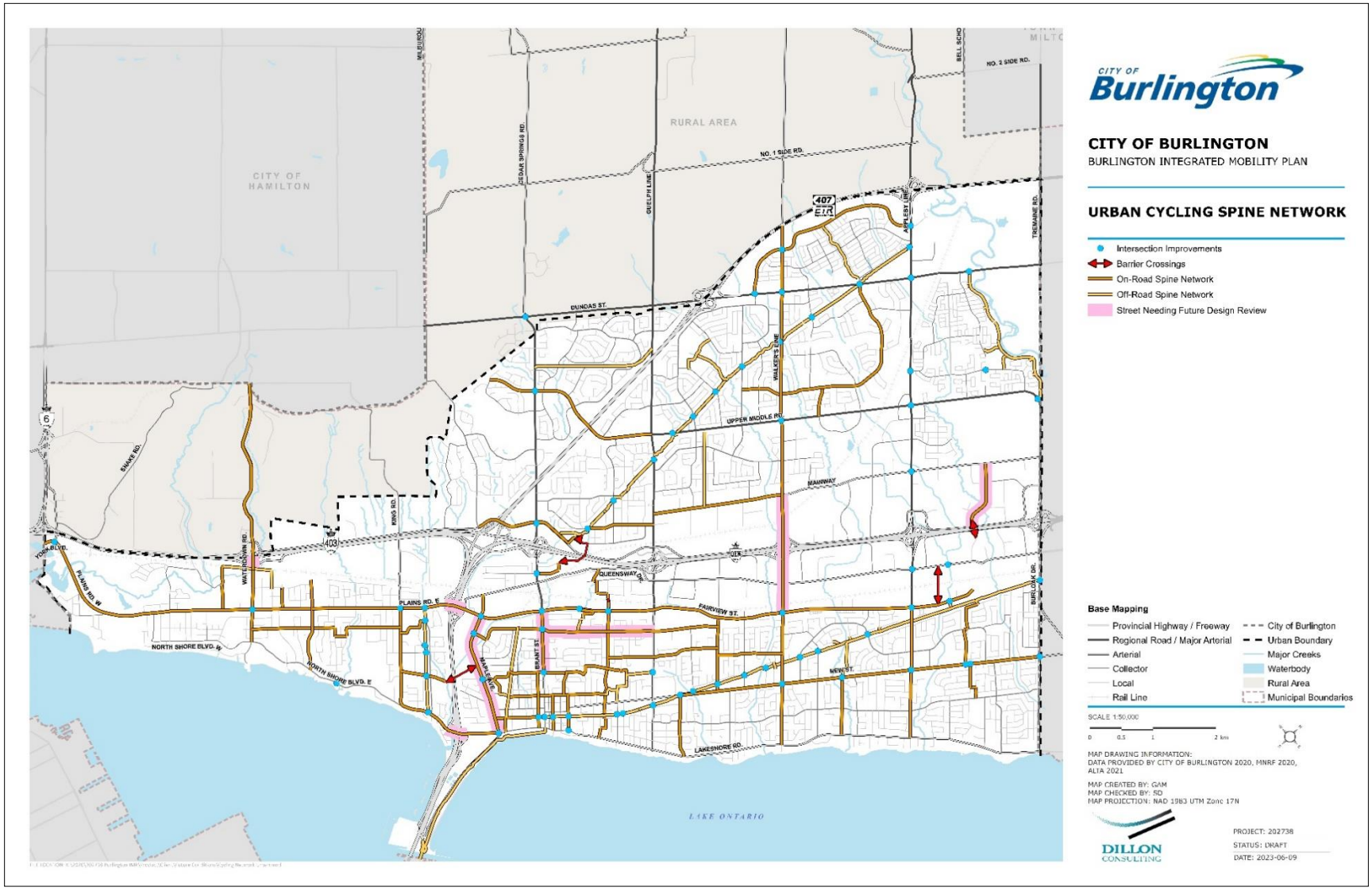
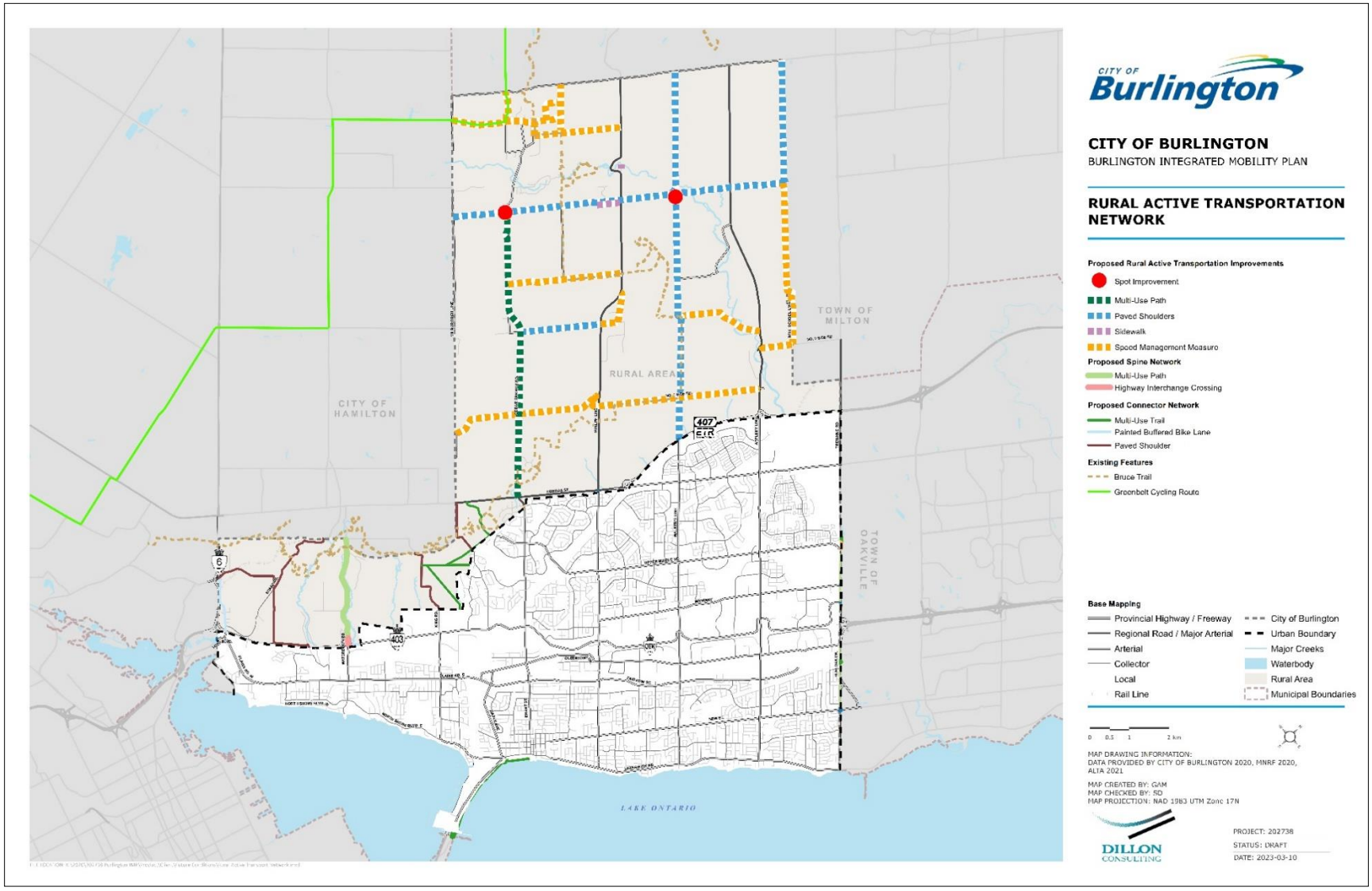


Figure 4: Rural Active Transport Network



The City maintains a Cycling Plan and a Rural Active Transportation Plan that:

a) Identifies an implementation strategy for a complete and connected cycling network;
b) Identifies policies to build an attractive environment for cycling; and
c) Identifies programs and policies that improve cyclist safety and promote cycling.

The IMP summarizes the key policies below.

3.1 Create a complete and connected cycling network

A bicycle is a vehicle under the Highway Traffic Act; therefore, all public streets serve bicycles except where they are expressly prohibited (e.g., 400-series highways). Without dedicated facilities, many streets are unattractive to cyclists due to vehicle volumes and speeds. Burlington's Cycling Plan and Rural AT Plan identify a Spine Network and a network of Connector Routes to create a complete and connected network of facilities with enhanced safety, comfort and convenience for cyclists.

Where will cycling facilities be constructed?

3.1.1 The City will support the ongoing development of a bicycle network that is well connected and comfortable, serving all trip purposes throughout the city by incrementally implementing the Spine Cycling Network and the Connector Routes (as defined in the Cycling Plan) and the elements of the Rural AT Plan.

3.1.2 The City will support connections to and from provincial and regional cycling routes that facilitate opportunities for tourism and travel to, from and through Burlington.

3.1.3 The City will ensure that the cycling network includes key connections. Where necessary the City will establish dedicated right-of-way or enter into agreements with landowners to provide these connections. Key connections include:

a) Direct connections to bus stops and other major walking destinations, including GO stations, strategic growth areas identified in the Official Plan, employment areas;
b) Direct connections between the trails and cycling network;
c) Direct connections to schools;

d) Connections to link neighbourhoods that are separated by physical barriers;
e) Cycling connections between subdivisions, cul-de-sacs and developments, where appropriate; and
f) Providing bicycle paths along rail lines, where appropriate and where they conform to safety regulations.

3.1.4 The City will provide direct connections between the on-street cycling network and trail network, creating controlled crossings where the street and trail networks intersect where practical.

How will the cycling network be implemented?

3.1.5 The City will implement and expand the cycling network by using four different approaches, as applicable:

a) As part of new development, through the development review process;
b) As part of street construction/ reconstruction projects, through a complete streets approach;
c) As retrofit projects, to fill in "missing links" of the existing cycling network; and
d) As other capital projects, to construct new connections across key barriers to cycling.

3.1.6 The City will evaluate, identify and prioritize candidate retrofit projects (projects that fill in missing links) and implement them as permitted. Prioritization will align with the overall goals and values established through the IMP and be refined through the Capital budget process.

3.1.7 The City will undertake a Rapid Deployment Study for the Spine Network to identify a connected network of facilities that can be implemented quickly without significant impact on the operation of the street network as a catalyst for increasing cycling in Burlington.

3.2 Enhance the cyclist level of service (experience)

The Burlington IMP targets a significant increase in the number of people choosing to cycle at all times of the day and for all purposes – work, school, shopping, and/or recreation. Mode choices are largely made based on relative competitiveness,

convenience and comfort. Modes to be encouraged should be given a competitive advantage (e.g. time, comfort, distance, cost, etc.) where trade-offs are required.

How will the cycling level of service be improved?

3.2.1 The City will adopt Multimodal Level of Service Guidelines that consider cycling levels of service in all design and operating decisions for the multi-modal transportation network, in accordance with the priority networks recommended by the IMP. The City will continue to seek to improve cycling levels of service, particularly in locations where barriers to cycling volumes are high.

3.2.2 The City will maintain cyclist level of service in a corridor through intersections, particularly along the Cycling Spine Network where practical. Intersection design guidance will come from OTM Book 18 and the Complete Streets Design Guide.

How will the cycling level of service be improved?

3.2.3 The City will continue to maintain infrastructure to provide comfortable and convenient passage for cyclists.

3.2.4 The City will continuously refine and implement design and maintenance standards to improve year-round use of the **Cycling Spine Network** and to reduce the risk of collisions and injuries.

3.2.5 The City will identify a Winter Cycling Network within the Cycling Spine Network and the Rural AT Network. The winter-maintained network may be expanded as winter cyclist volumes increase, and as the City builds more separated or buffered cycling facilities.

3.2.6 The City will regularly investigate grant and funding opportunities to improve the winter maintenance of cycling facilities.

3.3 Build a cycling network that attracts new cyclists

There is greater likelihood of people choosing to cycle when facilities are designed with the needs of less confident cyclists in mind. In-road cycling facilities have historically been designed to serve commuter cyclists who are confident to bike alongside vehicles. The targeted growth in the cycling mode share requires that the Spine Cycling Network be designed to serve a broader population.

3.3.1 The City will design the Cycling Spine Network to serve cyclists of all ages and abilities. The facilities will be designed to feel intuitive and comfortable for anyone from children to seniors, and people who are new to cycling, or may have disabilities and use adaptive bicycle types.

3.3.2 The City will review the current and planned roadway characteristics and conditions when implementing cycling facilities to ensure that the facility being implemented is appropriate for the context. The City will follow the direction of the Complete Streets Design Guide and the Multimodal Level of Service Guidelines in facility selection and design. The City will also consider OTM Book 18 and the NACTO Designing for All Ages & Abilities Guide.

3.3.3 The City will prioritize direct connections to the Cycling Spine Network.

3.4 Integrate and explore Micro-mobility

Micro-mobility devices such as e-scooters and e-bikes have become important transportation options for short trips over the past five years. As new micro-mobility innovations and technologies emerge, the way people and goods move in urban environments will change and disrupt our transportation networks. Anticipating these changes and understanding the challenges and opportunities they present is critical for forecasting what transportation will look like in the future and enables Burlington to mitigate any negative impacts.

How will current micro-mobility devices be accommodated?

3.4.1 The **Cycling Spine Network** shall be designed to be used by micro-mobility modes as demand grows and as permitted through the Traffic By-Law and Ministry of Transportation regulations.

3.4.2 The City will evaluate the opportunity to introduce or adopt shared micro-mobility services like e-scooters, and e-bikes in achieving the IMP cycling mode share target.

3.4.3 The City will explore the needs for marshalling, storing, parking and/or charging micro-mobility devices at strategic locations around Burlington, particularly at transit stops and stations. Development of micro-mobility nodes may require the

dedication or acquisition of additional property, beyond the basic road right-of-way.

3.4.4 The City will review the need for updates to the Traffic By-law to permit new types of vehicles in City roads and rights of way.

How will innovative and new trends be explored?

3.4.5 The City will monitor and explore future micro-mobility options and how they can be accommodated in Burlington's multimodal transportation network, including opportunities for intermodal connections at transit stops and stations.

3.4.6 The City will regularly monitor federal and provincial government funding, pilot projects and program opportunities to assist with investing in cycling and micro mobility technologies and infrastructure.

3.5 Create attractive connections to transit

Creation of a cycling-friendly city requires facilities to allow people who bike to transfer conveniently to transit.

How will the City improve cycling connections to transit?

3.5.1 The City will continue to ensure all buses are equipped with bicycle racks.

3.5.2 The City will provide bicycle parking facilities at key transit nodes and transfer points.

3.5.3 The City will continue to plan for trails, sidewalks, or pathways in appropriate locations to increase pedestrian and cyclist accessibility to transit services through the implementation of the Cycling Plan and the Rural Active Transportation.

3.6 Create attractive trip-end facilities

Facilities to carry bicycles are a vital component of a cycling-friendly city, but facilities that encourage and support cycling as a mode choice, such as secure bicycle storage at the start and end of trips, are just as critical.

How will the City provide public bicycle parking?

3.6.1 The City will continue to provide short- and long-term bicycle parking facilities throughout Downtown and in MTSA and primary and secondary growth areas.

3.6.2 The City will continue to provide short- and long-term bicycle parking facilities at City-owned properties, such as parks museums, libraries and recreational facilities.

3.6.3 The City will consider the needs of short-term and long-term bicycle parking when it prepares the Downtown Parking Master Plan and the TDM Action Plan.

How will the City encourage end-of-trip facilities on private property?

3.6.4 The City will review the Zoning By-law and update minimum provisions for on-site bicycle parking and storage for bicycles and other micro-mobility devices for new developments.

3.6.5 The City will require the provision of start and end of trip facilities through the TDM plan for all new developments.

3.6.6 The City will develop a strategy to increase/ improve end-of-trip facilities throughout the City at existing developments through the TDM Action Plan.

3.7 Improve cycling safety and promotion

The promotion of cycling is a critical piece to rebalance the cycling mode share across the city. To improve cycling safety and promotion:

How will the City promote cycling safety?

3.7.1 The City will implement a Community Road Safety Strategy as a tool to improve cyclist safety city-wide.

How will the City promote cycling as a mode of travel?

3.7.2 The City will work with a range of public and private sector partners to improve safety for cyclists and promote cycling. Potential partners include Halton Region, MTO, adjacent municipalities, police agencies, neighbourhood associations, school boards and advocacy groups.

3.7.3 The City will develop and implement a **Transportation Demand Management (TDM)** program to influence when, where and how people cycle around Burlington.

4.0 Transit Policies

This section of the Integrated Mobility Plan (IMP) presents the policies related to transit movement.

Relevant Goals that Align with the Transit Policies:

Goal 2: Burlington's transportation system will be accessible and reliable for users regardless of factors like age, ability, income, or familiarity with the city.

Goal 3: Burlington will provide high-quality transportation options to move people and goods wherever and whenever, while maintaining a high quality of life for residents.

Goal 4: Burlington will eliminate transportation-related carbon emissions.

Goal 5: Burlington's streets will support the intended roles of the communities they run through and help these communities be vibrant and prosperous.

Goal 6: Burlington will actively plan for the transportation changes of tomorrow while continuing to deliver great service today.

The Burlington *Official Plan* indicates that the City's transportation system will be planned and managed to offer a balance of transportation choices that reduce reliance upon any single mode, and promote transit, as well as cycling and walking. The 2016 City-wide mode share for transit is 3%. The City of Burlington is targeting to increase transit mode share to 15% by 2051. Rebalancing the mode share will require the City to make transit more attractive than automobile use for an even greater number of residents. Ongoing efforts to improve the availability, reliability, speed, accessibility and comfort of transit service will improve the transit user experience and make transit a more viable transportation choice.

Transit ridership growth strategies in Burlington will be centered on the **Frequent Transit Network (FTN).** The FTN is a network of corridors with frequent transit service where service and infrastructure improvements will be implemented to reduce travel time and delay for buses. The FTN will be complemented by the city's larger network of transit routes that will be reviewed through its regular updates.

Frequent Transit - A public transit service that runs at least every fifteen (15) minutes in both directions, typically seven (7) days per week throughout the day and early evening, with variations in service depending on local conditions.

Frequent Transit Corridors –A priority component of the city-wide public transit network. The long-term frequent transit corridors consist of the following two components, as identified on Schedule B-2: Growth Framework and Long Term Frequent Transit Corridors, of this Plan:

1. Frequent Transit Corridors have existing and/or planned land uses, and street design conditions to enable a frequent service.
2. Candidate Frequent Transit Corridors have some of the existing and/or planned land uses and street design conditions which may enable a frequent service in the future.

The City maintains a Transit Business Plan that:

a) Prepares the 5 year transit strategies, projects and activities which align to the long term objectives of the IMP;
b) Addresses the 5 year growth projections for ridership and the service requirements to accommodate growth, including being forward thinking on how services are planned and delivered;
c) Identifies the fleet, human resources and infrastructure requirements to support the plan;
d) Identifies capital and operating costs and associated funding requirements for transit; and
e) Aligns with other corporate, regional and provincial plans.

The IMP summarizes the key elements below.

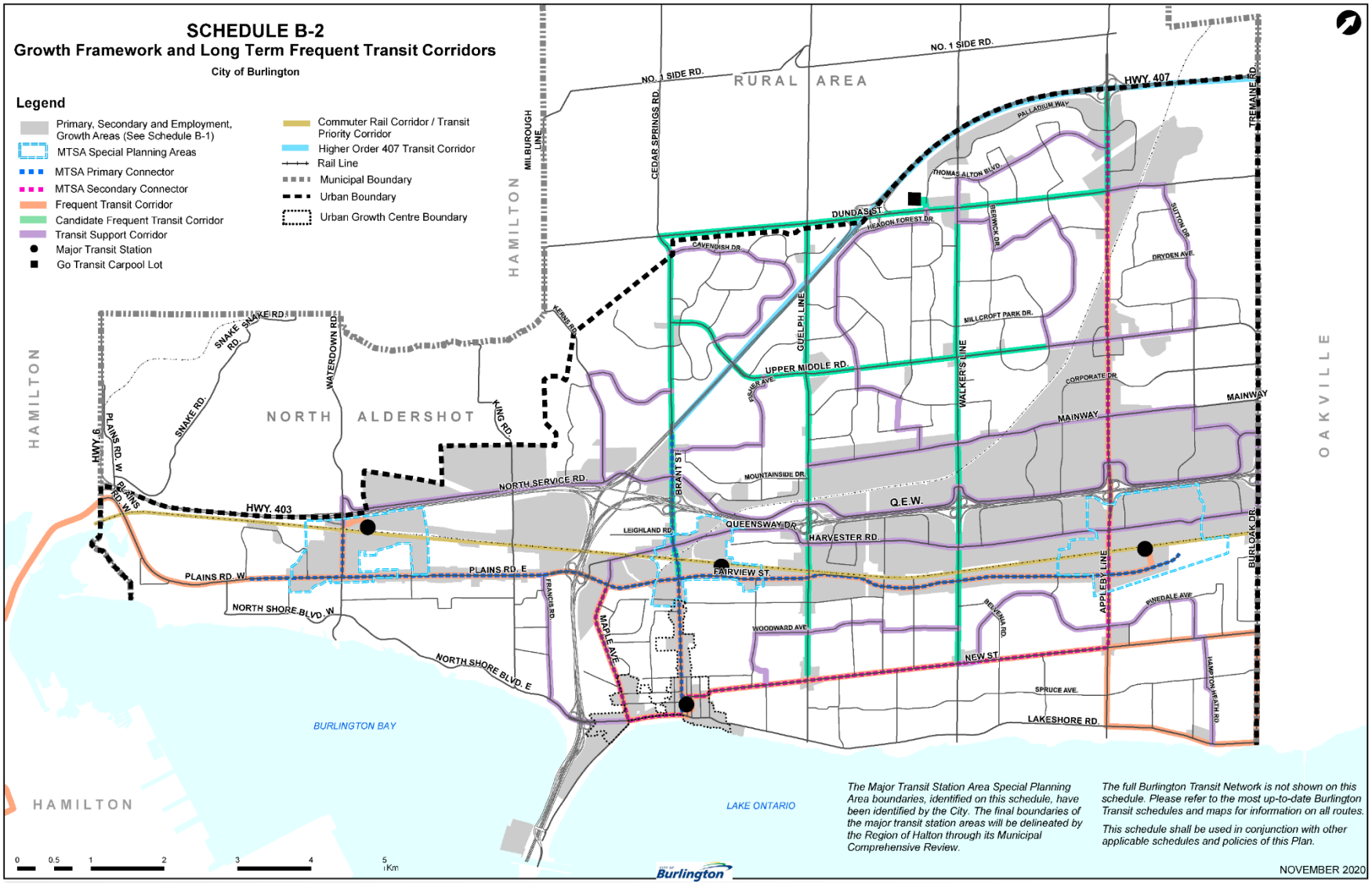
4.1 Build and maintain a quality transit network

The network needs to be direct, affordable, accessible, and safe to encourage people to use transit and compete with the private auto for longer trips. This section addresses the need for a quality transit network and user experience.

How will the Frequent Transit Network be implemented?

4.1.1 The City will implement the Frequent Transit Network (FTN) from **Official Plan Schedule B-2** (**Figure 5**), which maintains, at minimum, a 10-15 minute peak period service and a 15-30 minute service during the remainder of the day.

Figure 5: Growth Framework and Long Term Frequent Transit Corridors



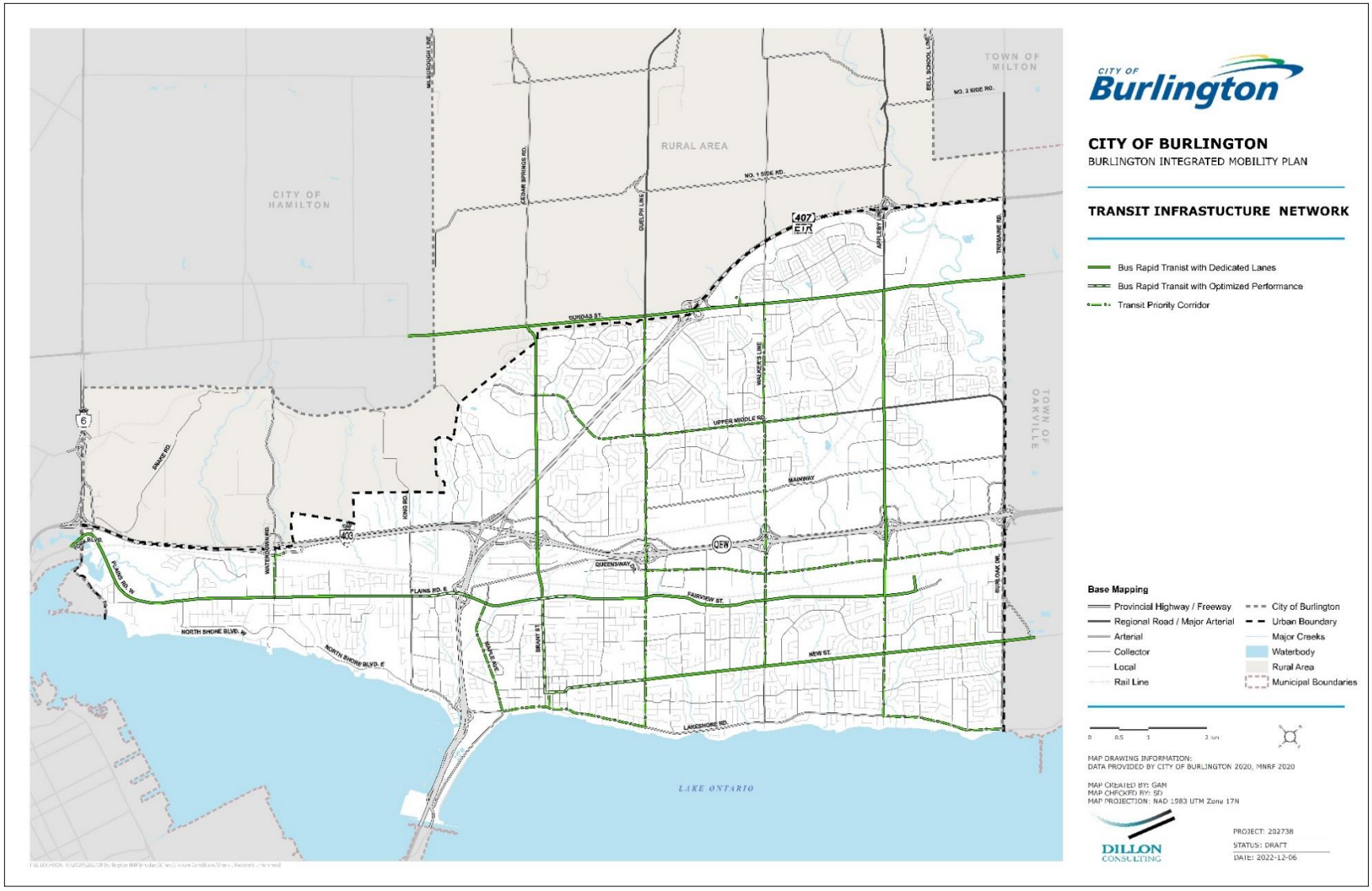
4.1.2 The City will stage the implementation of the supporting infrastructure elements for the FTN shown in **Figure 6**, with elements beyond Stage 1 coming online when and if the need for them emerges, according to the following guidelines:

Stage 1 – Increase frequency of service and/or optimize performance for all routes on the FTN.

Stage 2 – Implement transit priority measures where buses continue to experience significant delays (more than five minutes late), even with Stage 1 implemented. Transit Priority Measures are subject to appropriate environmental assessment studies.

Stage 3 – Convert general traffic lanes to dedicated transit lanes (either at peak times or all-day) on existing four-lane streets and/or widen existing two-lane streets to four lanes to create dedicated transit lanes where delay and ridership warrants. Lane conversions and widenings are subject to relevant technical and environmental assessment studies.

Figure 6: Transit Infrastructure Network



4.1.3 The City will monitor ridership and performance metrics in all FTN corridors and initiate the required planning and design studies for Stage 2 network modifications when conditions demonstrate they are needed.

4.1.4 The City will collaborate with Halton Region and Metrolinx to ensure that the delivery of partner agency infrastructure projects are coordinated with Burlington transit priority and bus rapid transit elements.

4.2 Enhance the transit passenger level of service

The City will continue to ensure that Burlington Transit services and amenities are accessible, inviting and comfortable places to be.

How will the level of service for transit passengers be improved?

4.2.1 The City will adopt **Multimodal Level of Service Guidelines** that consider transit levels of service in all design and operating decisions for the multimodal transportation network, in accordance with the priority networks recommended by the IMP. The City will continue to seek to improve transit levels of service, particularly in locations where barriers to transit exist and passenger volumes are high.

4.2.2 The City will continue to expand first and last mile choices at all transit stations (such as, priority transit access, pedestrian access to workplaces and destinations, improved on-demand services, and on and off-site bike facilities).

4.2.3 The City will implement an equity lens into regular transit service reviews to ensure that everyone in the community is able to access and use the transit system.

4.2.4 The City establish a design guideline and prioritize improvements for passenger amenities at all transit stops and stations including shelters, bicycle racks, and seating, to improve the experience for customers. The City will prioritize improvements for passenger amenities at stops on the FTN corridors.

4.2.5 The City will meet or exceed the *Accessibility for Ontarians with Disabilities Act* (AODA) and the Accessibility Design Standards for accommodating persons with disabilities within the Burlington Transit system and services.

4.3 Explore On-Demand Transit

Many jurisdictions are investigating the implications and implementation of on-demand transit technology and opportunities. This section outlines Burlington's commitments to on-demand transit, as referenced in the 2020 Burlington Transit Five-Year Business Plan.

How will on-demand transit opportunities be investigated?

4.3.1 The City will continue to explore on-demand alternative service delivery strategies to connect GO Rail service to all areas of Burlington that do not conveniently connect to a fixed-route Burlington Transit services.

4.3.2 The City will continue to further explore the use of on-demand transit services to complement fixed-route services and will consider expansion of the program to rural areas. The City will continue to develop an on-demand transit service model and business case for low demand areas and time periods, allowing customers to use a mobile app to book a shared-ride demand-responsive service to connect to the fixed-route service. This should include a review of using dedicated Burlington Transit vehicles or contracting out the service using vehicles that are not dedicated to the service (e.g. pay per trip) seeking partnerships with ridesharing and/or taxi companies to further support on-demand initiatives.

4.3.3 The City will continue to explore the concept of integrating specialized transit services with on-demand transit services – which could be achieved with demand-responsive technology that supports both on demand transit service and specialized transit dispatch.

4.4 Strengthen the relationship between land use and transit

To continue rebalancing the mode share in the future, public transit will need to keep attracting ridership and accommodating for this growth. This section focuses on strengthening the relationship between land use and transit in order to increase the efficiency and attractiveness of transit service.

How will transit and land use cooperation continue to be supported?

4.4.1 The City will develop the transit service guidelines. The transit service guidelines set walking standards for intensification areas and general areas to ultimately achieve ridership goals.

4.4.2 The City will continue to require the provision of on-site or off-site facilities from development applications that involve major trip generators, such as transit user amenities, integrated mobility options, accessibility accommodations, or road improvements that will facilitate public transit service as appropriate.

4.4.3 The City will work with other levels of government and service providers to ensure that any new community facilities are within existing or planned transit supportive development, and/or within a short walking distance to frequent transit service.

4.4.4 The City will encourage all future development to take the form of **Complete Communities/Transit Supportive Development**.

4.4.5 The City will place priority on increasing the level of service of existing transit to support intensification areas, and expand transit service to areas which have achieved, or plan to achieve, transit-supportive residential and employment densities, together with a mix of land uses whenever possible.

4.5 Increase cross-boundary transit trips

In 2022, Burlington offers inter-regional transit connections with GO Transit (by bus and train), Hamilton Street Railway (HSR), and Oakville Transit and Via Rail. This section addresses the opportunity for more transit trips between Burlington and surrounding communities.

How will support for the development of GO Rail service be continued?

4.5.1 The City will continue to provide the Burlington Transit and GO Transit co-fare program, and will participate in future fare integration programs proposed by Metrolinx.

4.5.2 The City will maintain appropriate vehicle, cycling and pedestrian network connectivity to GO stations across the Metrolinx rail corridor as train frequency increases.

How will transit trips increase to adjacent communities?

4.5.3 The City will continue to encourage and participate in studies and programs that increase inter-urban bus and micro transit services that connect Burlington to other nearby urban centres in southwestern Ontario.

4.5.4 The City will continue to work with railway companies and other levels of government to increase the availability of inter-city passenger rail transportation for Burlington.

4.5.5 The City will collaborate with Metrolinx, Hamilton, Oakville and Halton Region to plan and deliver attractive transit service that can be improved to create a more seamless experience for customers and reduce operating costs.

4.6 Improve transit promotion

The promotion of transit is a critical piece to the rebalancing of mode share across the city. Network improvements and prioritization are very important; but so too is the active management of mode choice through an on-going effort to manage transportation demands. It is important to promote transit as a desirable, affordable, and environmentally sustainable mode of transportation. It is a priority to make transit more convenient and simpler to understand, through various communication channels and in partnership with school boards, agencies, police services, Halton Region, developers, employers, and community organizations. A key message will be the practicality of transit and its importance to decreasing carbon emissions and improving air quality.

How will transit as a mode of travel be promoted?

4.6.1 The City will develop and implement a **Transportation Demand Management (TDM)** program to influence when, where and how people travel by transit around Burlington, including measures that promote and encourage transit for more trips.

4.6.2 The City will explore opportunities for enhanced trip planning tools to help travelers make multi-modal transportation decisions in real-time.

4.6.3 Burlington Transit will continue to develop marketing programs and engagement opportunities for various groups, and promote key initiatives like electrification of the fleet.

How will new transit innovations and trends be explored?

4.6.3 The City will explore opportunities for Burlington Transit to leverage new service models or technologies that keep Burlington future-ready and resilient.

4.6.4 The City will explore the possibility of using mobility-as-a-service (MaaS) platforms to pay for a variety of mobility options available in Burlington.

4.6.5 The City will monitor and study the opportunities for autonomous transit buses or shuttles in Burlington.

4.6.6 The City will continue the transition of buses and fleet vehicles to zero tail-pipe emissions, and implement infrastructure upgrades required to accomplish this.

4.6.7 The City will collaborate with Halton Region and Metrolinx to investigate shared infrastructure for vehicle electrification, including on-street charging infrastructure at key locations throughout Halton.

5.0 Goods Movement Policies

This section of the Integrated Mobility Plan (IMP) presents the policies related to goods movement.

Relevant goals that align with the goods movement policies:

Goal 3: Burlington will provide high-quality transportation options to move people and goods wherever and whenever, while maintaining a high quality of life for residents.

Goal 4: Burlington will eliminate transportation-related carbon emissions.

Goal 5: Burlington's streets will support the intended roles of the communities they run through and help these communities be vibrant and prosperous.

Goal 6: Burlington will actively plan for the transportation changes of tomorrow while continuing to deliver great service today.

The City recognizes the importance of safe and efficient movement of goods to Burlington's economic livelihood and regional competitiveness. Burlington's goods movement policies consider the connection of Burlington's industries and businesses to the surrounding region and the overall North American freight movement system to facilitate the safe and efficient movement of raw materials and finished products. They also consider the operation of trucks and trains on the Burlington transportation system; looking to offset negative impacts of heavy vehicles on other modes while allowing for the safe delivery and pick up of materials.

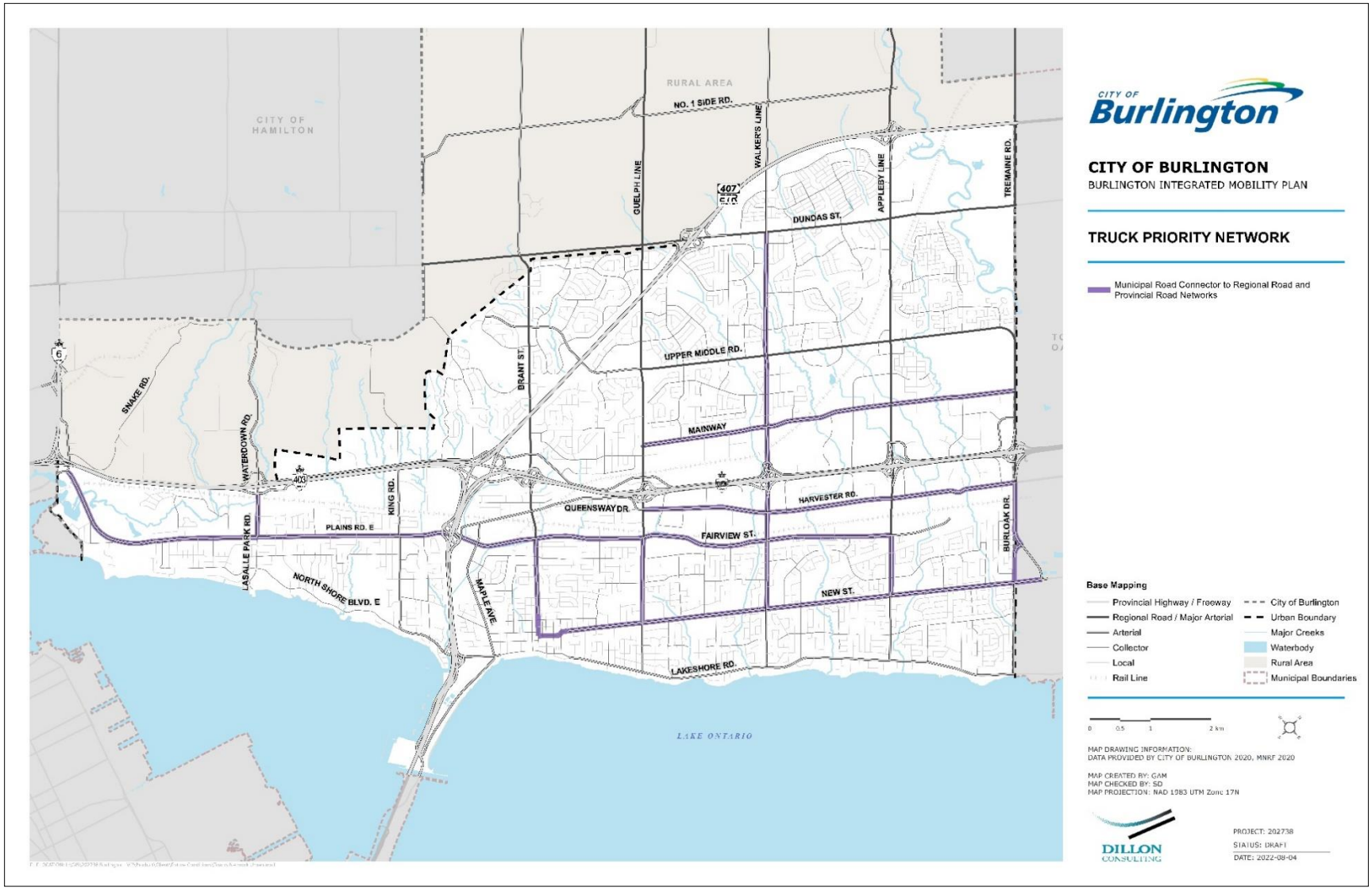
Figure 7 shows the Truck Priority Network. The **Truck Priority Network** is a network of streets that facilitate the efficient and safe movement of goods in the City, while striving to minimize associated social and environmental impacts. It is designed to allow large vehicles to travel through the city efficiently while safely interacting with people who are walking or cycling on the same streets.

The City will maintain a Goods Movement Master Plan that:

a) Identifies an implementation strategy for a complete and connected goods movement network, primarily centered around trucking; and
b) Identifies policies to build a safe and efficient truck network.

The IMP summarizes the key elements below.

Figure 7: Truck Priority Network



5.1 Build and maintain a goods movement network

Burlington's freight movement system consists of truck and rail freight operating on facilities owned by multiple parties (Ministry of Transportation, Metrolinx, Halton Region and Canadian National Railway). The City of Burlington does not currently have a comprehensive **Goods Movement Master Plan**. The **Truck Priority Network** in the IMP reflects key connections on Burlington streets that link employment and industrial areas to the Regional road network and the Provincial highway system.

5.1.1 The City will prepare a comprehensive Goods Movement Strategy to reflect the Official Plan policies and to inform:

a) Any required updates to Burlington's truck priority network (**Figure 7**);
b) The required design parameters for trucks on Burlington's streets;
c) The potential impact of emerging technology and modes, including autonomous drone or vehicle services, cargo-bicycles and e-commerce;
d) Consideration of accommodating long-combination vehicles in designated areas;
e) Designated delivery hours for key neighbourhoods; and
f) Curbside management controls and strategy.

The Goods Movement Strategy will consider the recommendations of the 2016 Freight Supportive Guidelines prepared by MTO.

5.1.2 The City will implement Truck Priority Network (see Figure 5) to inform the design decisions on the network.

5.1.3 The City will monitor opportunities to rehabilitate and retrofit the truck route network through enabling the adjustment or removal of seasonal weight restrictions.

5.1.4 The City will prioritize the implementation of the truck priority network based on truck volumes and conflicts with cyclists.

5.1.5 The City will continue to collaborate with the Halton Region, MTO and adjacent municipalities to implement the recommendations of the Official Plan goods movement policies in Section 6.2.8.

5.2 Enhance goods movement by truck

Trucks are the primary local freight transportation option in Burlington. The City maintains a comprehensive truck route system that consists of arterial and collector roads that connect the region to Burlington's industrial and commercial areas. This section will review the movement of goods with trucks in Burlington.

How will truck routes be designated to serve the industry and protect neighbourhoods?

5.2.1 The City will adopt Multimodal Level of Service Guidelines that consider truck levels of service in all design and operating decisions for the transportation network, in accordance with the priority networks recommended by the IMP.

How will truck needs in road planning, design and construction be considered?

5.2.2 The City will consider trucking needs in the development of the Complete Streets Design Guide and the inclusion of features such as on-street loading areas and separated cycling facilities, where appropriate, when constructing or rehabilitating roads.

5.2.3 The City will continue to address loading within the design of the right-of-way on Multi-Purpose Arterials, Urban Avenues and Main Streets where blocks do not have secondary access from a Laneway or Local Street.

How will the City engage with large truck and logistics users?

5.2.4 The City will regularly engage with large truck and logistics users to quantify freight demand characteristics, the use of arterial roads by trucks, and the congestion, noise and safety impacts of truck movements.

5.3 Enhance goods movement by rail

Burlington is connected to crucial freight corridors through the Canadian National Railway and the Canadian Pacific Railway. This section will review the movement of goods with rail in Burlington.

How will rail service to industrial areas be supported while protecting neighbourhoods?

5.3.1 The City will continue to minimize road/rail conflict wherever possible. The City will follow Transport Canada Grade Separation Assessment Guidelines, in light of the potential for significant environmental, social and cost impacts associated with grade separating rail and road crossings.

5.3.2 The City will continue to facilitate the provision of rail freight service to employment areas, where feasible.

How will rail supportive land use be considered?

5.3.3 The City will consider a site-specific risk management approach to meeting safety and security requirements where development cannot reasonably achieve standard safety measures, in consultation with the affected railway.

5.4 Explore goods movement technologies

Many jurisdictions are investigating the implications and implementation of goods movement technology and opportunities. This section outlines Burlington's commitments to exploring goods movement technologies and practices.

How will goods movement technology and practices be considered?

5.4.1 The City will encourage the goods movement industry to explore goods movement technologies and practices that can reduce community impacts, improve efficiency and enhance regional competitiveness.

Programs

6.0 Strategic Transportation Planning Program

6.1 Mandate/ Key Responsibilities

This program:

- Develops/ maintains integrated strategies and network plans for all modes;
- Develops/ aligns network planning and design guidelines and policies;
- Monitors and reports on progress towards IMP Vision and Objectives; and
- Partner with other departments and external agencies to manage strategic transportation planning issues.

6.2 Potential Actions by the Program

This section provides an initial list of potential actions by the Strategic Transportation Planning program. All actions will be confirmed by the Program Charter and Five-Year Action Plan.

Develops/ maintains integrated strategies and network plans for all modes

- Periodically review and update all mode plans and the IMP to ensure alignment with City of Burlington Transportation Vision and Goals.
- Prepare a Pedestrian Plan that includes a pedestrian charter (statement of commitments to pedestrians in the City | Pedestrian Rights and Expectations and Commitment to recognizing the importance of walking as a standalone mode and as a connection to transit).
- Prepare a comprehensive Goods Movement Strategy.
- Prepare a Winter Cycling Network and Strategy.
- Lead Environmental Assessment and Functional Design studies required to implement the IMP and rebalance the allocation of street right-of-way and improve safety for vulnerable road users.
- Maintain the City's Strategic Travel Demand Model.

Develops/ aligns network planning and design guidelines and policies

- Prepare and/or update a number of strategic guidelines to align with the Transportation Goals and support the implementation of the IMP policies, including:
    - Multimodal Level of Service Guidelines;
    - Complete Streets Design Guidelines;
    - Flex Zone Management Guidelines; and
    - Transportation Impact Assessment Guidelines.

- Prepare Guidelines for identifying and prioritizing stand-alone pedestrian and cycling projects to further the implementation of the Preferred Transportation Network and improve safety for all travelers, particularly vulnerable road users.
- Prepare Transportation Equity Guidelines for Burlington to guide planning, operations and design activities. **Table 1** outlines the proposed project elements and guidance for the proposed Transportation Equity Guidelines.

Table 1: Transportation Equity Guidelines: Proposed Project Elements and Guidance

Project Element	Guidance Related to Transportation Equity
Engagement	• Identifying community groups and engagement techniques for projects, with the objective of reaching historically under-represented communities.
Planning	• Methods for determining data requirements for Needs Analysis and decision criteria for Options Analysis that reflect Equity objectives. • Project prioritization criteria for capital planning.
Operations	• Key parameters for operating the street system, including timing traffic signals, performing winter maintenance activities.
Design	• Key parameters for designing streets and street elements, such as AAA design parameters for Spine Cycling Network and AODA design parameters for pedestrian facilities.

Monitors and reports on progress towards IMP Vision and Objectives

- Develop IMP Dashboard based on the IMP Key Performance Indicators (KPI) for reporting and tracking progress on IMP objectives.
- Develop and implement a strategic data collection program that includes big data to support the dashboard.

Partners with others to manage strategic transportation planning issues

- Continue to be the City's Centre of Excellence for transportation planning.
- Provide input into city policies such as master plans, Official Plan amendments, zoning by-law, and secondary plans to support the goals of the Integrated Mobility Plan (IMP).
- Review development applications to ensure compatibility with the adjacent street network, active transportation network, safety regulations and design guidelines.

6.3 Alignment with IMP Strategy

Table 2 describes how the Strategic Transportation Planning Program will play a pivotal role in addressing the IMP Problem and Opportunity Statements.

6.4 Managing Risk

Table 3 shows the risk profile for the Strategic Transportation Planning Program. **Table 3** identifies:

- The risks to be managed by the City during Program execution; and
- The risks to the City that will be created by delaying implementation of the Program and/or under resourcing the Program.

6.5 Potential Partnerships

The Strategic Transportation Planning Program can leverage the following partnerships:

- Halton Region;
- Metrolinx;
- Ministry of Transportation of Ontario (MTO); and
- Adjacent municipalities.

6.6 Resource Recommendations

The staff complement is currently one Manager of Transportation Planning and Parking, one Supervisor of Transportation Planning (currently vacant) and three (3) Transportation Planning Technologists. To effectively keep-up with the growth and development occurring within the City, it is recommended that the Transportation Planning Technologist complement be increased to four (4).

Table 2: Role of Strategic Transportation Planning Program in advancing IMP Goals

IMP Goal	IMP Problem Statement	How does the Strategic Transportation Planning Program address the IMP Problem Statement
Goal 1 Burlington will eliminate transportation-related deaths and serious injuries.	We need to design our streets to safely serve all modes of transportation, including walking, cycling and transit.	**The City's strategy to address this Problem Statement will be led by another program; the Strategic Transportation Planning Program will play a critical role in supporting the City's actions**. Potential actions include updating planning, design and analysis tools to reflect safety objectives.
Goal 2 Burlington's transportation system will be accessible and reliable for users regardless of factors like age, ability, income, or familiarity with the city.	We need to design our streets to serve the needs of a diverse group of people, of all ages and abilities.	**The City's strategy to address this Problem Statement will be led by the Strategic Transportation Planning Program**. Potential actions include updating planning, design and analysis tools to reflect the needs of broader group of people.
		The City's strategy to address this Problem Statement will be led by the Strategic Transportation Planning Program. Potential actions include planning and implementing street transformation projects to reflect the priority networks in the IMP.
	We will prioritize transportation projects that improve multimodal access and connectivity for more residents.	**The City's strategy to address this Problem Statement will be led by the Strategic Transportation Planning Program**. Potential actions include preparing and implementing a prioritization tool for capital projects that values multimodal access and connectivity.

IMP Goal	IMP Problem Statement	How does the Strategic Transportation Planning Program address the IMP Problem Statement
Goal 3 Burlington will provide high-quality transportation options to move people and goods wherever and whenever.	We need better walking and cycling connections to transit stops and hubs.	**The City's strategy to address this Problem Statement will be led by another program; the Strategic Transportation Planning Program will play a critical role in supporting the City's actions**. Potential actions include the development of a planning and prioritization guideline for network gaps.
	We need more safe crossings of the rivers, rail lines and highways for people walking and cycling.	**The City's strategy to address this Problem Statement will be led by the Strategic Transportation Planning Program**. Potential actions include leading planning and design studies for the crossings identified in the Preferred Network Plan.
	We need to reduce transit travel times and improve traveler convenience to most destinations, particularly between neighbouring areas of the city.	**The City's strategy to address this Problem Statement will be led by another program**.
	We need strong (i.e. fast and direct) transit connections to existing and future jobs.	**The City's strategy to address this Problem Statement will be led by another program**
	We need to improve transportation options for rural residents.	**The City's strategy to address this Problem Statement will be led by another program**
	We need to maintain peak period movement for all modes on Burlington streets.	**The City's strategy to address this Problem Statement will be led by another program**

IMP Goal	IMP Problem Statement	How does the Strategic Transportation Planning Program address the IMP Problem Statement
Goal 4 Burlington will eliminate transportation-related carbon emissions.	We need to reduce the percentage of trips made by car.	**The City's strategy to address this Problem Statement will be led by another program**
	We need to tap Burlington's unrealized potential for electric vehicles.	**The City's strategy to address this Problem Statement will be led by another program; the Strategic Transportation Planning Program will play a critical role in supporting the City's actions**. Potential actions include collaboration with Manager of Environmental Sustainability to develop a framework and strategy for EV.
Goal 5 Burlington's streets will support the intended roles of the communities they run through and help these communities be vibrant and prosperous.	We need to redesign streets in key growth areas to prioritize walking, cycling and transit.	**The City's strategy to address this Problem Statement will be led by the Strategic Transportation Planning Program**. Potential actions include planning and implementing street transformation projects to reflect the priority networks in the IMP.
	We need to update our road designs to reflect the unique priorities of different areas and current thinking on urban street design.	**The City's strategy to address this Problem Statement will be led by the Strategic Transportation Planning Program**. Potential actions include updating planning, design and analysis tools to reflect the variety of contexts across the city.
		The City's strategy to address this Problem Statement will be led by the Strategic Transportation Planning Program. Potential actions include planning and implementing street transformation projects to reflect the priority networks in the IMP.

IMP Goal	IMP Problem Statement	How does the Strategic Transportation Planning Program address the IMP Problem Statement
Goal 6 Burlington will actively plan for the transportation changes of tomorrow while continuing to deliver great service today.	We need to improve the resiliency of Burlington's transportation system.	**The City's strategy to address this Problem Statement will be led by the Strategic Transportation Planning Program**. Potential actions include updating planning, design and analysis tools to reflect the variety of contexts across the city.
	We need to better prepare for the future of mobility.	**The City's strategy to address this Problem Statement will be led by the Strategic Transportation Planning Program**. Potential actions include monitoring trends and changes in transportation networks and factors that affect mobility choices.
	We need to leverage and connect capital planning to asset management.	**The City's strategy to address this Problem Statement will be led by another program; the Strategic Transportation Planning Program will play a critical role in supporting the City's actions**. Potential actions include planning and implementing street transformation projects to reflect the priority networks in the IMP.

Table 3: Risk Profile for Strategic Transportation Planning Program

Key Responsibility	Risk to be managed during Program execution	Risks created by delaying implementation of the Program and/or under resourcing the Program
Develops/ maintains integrated strategies and network plans for all modes.	Stakeholders will have concerns about the potential impacts of street transformations.	One or more modes will not be accommodated at targeted level of service.
	Implementation of capital projects will need to consider asset condition in addition to IMP strategic priorities.	The required shift in mode share will not take place without expansion and improvement to sustainable transportation networks; the targeted mode share shift is key to managing congestion and reducing GHG.
Develops/ aligns network planning and design guidelines and policies.	Stakeholders may have concerns about new methods for planning and design.	One or more modes are not accommodated at targeted level of service.
		Safety for vulnerable travelers will not be improved and equity objectives will not be met.
		The required shift in mode share will not take place without new/ realigned planning and design guidelines; the targeted mode share shift is key to managing congestion and reducing GHG.
Monitors and reports on progress towards IMP Vision and Objectives.	Progress towards some of the IMP goals will be difficult to measure quantitatively.	Progress towards goals will not be known; any required adjustments to the IMP and Action Plans to improve effectiveness will not be made.
Partners with others to manage strategic transportation planning issues and review development applications.		Support for other departments will lag delaying projects.

7.0 Transportation Demand Management (TDM) Program

7.1 Mandate/ Key Responsibilities

This program:

- Develops measures and tools to manage demand for travel for all transportation modes, targeting factors like cost, convenience, and understanding of issues.

Transportation Demand Management (TDM) is a term used to describe a suite of initiatives aimed at reducing traffic volumes (demand) on the road network, particularly in the commuter peak hours, by targeting driver behaviour and mode choice.

The City does not currently deliver a TDM Program, yet the importance of implementing TDM is recognized through the new Official Plan (Section 6.2.10 Transportation Demand Management) which identifies the need for a TDM lens to be applied through development application review to ensure that new development is built in a manner that promotes more efficient use of existing transportation infrastructure, reduces automobile use, and promotes active transportation and transit.

7.2 Potential Actions by the Program

This section provides an introductory list of potential actions by the Transportation Demand Management Program. All actions will be confirmed by the Program Charter and Five-Year Action Plan.

Develops measures and tools to manage demand for travel for all transportation modes

- Prepare and maintain a TDM Strategy and Action Plan for Burlington.
    - The TDM Strategy will:
        - Identify Objectives and Performance Measures for the TDM Program (e.g., increase mode share for walking by X% by Y horizon);
        - Identify key travel markets (groups of trips with common factors like destination, origin, purpose, etc.) to be targeted by the TDM Strategy (e.g., developers, residents of the MTSA, employees of the City of Burlington, school boards); and

        - Identify Partners that could be engaged to deliver TDM tools and actions.

    - The TDM Action Plan will:

        - Identify specific TDM tools or actions that the City will undertake (e.g., develop and maintain a TDM supplement for the TIA Guidelines, implement dynamic pricing for parking, develop an education campaign for elementary school children).

- Prepare a micro-mobility plan/ strategy that is linked to the Complete Streets Design Guide and connected to Traffic By-laws.
- Form partnerships and support community collaborations.

7.3 Alignment with IMP Strategy

Table 4 describes how the TDM Program will play a pivotal role in addressing the IMP Problem and Opportunity Statements.

7.4 Managing Risk

Table 5 shows the risk profile for the Strategic Transportation Planning Program. **Table 5** identifies:

- The risks to be managed by the City during Program execution; and
- The risks to the City that will be created by delaying implementation of the Program and/or under resourcing the Program.

7.5 Potential Partnerships

The following partnerships can be leveraged by the City:

- School boards;
- Large employers / Chamber of Commerce;
- Developers;
- Local environmental and transportation-related organizations;
- Internal partnerships: Economic Development and Tourism;
- Community advocacy groups; and
- Micro-mobility providers.

7.6 Resource Recommendations

TDM is currently unfunded and unstaffed. One full-time position would be required to develop, implement and monitor the TDM program.

Table 4: Role of Transportation Demand Management Program in advancing IMP Goals

IMP Goal	IMP Problem Statement	How does the TDM Program address the IMP Problem Statement
Goal 1 Burlington will eliminate transportation-related deaths and serious injuries.	We need to design our streets to safely serve all modes of transportation, including walking, cycling and transit.	**The City's strategy to address this Problem Statement will be led by another program.**
Goal 2 Burlington's transportation system will be accessible and reliable for users regardless of factors like age, ability, income, or familiarity with the city.	We need to design our streets to serve the needs of a diverse group of people, of all ages and abilities.	**The City's strategy to address this Problem Statement will be led by another program; the TDM Program will play a critical role in supporting the City's actions.** Potential actions include preparing educational and promotional materials to make travelers aware of the available options.
	We will prioritize transportation projects that improve multimodal access and connectivity for more residents.	**The City's strategy to address this Problem Statement will be led by another program; the TDM Program will play a critical role in supporting the City's actions.** Potential actions include preparing educational and promotional materials to make travelers aware of the available options

IMP Goal	IMP Problem Statement	How does the TDM Program address the IMP Problem Statement
Goal 3 Burlington will provide high-quality transportation options to move people and goods wherever and whenever.	We need better walking and cycling connections to transit stops and hubs.	**The City's strategy to address this Problem Statement will be led by another program; the TDM Program will play a critical role in supporting the City's actions.** Potential actions include preparing educational and promotional materials to make travelers aware of the available options
	We need more safe crossings of the rivers, rail lines and highways for people walking and cycling.	**The City's strategy to address this Problem Statement will be led by another program.**
	We need to reduce transit travel times and improve traveler convenience to most destinations, particularly between neighbouring areas of the city.	**The City's strategy to address this Problem Statement will be led by another program; the TDM Program will play a critical role in supporting the City's actions.** Potential actions include working with groups of travelers to understand barriers for mode choice and promoting/ educating travelers around sustainable transportation.
	We need strong (i.e. fast and direct) transit connections to existing and future jobs.	**The City's strategy to address this Problem Statement will be led by another program.**
	We need to improve transportation options for rural residents.	**The City's strategy to address this Problem Statement will be led by another program; the TDM Program will play a critical role in supporting the City's actions.** Potential actions include working with groups of travelers to understand barriers for mode choice and

IMP Goal	IMP Problem Statement	How does the TDM Program address the IMP Problem Statement
		promoting/ educating travelers around sustainable transportation
	We need to maintain peak period movement for all modes on Burlington streets.	**The City's strategy to address this Problem Statement will be led by another program.**
Goal 4 Burlington will eliminate transportation-related carbon emissions.	We need to reduce the percentage of trips made by car.	**The City's strategy to address this Problem Statement will be led by another program; the TDM Program will play a critical role in supporting the City's actions.** Potential actions include working with groups of travelers to understand barriers for mode choice and promoting/ educating travelers around sustainable transportation
	We need to tap Burlington's unrealized potential for electric vehicles	**The City's strategy to address this Problem Statement will be led by another program; the TDM Program will play a critical role in supporting the City's actions.** Potential actions include preparing educational and promotional materials to make travelers aware of the available options.
Goal 5 Burlington's streets will support the intended roles of the communities they run through and help these	We need to redesign streets in key growth areas to prioritize walking, cycling and transit.	**The City's strategy to address this Problem Statement will be led by another program; the TDM Program will play a critical role in supporting the City's actions.** Potential actions include preparing educational and promotional materials to make travelers aware of the available options.

IMP Goal	IMP Problem Statement	How does the TDM Program address the IMP Problem Statement
communities be vibrant and prosperous.	We need to update our road designs to reflect the unique priorities of different areas and current thinking on urban street design.	**The City's strategy to address this Problem Statement will be led by another program.**
		The City's strategy to address this Problem Statement will be led by another program.
Goal 6 Burlington will actively plan for the transportation changes of tomorrow while continuing to deliver great service today.	We need to improve the resiliency of Burlington's transportation system.	**The City's strategy to address this Problem Statement will be led by another program; the TDM Program will play a critical role in supporting the City's actions.** Potential actions include preparing educational and promotional materials to make travelers aware of the available options.
	We need to better prepare for the future of mobility.	**The City's strategy to address this Problem Statement will be led by Strategic Transportation Planning.** Potential actions include preparing a micro-mobility plan for Burlington.
	We need to leverage and connect capital planning to asset management.	**The City's strategy to address this Problem Statement will be led by another program.**

Table 5: Risk Profile for Transportation Demand Management Program

Key Responsibility	Risk to be managed during Program execution	Risks created by delaying implementation of the Program and/or under resourcing the Program
Develops measures and tools to manage demand for travel for all transportation modes.	Targeted travelers will fit into multiple travel markets (i.e., someone may live in an MTSA, have school aged children and work for the City of Burlington); measures that attempt to influence travel choices will have to be as informed as possible about the factors that go into the decisions of where, when and how to travel.	One or more modes will not be accommodated at targeted level of service.
		The required shift in mode share will not take place without measures and tools to influence mode choice; the targeted mode share shift is key to managing congestion and reducing GHG.
		Fare revenue from transit will not reach its potential without measures to encourage transit use.

8.0 Strategic Parking Management Program

8.1 Mandate/Key Responsibilities

This program:

- Develop measures and tools to manage parking supply for all modes.

The Strategic Parking Management Program will be a collection of tools and strategies used to align parking supply with the range of City of Burlington objectives (transportation, land use, revenue generation, etc.). Optimizing parking supply and pricing will contribute to the reduction of negative environmental impacts, reduction of auto mode share and diminish mobility costs and stress for users.

Given the significant costs associated with parking and its influence on mode choice, strategic parking management is increasingly important in municipalities. Effective parking management should strike a balance between supply for various user groups (e.g. short-term, long-term, and accessible), while limiting the oversupply of parking spaces. Improved parking efficiency can reduce the amount of space needed for parking, providing opportunities to develop more community-oriented spaces and supporting the potential reallocation of on-street parking for other uses such as active transportation and transit infrastructure.

8.2 Potential Actions by the Program

This section provides an introductory list of potential actions by the Strategic Parking Management Program. All actions will be confirmed by the Program Charter and Five-Year Action Plan.

Develop measures and tools to manage parking supply for all modes

- Review on-street and off-street parking locations and supply to ensure the city-wide parking system is in alignment with the goals and objectives of this plan.
- Maintain and update the traffic, parking and zoning bylaws.
    - Study the elimination of parking minimums in intensification areas.
    - Develop a strategy for Aldershot BIA and future municipal parking supply.
- Develop the city's first Downtown Parking Master Plan.

  - Investigate pricing structures at Downtown lots that incentivizes active transportation and micro mobility.
  - Consider implementation of dynamic pricing of Downtown lots.

- Consider public-private partnerships to expand the parking supply.
- Assess parking enforcement strategies and efforts.
- Develop a city-wide parking plan for non-auto modes to support the targeted shift in mode share.

8.3 Alignment with IMP Strategy

Table 6 describes how the Strategic Parking Management Program will play a pivotal role in addressing the IMP Problem and Opportunity Statements.

8.4 Managing Risk

Table 7 shows the risk profile for the Strategic Parking Management Program. **Table 7** identifies:

- The risks to be managed by the City during Program execution; and
- The risks to the City that will be created by delaying implementation of the Program and/or under resourcing the Program.

8.5 Potential Partnerships

The following partnerships can be leveraged by the City:

- Downtown Parking Committee;
- Burlington Downton Business Association / Aldershot BIA / BEDC;
- Municipal Alliance for Connected & Autonomous Vehicles Ontario;
- Post-secondary institutions (research and development); and
- Private industry & micro mobility suppliers.

8.6 Resource Recommendations

Subject to further discussion as a result of reallocating resources.

Table 6: Role of Strategic Parking Management Program in advancing IMP Goals

IMP Goal	IMP Problem Statement	How does the Strategic Parking Management Program address the IMP Problem Statement
Goal 1 Burlington will eliminate transportation-related deaths and serious injuries.	We need to design our streets to safely serve all modes of transportation, including walking, cycling and transit.	**The City's strategy to address this Problem Statement will be led by another program.**
Goal 2 Burlington's transportation system will be accessible and reliable for users regardless of factors like age, ability, income, or familiarity with the city.	We need to design our streets to serve the needs of a diverse group of people, of all ages and abilities.	**The City's strategy to address this Problem Statement will be led by the Strategic Parking Planning Program, for the elements of the solution that are related to parking.** Potential actions include managing the parking supply to meet the needs of the less physically able portion of the population.
	We will prioritize transportation projects that improve multimodal access and connectivity for more residents.	**The City's strategy to address this Problem Statement will be led by another program.**
Goal 3 Burlington will provide high-quality transportation options to move people and goods wherever and whenever.	We need better walking and cycling connections to transit stops and hubs.	**The City's strategy to address this Problem Statement will be led by another program; the Strategic Parking Planning Program will play a critical role in supporting the City's actions.** Potential actions include developing guidelines for bicycle and micro-mobility parking facilities at transit stops and hubs.

IMP Goal	IMP Problem Statement	How does the Strategic Parking Management Program address the IMP Problem Statement
	We need more safe crossings of the rivers, rail lines and highways for people walking and cycling.	**The City's strategy to address this Problem Statement will be led by another program.**
	We need to reduce transit travel times and improve traveler convenience to most destinations, particularly between neighbouring areas of the city.	**The City's strategy to address this Problem Statement will be led by another program.**
	We need strong (i.e. fast and direct) transit connections to existing and future jobs.	**The City's strategy to address this Problem Statement will be led by another program.**
	We need to improve transportation options for rural residents.	**The City's strategy to address this Problem Statement will be led by another program.**
	We need to maintain peak period movement for all modes on Burlington streets.	**The City's strategy to address this Problem Statement will be led by another program.**
Goal 4 Burlington will eliminate transportation-related carbon emissions.	We need to reduce the percentage of trips made by car.	**The City's strategy to address this Problem Statement will be led by another program; the Strategic Parking Program will play a critical role in supporting the City's actions.** Potential actions include managing parking supply to align with City's mode share objectives.

IMP Goal	IMP Problem Statement	How does the Strategic Parking Management Program address the IMP Problem Statement
	We need to tap Burlington's unrealized potential for electric vehicles.	**The City's strategy to address this Problem Statement will be led by another program; the Strategic Parking Program will play a critical role in supporting the City's actions.** Potential actions include collaboration with the Manager of Environmental Sustainability to develop a framework and strategy for EV parking and charging.
Goal 5 Burlington's streets will support the intended roles of the communities they run through and help these communities be vibrant and prosperous.	We need to redesign streets in key growth areas to prioritize walking, cycling and transit.	**The City's strategy to address this Problem Statement will be led by another program.**
	We need to update our road designs to reflect the unique priorities of different areas and current thinking on urban street design.	**The City's strategy to address this Problem Statement will be led by another program.**
Goal 6 Burlington will actively plan for the transportation changes of tomorrow while continuing to deliver great service today.	We need to improve the resiliency of Burlington's transportation system.	**The City's strategy to address this Problem Statement will be led by another program.**
	We need to better prepare for the future of mobility.	**The City's strategy to address this Problem Statement will be led by another program; the Strategic Parking Program will play a critical role in supporting the City's actions.** Potential actions include collaboration with the Manager of Environmental Sustainability to develop a framework and strategy for EV parking and charging.

IMP Goal	IMP Problem Statement	How does the Strategic Parking Management Program address the IMP Problem Statement
	We need to leverage and connect capital planning to asset management.	**The City's strategy to address this Problem Statement will be led by another program.**

Table 7: Risk Profile for Strategic Parking Management Program

Key Responsibility	Risk to be managed during Program execution	Risks created by delaying implementation of the Program and/or under resourcing the Program
Develop measures and tools to manage parking supply for all modes.	Stakeholders will have concerns limiting parking supply and/or adjusting parking pricing.	One or more modes will not be accommodated at targeted level of service.
		The required shift in mode share will not take place without measures and tools to manage parking supply; the targeted mode share shift is key to managing congestion and reducing GHG.
		Parking revenue will not reach its potential without measures to manage supply and pricing.

9.0 Active Transportation Program

9.1 Mandate/ Key Responsibilities

This program:

- Designs and implements Active Transportation (AT) projects (retrofit, connector network, connections to transit stops) outside of the pedestrian and cycling Priority Networks.

Active Transportation requires a person to move themselves to a destination through non-motorized means. Examples of active transportation include, walking, cycling, scootering, and rollerblading. By definition, Active Transportation also includes electric-powered bicycles, e-scooters and other 'micro-mobility' devices that require human power to move them.

9.2 Potential Actions by the Program

This section provides an introductory list of potential actions by the Active Transportation program. All actions will be confirmed by the Program Charter and Five-Year Action Plan.

Designs and implements Active Transportation (AT) projects

- Increase connectivity through eliminating gaps within the active transportation network.
- Provide input into capital design projects to facilitate implementation of the active transportation networks recommended through the IMP.
- Monitor progress toward implementation of the Priority Networks.

9.3 Alignment with IMP Strategy

Table 8 describes how the Active Transportation Program will play a pivotal role in addressing the IMP Problem and Opportunity Statements.

9.4 Managing Risk

Table 9 shows the risk profile for the Active Transportation Program. **Table 9** identifies:

- The risks to be managed by the City during Program execution; and

- The risks to the City that will be created by delaying implementation of the Program and/or under resourcing the Program.

9.5 Potential Partnerships

The following partnerships can be leveraged by the City:

- Halton Region Public Health;
- Halton Regional Police Services;
- Local school boards;
- Metrolinx;
- Ministry of Transportation of Ontario (MTO);
- Community advocacy groups (i.e. BurlingtonGreen);
- Cycling Groups;
- Seniors associations;
- Micro-mobility service providers such as bike-shares or scooter-share programs; and
- Other levels of Provincial and Federal government for infrastructure funding opportunities.

9.6 Resource Recommendations

It is important to reflect the mode share targets in the proportionate staff and budget resourcing for the active transportation program. Currently, there is no dedicated resource allocated to Active Transportation. One staff member within Transportation Planning directs approximately 10% of time toward the promotion of AT, but the need for dedicated resourcing is critical to support the implementation of the IMP. It is recommended that in the short term, one full-time Project Coordinator be assigned to the Active Transportation program, expecting that the staff complement grow and include an addition full-time Transportation Technologist after such time that Complete Streets Guidelines are adopted.

Table 8: Role of Active Transportation Program in advancing IMP Goals

IMP Goal	IMP Problem Statement	How does the Active Transportation Program address the IMP Problem Statement
Goal 1 Burlington will eliminate transportation-related deaths and serious injuries.	We need to design our streets to safely serve all modes of transportation, including walking, cycling and transit.	**The City's strategy to address this Problem Statement will be led by another program.**
Goal 2 Burlington's transportation system will be accessible and reliable for users regardless of factors like age, ability, income, or familiarity with the city.	We need to design our streets to serve the needs of a diverse group of people, of all ages and abilities.	**The City's strategy to address this Problem Statement will be led by another program; the Active Transportation Program will play a critical role in supporting the City's actions.** Potential actions include identifying local walking and cycling infrastructure projects to increase the proportion of the population served at higher levels of service.
	We will prioritize transportation projects that improve multimodal access and connectivity for more residents.	**The City's strategy to address this Problem Statement will be led by another program; the Active Transportation Program will play a critical role in supporting the City's actions.** Potential actions include identifying local walking and cycling infrastructure projects to increase the proportion of the population served at higher levels of service.

IMP Goal	IMP Problem Statement	How does the Active Transportation Program address the IMP Problem Statement
Goal 3 Burlington will provide high-quality transportation options to move people and goods wherever and whenever.	We need better walking and cycling connections to transit stops and hubs.	**The City's strategy to address this Problem Statement will be led by another program; the Active Transportation Program will play a critical role in supporting the City's actions.** Potential actions include identifying local walking and cycling infrastructure projects to make missing connections to transit stops and hubs.
	We need more safe crossings of the rivers, rail lines and highways for people walking and cycling.	**The City's strategy to address this Problem Statement will be led by another program.**
	We need to reduce transit travel times and improve traveler convenience to most destinations, particularly between neighbouring areas of the city.	**The City's strategy to address this Problem Statement will be led by another program.**
	We need strong (i.e. fast and direct) transit connections to existing and future jobs.	**The City's strategy to address this Problem Statement will be led by another program.**
	We need to improve transportation options for rural residents.	**The City's strategy to address this Problem Statement will be led by another program.**
	We need to maintain peak period movement for all modes on Burlington streets.	**The City's strategy to address this Problem Statement will be led by another program.**

IMP Goal	IMP Problem Statement	How does the Active Transportation Program address the IMP Problem Statement
Goal 4 Burlington will eliminate transportation-related carbon emissions.	We need to reduce the percentage of trips made by car.	**The City's strategy to address this Problem Statement will be led by another program; the Active Transportation Program will play a critical role in supporting the City's actions.** Potential actions include identifying local walking and cycling infrastructure projects to increase the proportion of the population served at higher levels of service.
	We need to tap Burlington's unrealized potential for electric vehicles.	**The City's strategy to address this Problem Statement will be led by another program.**
Goal 5 Burlington's streets will support the intended roles of the communities they run through and help these communities be vibrant and prosperous.	We need to redesign streets in key growth areas to prioritize walking, cycling and transit.	**The City's strategy to address this Problem Statement will be led by another program; the Active Transportation Program will play a critical role in supporting the City's actions. Potential actions** include identifying local walking and cycling infrastructure projects to increase the proportion of the population served at higher levels of service.
	We need to update our road designs to reflect the unique priorities of different areas and current thinking on urban street design.	**The City's strategy to address this Problem Statement will be led by another program.**

IMP Goal	IMP Problem Statement	How does the Active Transportation Program address the IMP Problem Statement
Goal 6 Burlington will actively plan for the transportation changes of tomorrow while continuing to deliver great service today.	We need to improve the resiliency of Burlington's transportation system.	**The City's strategy to address this Problem Statement will be led by another program; the Active Transportation Program will play a critical role in supporting the City's actions.** Potential actions include identifying local walking and cycling infrastructure projects to increase the transportation options and access for all residents.
	We need to better prepare for the future of mobility.	**The City's strategy to address this Problem Statement will be led by another program.**
	We need to leverage and connect capital planning to asset management.	**The City's strategy to address this Problem Statement will be led by another program.**

Table 9: Risk Profile for Active Transportation Program

Key Responsibility	Risk to be managed during Program execution	Risks created by delaying implementation of the Program and/or under resourcing the Program
Designs and implements Active Transportation (AT) projects.		Walking and cycling will not be accommodated at targeted level of service.
		The required shift in mode share will not take place without measures to expand the AT network; the targeted mode share shift is key to managing congestion and reducing GHG.

10.0 Transportation Systems Management (TSM) Program

10.1 Mandate/ Key Responsibilities

This program:

- plans and implements measures to optimize vehicle flows in key corridors and at intersections.

The **Transportation Systems Management (TSM)** Program will be managed through the Traffic Operations section at the City of Burlington. TSM uses various low-cost strategies to maintain or reduce travel time, maximize the efficiency of the transportation network and improve the utilization of existing transportation facilities.

10.2 Potential Actions by the Program

This section provides an introductory list of potential actions by the TSM program. All actions will be confirmed by the Program Charter and Five-Year Action Plan.

Plans and implements measures to optimize vehicle flows in key corridors and at intersections

- Develop a TSM Strategy and Action Plan that considers traffic flow optimization, access management, transit signal priority, intelligent transportation systems and smart signals, and enhanced data collection.
- Implement traffic flow improvements on key arterial corridors.
- Prepare strategies to manage traffic spillover from events on Provincial facilities.
    - Coordinate the management of operational impacts of the Ministry of Transportation actions on the city's transportation network.
    - Prepare a strategy for incident detection, response and mitigation.
    - Develop strategies and implement tactics to mitigate traffic congestion when an incident occurs on the Provincial freeway system (i.e. closure of the Skyway Bridge).
- Implement adaptive traffic signal control.
- Create a centralized traffic management centre.
- Prepare, manage and maintain a traffic signals management plan.

- Prepare an Intelligent Transportation Systems strategy that considers, among other things.
    - Automated and responsive traffic signal control.
    - Digital data collection.
    - Digital banners for real-time communication.
- Stay informed and assess feasibility of implementation of new and emerging technologies.
- Design and deliver a data collection program that supports operational analysis.
- Continue to be the city's Centre of Excellence for traffic operations; collaborate with others to implement measures aimed at rebalancing the transportation network and reducing emissions from transportation sources.

10.3 Alignment with IMP Strategy

Table 10 describes how the TSM Program will play a pivotal role in addressing the IMP Problem and Opportunity Statements.

10.4 Managing Risk

Table 11 shows the risk profile for the TSM Program. **Table 11** identifies:

- The risks to be managed by the city during Program execution; and
- The risks to the city that will be created by delaying implementation of the Program and/or under resourcing the Program.

10.5 Potential Partnerships

This section outlines the potential local partnerships the city can further develop or establish. It is recommended that Burlington continue to research, investigate, and implement TSM strategies. It is recommended that future partnerships be leveraged for engagement and public participation activities where TSM is a priority.

The following partnerships can be leveraged by the City:

- Halton Region;
- Ministry of Transportation Ontario (MTO);
- Metrolinx;
- Halton Region Police Services; and
- Burlington Economic Development Corporation / Aldershot BIA.

10.6 Resource Recommendations

It is recommended that the existing eight (8) positions be maintained to continue to manage and operate the city's road operations, traffic signals and road safety programs. An additional full-time employee is recommended to support expanding and maintaining the data collection program. Future resource needs to be determined.

Table 10: Role of TSM Program in advancing IMP Goals

IMP Goal	IMP Problem Statement	How does the TSM Program address the IMP Problem Statement
Goal 1 Burlington will eliminate transportation-related deaths and serious injuries.	We need to design our streets to safely serve all modes of transportation, including walking, cycling and transit.	**The City's strategy to address this Problem Statement will be led by another program; the TSM Program will play a critical role in supporting the City's actions.** Potential actions include collecting data related to safety, monitoring system performance, identifying actions to reduce driver frustration and delay, and developing an incident detection and response strategy.
Goal 2 Burlington's transportation system will be accessible and reliable for users regardless of factors like age, ability, income, or familiarity with the city.	We need to design our streets to serve the needs of a diverse group of people, of all ages and abilities.	**The City's strategy to address this Problem Statement will be led by another program.**
	We will prioritize transportation projects that improve multimodal access and connectivity for more residents.	**The City's strategy to address this Problem Statement will be led by another program; the TSM Program will play a critical role in supporting the City's actions**. Potential actions include collecting data to support studies and participating in analysis of options.
Goal 3 Burlington will provide high-quality transportation options to move people and goods wherever and whenever.	We need better walking and cycling connections to transit stops and hubs.	**The City's strategy to address this Problem Statement will be led by another program.**
	We need more safe crossings of the rivers, rail lines and highways for people walking and cycling.	**The City's strategy to address this Problem Statement will be led by another program.**

IMP Goal	IMP Problem Statement	How does the TSM Program address the IMP Problem Statement
	We need to reduce transit travel times and improve traveler convenience to most destinations, particularly between neighbouring areas of the city.	**The City's strategy to address this Problem Statement will be led by the TSM Program**. Potential actions include planning and implementing measures to manage vehicle congestion in key corridors and at intersections and the delivery of transit signal priority.
	We need strong (i.e. fast and direct) transit connections to existing and future jobs.	**The City's strategy to address this Problem Statement will be led by another program; the TSM Program will play a critical role in supporting the City's actions.** Potential actions include collecting data to support studies and participating in analysis of options.
	We need to improve transportation options for rural residents.	**The City's strategy to address this Problem Statement will be led by another program; the TSM Program will play a critical role in supporting the City's actions.** Potential actions include collecting data to support studies and participating in analysis of options.
	We need to maintain peak period movement for all modes on Burlington streets.	**The City's strategy to address this Problem Statement will be led by the TSM Program**. Potential actions include planning and implementing measures to manage vehicle congestion in key corridors and at intersections.

IMP Goal	IMP Problem Statement	How does the TSM Program address the IMP Problem Statement
Goal 4 Burlington will eliminate transportation-related carbon emissions.	We need to reduce the percentage of trips made by car.	**The City's strategy to address this Problem Statement will be led by another program.**
	We need to tap Burlington's unrealized potential for electric vehicles.	**The City's strategy to address this Problem Statement will be led by another program; the TSM Program will play a critical role in supporting the City's actions.** Potential actions include developing strategies to reduce delays at intersections.
Goal 5 Burlington's streets will support the intended roles of the communities they run through and help these communities be vibrant and prosperous.	We need to redesign streets in key growth areas to prioritize walking, cycling and transit.	**The City's strategy to address this Problem Statement will be led by another program; the TSM Program will play a critical role in supporting the City's actions.** Potential actions include collecting data to support studies and participating in analysis of options.
	We need to update our road designs to reflect the unique priorities of different areas and current thinking on urban street design.	**The City's strategy to address this Problem Statement will be led by another program.**
		The City's strategy to address this Problem Statement will be led by another program.

IMP Goal	IMP Problem Statement	How does the TSM Program address the IMP Problem Statement
Goal 6 Burlington will actively plan for the transportation changes of tomorrow while continuing to deliver great service today.	We need to improve the resiliency of Burlington's transportation system.	**The City's strategy to address this Problem Statement will be led by another program; the TSM Program will play a critical role in supporting the City's actions.** Potential actions include the planning and implementation of intelligent transportation systems and adaptive / smart traffic signals, collecting data to support studies and participating in analysis of options.
	We need to better prepare for the future of mobility.	**The City's strategy to address this Problem Statement will be led by another program; the TSM Program will play a critical role in supporting the City's actions.** Potential actions include preparing and implementing an Intelligent Transportation Strategy for Burlington.
	We need to leverage and connect capital planning to asset management.	**The City's strategy to address this Problem Statement will be led by another program.**

Table 11: Risk Profile for TSM Program

Key Responsibility	Risk to be managed during Program execution	Risks created by delaying implementation of the Program and/or under resourcing the Program
Plans and implements measures to manage vehicle flows in key corridors and at intersections.	Technology is evolving quickly and it is important to maximize flexibility between technology platforms.	Key corridors and intersections will reach congested conditions, reducing safety for all travelers and increasing travel times and GHG levels.
		Opportunities to leverage technology advances to improve and optimize system performance will be missed.

11.0 Vision Zero Program

11.1 Mandate/ Key Responsibilities

This program:

> Develops, designs, recommends and implements measures to eliminate fatal and injury collisions and protect vulnerable road users to achieve Vision Zero.

All road users are impacted by the safety of the transportation system. **Vision Zero** refers to the strategies, tools, and measures cities can use to prevent collisions resulting in injuries and deaths.

Vision Zero is delivered through Traffic Operations at the City of Burlington.

11.2 Potential Actions by the Program

This section provides an introductory list of potential actions by the Vision Zero program. All actions will be confirmed by the Program Charter and Five-Year Action Plan.

Develops, designs and implements measures to eliminate fatal and injury collisions and protect vulnerable road users to achieve Vision Zero

- Achieve Council-endorsement to formally adopt the Vision Zero approach to transportation safety.
    - Develop a Vision Zero Road Safety Action Plan.
    - Foster and improve internal and external engagement, buy-in and collaboration with regards to roadway safety.
- Increase efforts dedicated to proactive analysis and identification of problems.
    - Determine needs and enhance data collection related to collision occurrences and patterns/trends/hot spots utilizing modern technologies and techniques.
    - Expand on existing network screening programs, including programs to develop and implement countermeasures at high ranking locations.
    - Continue to review the need for grade-separations of existing at-grade rail crossings.
- Review, create and update various transportation guidelines including but not limited to traffic calming, speed management, street and trail lighting.

- Develop metrics, mapping tools, dashboards and reports that measure safety performance and assist with analysis.
- Review, develop and pilot new and innovative street and intersection design with a focus on safety for all users.
- Review the applicability and implementation of automated enforcement tools
- Become the Centre of Excellence for Vision Zero.

11.3 Alignment with IMP Strategy

Table 12 describes how the Vision Zero Program will play a pivotal role in addressing the IMP Problem and Opportunity Statements.

11.4 Managing Risk

Table 13 shows the risk profile for the Vision Zero Program. **Table 13** identifies:

- The risks to be managed by the City during Program execution; and
- The risks to the City that will be created by delaying implementation of the Program and/or under resourcing the Program.

11.5 Potential Partnerships

It is recommended that future partnerships be leveraged for engagement and public participation activities when Road Safety is a priority. The following partnerships can be leveraged by the City:

- Neighbourhood associations and Community Road Safety advocacy groups;
- Halton Region;
- Halton Region Police Services;
- Halton District School Board / Halton Catholic District School Board;
- Halton Region Public Health;
- Ministry of Transportation Ontario (MTO); and
- Insurance Industry Representatives

11.6 Resource Recommendations

To support the Vision Zero efforts, additional road safety staff may be required to support new road safety initiatives and expansions of existing programs as a part of a Vision Zero community. Future staffing and resource needs will be determined through budgeting exercises.

Table 12: Role of Vision Zero Program in advancing IMP Goals

IMP Goal	IMP Problem Statement	How does the Vision Zero Program address the IMP Problem Statement
Goal 1 Burlington will eliminate transportation-related deaths and serious injuries.	We need to design our streets to safely serve all modes of transportation, including walking, cycling and transit.	**The City's strategy to address this Problem Statement will be led by the Vision Zero Program.** Potential actions include developing, designing and implementing measures and infrastructure to eliminate fatal and injury collisions.
Goal 2 Burlington's transportation system will be accessible and reliable for users regardless of factors like age, ability, income, or familiarity with the city.	We need to design our streets to serve the needs of a diverse group of people, of all ages and abilities.	**The City's strategy to address this Problem Statement will be led by another program; the Vision Zero Program will play a critical role in supporting the City's actions.** Potential actions include participating in analysis of options.
	We will prioritize transportation projects that improve multimodal access and connectivity for more residents.	**The City's strategy to address this Problem Statement will be led by another program; the Vision Zero Program will play a critical role in supporting the City's actions.** Potential actions include participating in analysis of options.
Goal 3 Burlington will provide high-quality transportation options to move people and goods wherever and whenever.	We need better walking and cycling connections to transit stops and hubs.	**The City's strategy to address this Problem Statement will be led by another program.**
	We need more safe crossings of the rivers, rail lines and highways for people walking and cycling.	**The City's strategy to address this Problem Statement will be led by another program.**

IMP Goal	IMP Problem Statement	How does the Vision Zero Program address the IMP Problem Statement
	We need to reduce transit travel times and improve traveler convenience to most destinations, particularly between neighbouring areas of the city.	**The City's strategy to address this Problem Statement will be led by another program.**
	We need strong (i.e. fast and direct) transit connections to existing and future jobs.	**The City's strategy to address this Problem Statement will be led by another program.**
	We need to improve transportation options for rural residents.	**The City's strategy to address this Problem Statement will be led by another program.**
	We need to maintain peak period movement for all modes on Burlington streets.	**The City's strategy to address this Problem Statement will be led by another program; the Vision Zero Program will play a critical role in supporting the City's actions.** Potential actions include participating in analysis of options.
Goal 4 Burlington will eliminate transportation-related carbon emissions.	We need to reduce the percentage of trips made by car.	**The City's strategy to address this Problem Statement will be led by another program.**
	We need to tap Burlington's unrealized potential for electric vehicles.	**The City's strategy to address this Problem Statement will be led by another program.**

IMP Goal	IMP Problem Statement	How does the Vision Zero Program address the IMP Problem Statement
Goal 5 Burlington's streets will support the intended roles of the communities they run through and help these communities be vibrant and prosperous.	We need to redesign streets in key growth areas to prioritize walking, cycling and transit.	**The City's strategy to address this Problem Statement will be led by another program; the Vision Zero Program will play a critical role in supporting the City's actions.** Potential actions include participating in analysis of options.
	We need to update our road designs to reflect the unique priorities of different areas and current thinking on urban street design.	**The City's strategy to address this Problem Statement will be led by another program.**
Goal 6 Burlington will actively plan for the transportation changes of tomorrow while continuing to deliver great service today.	We need to improve the resiliency of Burlington's transportation system.	**The City's strategy to address this Problem Statement will be led by another program; the Vision Zero Program will play a critical role in supporting the City's actions.** Potential actions include participating in analysis of options.
	We need to better prepare for the future of mobility.	**The City's strategy to address this Problem Statement will be led by another program.**
	We need to leverage and connect capital planning to asset management.	**The City's strategy to address this Problem Statement will be led by another program; the Vision Zero Program will play a critical role in supporting the City's actions.** Potential actions include participating in analysis of options.

Table 13: Risk Profile for the Vision Zero Program

Key Responsibility	Risk to be managed during Program execution	Risks created by delaying implementation of the Program and/or under resourcing the Program
Develops, designs and implements measures to prevent collisions and protect vulnerable road users.	Proactive management of Vision Zero will require new funding.	Safety for vulnerable users will degrade over time as congestion increases if the Vision Zero program does not identify and address safety concerns.

Appendix B
IMP Capital Project Listing
and Estimated Costs

ID #	Name	From	To	Length (m)	Rank	Total Cost
1	**Plains Road**	York Boulevard	Daryl Drive	3050	**48**	**$6,664,500**
2	**Plains Road**	Daryl Drive	Shadeland Avenue	1700	**T8**	**$7,668,000**
3	**Plains Road**	Shadeland Avenue	King Road	1400	**T32**	**$5,110,000**
4	**Plains Road**	King Road	QEW N/B Off Ramp / Plains	1000	**12**	**$3,630,000**
5	**Fairview Street**	QEW N/B Off Ramp / Plains Road E	Brant Street	1300	**T6**	**$5,005,000**
6	**Fairview Street**	Brant Street	Drury Lane	1050	**T1**	**$3,932,500**
7	**Fairview Street**	Drury Lane	Guelph Line	725	**T1**	**$2,646,250**
8	**Fairview Street**	Guelph Line	Walkers Line	2075	**T14**	**$7,573,750**
9	**Fairview Street**	Walkers Line	Appleby Line	2000	**T14**	**$7,350,000**
10	**Fairview Street**	Appleby Line	Road End	1000	**49**	**$3,850,000**
11	**James Street**	Brant Street	Martha Street	400	**T14**	**$1,000,000**
12	**New Street**	Martha Street	Guelph Line	1350	**T32**	**$379,350**
13	**New Street**	Guelph Line	Walkers Line	2050	**63**	**$7,438,175**
14	**New Street**	Walkers Line	Appleby Line	2050	**41**	**$3,642,500**
15	**New Street**	Appleby Line	Burloak Drive	2050	**T30**	**$3,455,000**
16	**Lakeshore Road**	825 m south of North Shore Boulevard E	North Shore Boulevard E	825	**T8**	**$2,062,500**
17	**North Shore Boulevard E**	King Road	QEW N/B Off-Ramp	1175	**77**	**$1,292,500**
18	**North Shore Boulevard E**	QEW N/B Off-Ramp	Maple Avenue / Lakeshore	500	**T1**	**$1,827,000**
19	**Lakeshore Road**	Maple Avenue / Lakeshore Road	Brant Street	725	**5**	**$203,725**
20	**Lakeshore Road**	Brant Street	Martha Street	375	**T14**	**$580,781**
21	**Lakeshore Road**	Martha Street	Guelph Line	1375	**T26**	**$1,250,000**
22	**Lakeshore Road**	Appleby Line	Burloak Drive	2055	**70**	**$687,500**
23	**Harvester Road**	Appleby Line	Burloak Drive	2050	**40**	**$3,763,550**
24	**Upper Middle Road**	Havendale Boulevard	Brant Street	725	**79**	**$1,297,500**
25	**Upper Middle Road**	Brant Street	Guelph Line	2175	**T71**	**$4,728,325**
26	**Waterdown Road**	Mountain Brown Road	Hwy 403 E/B Off-Ramp	2950	**64**	**$3,392,500**
27	**Waterdown Road**	Hwy 403 E/B Off-Ramp	Plains Road	725	**10**	**$2,646,250**
28	**King Road**	Plains Road	Northshore Road	1525	**T54**	**$5,566,250**
29	**Maple Avenue**	Fairview Street	Lakeshore Road	1975	**38**	**$5,896,250**
30	**Brant Street**	Fairview Street	Lakeshore Road	1850	**T42**	**$5,822,875**
31	**Guelph Line**	Fairview Street	New Street	1425	**23**	**$2,587,925**
32	**Guelph Line**	New Street	Lakeshore Road	825	**80**	**$606,825**
33	**Walkers Line**	Hwy 407	Dundas Street	1050	**78**	**$2,851,875**
34	**Walkers Line**	Dundas Street	Upper Middle Road	2025	**T66**	**$4,420,166**
35	**Walkers Line**	Upper Middle Road	Mainway	1175	**69**	**$1,722,967**
36	**Walkers Line**	Mainway	Harvester Road	1425	**T66**	**$1,828,894**
37	**Walkers Line**	Harvester Road	Fairview Street	450	**T50**	**$993,443**
38	**Walkers Line**	Fairview Street	New Street	1125	**T28**	**$1,789,900**
39	**Walkers Line**	New Street	Lakeshore Road	950	**T81**	**$767,600**
40	**Appleby Line**	Fairview Street	New Street	1000	**13**	**$2,330,000**
41	**Appleby Line**	New Street	Lakeshore Road	2050	**53**	**$1,384,000**
42	**Burloak Drive**	Harvester Road	New Street	1700	**52**	**$1,352,700**
43	**Palladium Way**	Dundas Street	Walkers Line	850	**T81**	**$1,247,500**
44	**Palladium Way**	Walkers Line	Appleby Line	2550	**T81**	**$3,617,500**
45	**Mainway**	Guelph Line	Walkers Line	2050	**T54**	**$2,966,350**
46	**Mainway**	Walkers Line	Appleby Line	2050	**T42**	**$3,045,000**
47	**Mainway**	Appleby Line	Burloak Drive	2050	**65**	**$4,420,000**
48	**North Service Road**	Kerns Road	Brant Street	975	**T54**	**$1,586,475**
49	**North Service Road**	Brant Street	Industrial Street	625	**39**	**$1,363,125**
50	**South Service Road**	Harvester Road	Century Drive	1300	**T54**	**$3,250,000**
51	**South Service Road Extension**	Waterdown Rd	King Rd	2300	**47**	**$30,600,000**
52	**Harvester Road**	Guelph Line	Walkers Line	2050	**T32**	**$615,000**
53	**Harvester Road**	Walkers Line	Appleby Line	2050	**T6**	**$1,302,500**
54	**Maple Avenue**	Plains Road E	Fairview Street	350	**11**	**$777,500**
55	**Sutton Drive**	Mainway	North Service Road	1100	**105**	**$1,026,300**
56	**Howard Road**	Lemonville Road	Plains Road	400	**T14**	**$1,013,200**
57	**Gallagher Road**	Road End	Plains Road	450	**T44**	**$1,139,850**
58	**Shadeland Avenue**	Plains Road	Townsend Avenue	300	**T44**	**$9,900**
59	**Townsend Avenue**	Stephenson Drive	Eagle Drive	1325	**T54**	**$43,725**
60	**Surrey Lane / Warwick Drive**	King Road	Francis Road	550	**T71**	**$18,150**
61	**Greenwood Drive**	King Road	Francis Road	475	**T54**	**$230,850**
62	**Maple Crossing Boulevard**	Maple Avenue	Multi-Use Trail	375	**T32**	**$12,375**
63	**Caroline Street**	Multi-Use Trail	Brant Street	525	**T28**	**$267,325**
64	**Caroline Street**	Brant Street	Drury Lane	950	**T30**	**$343,850**
65	**Thorpe Road / Stephenson Drive**	Maple Avenue	Grahams Lane	800	**T32**	**$26,400**
66	**Grahams Lane**	Stephenson Drive	Brant Street	350	**T1**	**$886,550**
67	**Prospect Street**	Brant Street	Guelph Line	1750	**T54**	**$2,200,000**
68	**Prospect Street**	Guelph Line	Cumberland Avenue	1025	**T54**	**$3,741,250**
69	**Woodward Avenue / Rexway Drive**	Guelph Line	Walkers Line	2200	**T81**	**$72,600**
70	**Headon Road**	Multi-Use Trail	Jordan Avenue	375	**T81**	**$12,375**
71	**Jordan Avenue**	Headon Road	Walkers Line	625	**T81**	**$20,625**
72	**Millcroft Park Drive**	Walkers Line	Dundas Street	3100	**T81**	**$102,300**
73	**William O'Connell Boulevard**	Millcroft Park Drive	Upper Middle Road	450	**68**	**$452,350**
74	**Leighland Road**	Brant Street	Truman Street	350	**T14**	**$886,550**
75	**Mountainside Drive**	Multi-Use Trail	Guelph Line	1025	**T50**	**$846,325**
76	**Wedgewood Drive**	Pinedale Avenue	New Street	550	**T81**	**$18,150**
77	**Rossmore Boulevard**	New Street	Lakeshore Road	975	**T71**	**$32,175**

ID #	Name	From	To	Length (m)	Rank	Total Cost
78	**Cumberland Ave Extension**	Mainway	Fairview St	1760	**T81**	**$147,600,000**
79	**Cumberland Avenue**	Fairview Street	Prospect Street	150	**T14**	**$399,150**
80	**Ontario Street**	Maple Avenue	Multi-Use Trail	225	**T32**	**$562,500**
81	**Elgin Street**	Maple Avenue	Brant Street	800	**24**	**$713,900**
82	**Locust Street**	Caroline Street	Lakeshore Road	500	**T14**	**$516,500**
83	**John Street**	Caroline Street	Lakeshore Road	500	**T26**	**$625,000**
84	**Elizabeth Street**	Caroline Street	Lakeshore Road	550	**T14**	**$18,150**
85	**Martha Street**	Caroline Street	Lakeshore Road	550	**25**	**$893,150**
86	**Cedar Springs Road**	Dundas Street	No. 1 Side Road	2100	**T81**	**$1,396,500**
87	**Cedar Springs Road**	No. 1 Side Road	No. 2 Side Road	2075	**T81**	**$1,379,875**
88	**Cedar Springs Road**	No. 2 Side Road	Britannia Road	3125	**T81**	**$4,134,375**
89	**Britannia Road**	Milburough Line	Cedar Springs Road	125	**T81**	**$118,750**
90	**Britannia Road**	Cedar Springs Road	Guelph Line	2950	**T81**	**$3,615,000**
91	**Britannia Road**	Guelph Line	Walkers Line	1400	**T81**	**$1,330,000**
92	**Britannia Road**	Walkers Line	Appleby Line	1600	**T81**	**$1,520,000**
93	**Britannia Road**	Appleby Line	Bell School Line	1500	**T81**	**$1,425,000**
94	**Walkers Line**	Hwy 407	No. 1 Side Road	1050	**T81**	**$997,500**
95	**Walkers Line**	No. 1 Side Road	No. 2 Side Road	2050	**T81**	**$1,947,500**
96	**Walkers Line**	No. 2 Side Road	Britannia Road	3200	**T81**	**$3,040,000**
97	**Walkers Line**	Britannia Road	Derry Road	3025	**T81**	**$2,873,750**
98	**Bell School Line**	Britannia Road	Derry Road	3100	**T81**	**$2,945,000**
99	**Snake Road**	Old York Road	Thomson Drive / Main Stre	2100	**T81**	**$873,600**
100	**King Road**	North Service Road	Burlington / Hamilton Bour	2400	**T71**	**$2,280,000**
101	**New Collector Road (east of Brant Street)**	Fairview St	Plains Rd	850	**T44**	**$38,300,000**
102	**New Collector Road (east of Appleby Line)**	Fairview St	Harvester Rd	600	**T54**	**$34,200,000**
103	**AT overpass/underpass of QEW (@ Maple Park)**	Greenwood Dr	Maple Ave	625	**T71**	**$19,000,000**
104	**AT overpass/underpass of QEW/403 (east of Brant Street)**	Truman St	Industrial St	750	**T71**	**$26,100,000**
105	**AT overpass/underpass of QEW/403 (east of Appleby Line)**	Century Dr	Sutton Dr	100	**T81**	**$18,800,000**
Total						**$518,798,152**

Appendix C
IMP Risk Confidence Records

IMP Risk Confidence Record

Integrated Mobility Plan	**Where we aspire to have…** • A Council-approved Integrated Mobility Plan to guide future mobility planning	**Implementation & Monitoring by:** Manager of Integrated Mobility	As of: Q4 2023

Success: We will know will have achieved our goals when…

- Council has approved the Integrated Mobility Plan (IMP) as the framework to guide future mobility planning including the Preferred Integrated Network, Policy Framework, and future Programming.
- The city has adopted a Vision Zero approach to street design and operations with a goal of eliminating transportation-related death and injury.
- Burlington's mobility network is accessible and reliable for all users regardless of age, ability, income, or familiarity with the city.
- Burlington's mobility network will provide high-quality travel options to move people and goods, wherever and whenever.
- Burlington has eliminated transportation-related carbon emissions.
- Burlington streets support the intended roles of the communities they live through, aligning all future land use planning with transportation planning.
- Burlington actively plans for transportation challenges of the future through embracing new and emerging technology while continuing to deliver great service.

Key Risk: **Here's what will get in our way of achieving the strategic objectives…**	**Level of Confidence – we will succeed…**		
	Initial	**Residual**	**Trend**
Integrated Mobility Plan (IMP) and supportive policies and programs **not** approved by Council.	VL	H	

Our Response: Here's what we will do to increase our level of success in achieving the strategic objectives…

- Clearly outline the risk of not approving the Integrated Mobility Plan and its recommended actions.
- The city does not currently have a Council-approved Transportation Master Plan. This puts both the city and staff at-risk when defending transportation-related decision making through the development review process and negatively impacts ability to secure adequate right-of-way for future multi-modal connections.
- Absence of a Council-approved Transportation Master Plan does not protect the city's interests as it relates to future mobility needs.
- Within reports and presentations to Council and the public, reiterate the consequences of not implementing the IMP and the impact of not achieving our goals for mobility.
- Absence of a Council-approved Transportation Master Plan will continue to be a barrier to advancing our mobility vision for the city and prohibit the city's ability to achieve key strategic objectives related to A City that Moves.

Mitigation (Response) Progress:

N/A

VH	Very High - We will achieve our strategic objectives within our planned timing horizon and will complete our planned outcomes	M	Moderate - Moderate impact to timing **OR** outcome or minor impact to timing **AND** outcome which effects our ability to achieve our strategic objectives
H	High - Minor impact to timing **OR** outcome which effects our ability to achieve our strategic objectives	L	Low - Significant impact to timing **AND** outcome which substantially effects our ability to achieve our strategic objectives
		VL	Very Low - We will **NOT** achieve our strategic objectives within our planned timing horizon and will not complete our planned outcomes

IMP Risk Confidence Record

Integrated Mobility Plan	**Where we aspire to have…** • Secured funding to implement active transportation elements of capital projects defined in the 10-year capital plan & forecast.	**Implementation & Monitoring by:** Director of Transportation Services, Director of Engineering Services	As of: **Q4-2024**

Success: We know will have achieved our goals when…

- Council approves the IMP.
- The city has a dedicated capital program for building active transportation facilities.
- Council approves to fund the IMP-recommended active transportation components of capital projects in the short-term as per the Capital Budget and Forecast (10-year horizon).

Key Risk: **Here's what will get in our way of achieving the strategic objectives…**	**Level of Confidence – we will succeed…**		
	Initial	**Residual**	**Trend**
Funding is not available to implement IMP-recommend active transportation improvements as part of upcoming capital projects listed in the 10-year Capital Budget and Forecast.	L	M	
Inability to fund these projects will result in missed implementation opportunities as these streets will not come up for renewal/reconstruction again within the horizon of the IMP.	VL	M	

Our Response: Here's what we will do to increase our level of success in achieving the strategic objectives…

- Within reports and presentations to Council and the public, reiterate the consequences of not implementing the IMP and the impact of not achieving our goals for mobility.
- Through capital planning efforts, identify active transportation needs as per the approved IMP and ensure cost estimates are accurate.
- Ensure that the IMP-recommended active transportation needs, and project costs are presented to Council through budget.
- Communicate the importance of keeping on-track with implementation of IMP projects.
- Encourage Council to maintain commitment to achieving the goals of the IMP through retention of funding in subsequent budget cycles.

Mitigation (Response) Progress:

N/A

VH	Very High - We will achieve our strategic objectives within our planned timing horizon and will complete our planned outcomes	M	Moderate - Moderate impact to timing **OR** outcome or minor impact to timing **AND** outcome which effects our ability to achieve our strategic objectives
H	High - Minor impact to timing **OR** outcome which effects our ability to achieve our strategic objectives	L	Low - Significant impact to timing **AND** outcome which substantially effects our ability to achieve our strategic objectives
		VL	Very Low - We will **NOT** achieve our strategic objectives within our planned timing horizon and will not complete our planned outcomes

IMP Risk Confidence Record

Integrated Mobility Plan	**Where we aspire to have…** • A long-term funding strategy to ensure recommended capital projects are planned and funded in a way that supports implementation	**Implementation & Monitoring by:** Director of Finance, Director of Transportation Services	As of: **Q4 2024**

Success: We know will have achieved our goals when…

- The city has a dedicated financial strategy in place to support implementation of the projects recommended through the IMP.
- Achievement of year-over-year increases in completing the spine bicycle network.
- Achievement of year-over-year increases in completing the rural active transportation network.
- Sidewalk gaps are filled, and new year-over-year increases in completing the sidewalk network are achieved.
- Mode share targets are showing a shift away from the auto and increases in active and sustainable mode shares.

Key Risk: **Here's what will get in our way of achieving the strategic objectives…**	**Level of Confidence – we will succeed…**		
	Initial	**Residual**	**Trend**
Financing strategy is not developed and therefore no future funding is available to implement IMP recommendations.	L	M	

Our Response: Here's what we will do to increase our level of success in achieving the strategic objectives…

- Finance Staff will report to Council on Phase 2 of the Multi-year Community Investment Plan (MCIP) which outlines capital infrastructure requirements required to support master plans completed to-date, including the IMP. The infrastructure needs outlined in the IMP will be captured in the MCIP which will provide a preliminary financing strategy.
- Staff will explore funding through Provincial and Federal grant opportunities.
- Staff will explore private sponsorship/partnership options to augment funding gaps.
- Staff will continue to communicate the importance of keeping on-track with implementation of the IMP and report on progress through the KPI's identified in the monitoring program.
- Within all reports and presentations to Council, reiterating the consequences of not maintaining the funding for the IMP and the impact that will have on the achievement of strategic objectives.

Mitigation (Response) Progress:

N/A

VH	Very High - We will achieve our strategic objectives within our planned timing horizon and will complete our planned outcomes	M	Moderate - Moderate impact to timing **OR** outcome or minor impact to timing **AND** outcome which effects our ability to achieve our strategic objectives
H	High - Minor impact to timing **OR** outcome which effects our ability to achieve our strategic objectives	L	Low - Significant impact to timing **AND** outcome which substantially effects our ability to achieve our strategic objectives
		VL	Very Low - We will **NOT** achieve our strategic objectives within our planned timing horizon and will not complete our planned outcomes

IMP Risk Confidence Record

Integrated Mobility Plan	**Where we aspire to have…** • New and enhanced programming to support the implementation of the IMP	**Implementation & Monitoring by:** Manager of Integrated Mobility	As of: **Q4-2028**

Success: We know will have achieved our goals when…

- Five-year action plans have been developed and key actionable items have been delivered for the following programs:
  - Strategic Transportation Planning
  - Transportation Demand Management
  - Strategic Parking Management
  - Active Transportation
  - Transportation Systems Management
  - Vision Zero Road Safety
- The city has developed and implemented Multi-Modal Level of Service Guidelines in conjunction with Traffic Impact Study Guidelines.
- The city has developed and adopted a Complete Streets approach to road design.

Key Risk: **Here's what will get in our way of achieving the strategic objectives…**	**Level of Confidence – we will succeed…**		
	Initial	**Residual**	**Trend**
Significant change in corporate strategic direction that impacts the vision for mobility as per the IMP	VL	H	
Operating budgets required to staff and support IMP programs are unfunded / under-funded	L	M	

Our Response: Here's what we will do to increase our level of success in achieving the strategic objectives…

- Communicate interdependencies of IMP programs and capital projects and the need for programming to support and sustain mode shift.
- Communicate to Council the importance of maintaining commitment to implementation of IMP and funding operating budgets accordingly.
- Review and revise Transportation Services workplan(s) to align with IMP programs.
- Communicate staff resourcing requirements through yearly DEOO submissions and supporting EPP.
- Increase operating budget to reflect additional project load.
- Investigate innovative ways of supporting delivery of program action items (i.e., FCM grant opportunities, etc.).

Mitigation (Response) Progress:

N/A

VH	Very High - We will achieve our strategic objectives within our planned timing horizon and will complete our planned outcomes	M	Moderate - Moderate impact to timing **OR** outcome or minor impact to timing **AND** outcome which effects our ability to achieve our strategic objectives
H	High - Minor impact to timing **OR** outcome which effects our ability to achieve our strategic objectives	L	Low - Significant impact to timing **AND** outcome which substantially effects our ability to achieve our strategic objectives
		VL	Very Low - We will **NOT** achieve our strategic objectives within our planned timing horizon and will not complete our planned outcomes

Appendix D

IMP / Roadway “State of Good Repair”
Overlap Projects

IMP / Roadway “State of Good Repair” Overlap Projects

Project No.	Unmet Need - IMP Project	Project No.	Road Renewal Affiliated Project Name	2025	2026	2027	2028	2029	
CO-UN-2138	Plains Road West Active Transportation Facilities	RD-RA-1749	Plains Road West Renewal	$ 2,600,000				$ 1,700,000	
CO-UN-2136	Walkers Line Active Transportation Facilities	RD-RA-1854	Walkers Line (Lakeshore Road - Dundas Street) Renewal	$ 2,500,000		$ 2,900,000	$ 625,000		
CO-UN-2140	Cedar Springs Road Active Transportation	RD-RA-1776	Cedar Springs Road Resurfacing		$ 3,200,000			$ 2,800,000	
CO-UN-2142	Fairview Street Active Transportation Facilities	RD-RA-1609	Fairview Street Resurfacing		$ 8,300,000				
CO-UN-2139	Lakeshore Road Active Transportation	RD-RA-1544	Lakeshore Road Resurfacing		$ 1,000,000	$ 2,000,000			
CO-UN-2143	Mainway Active Transportation Facilities	RD-RR-1741	Mainway Resurfacing (Guelph Line-Burloak Drive)		$ 2,600,000		$ 2,400,000		
CO-UN-2141	Snake Road Active Transportation	RD-RL-1966	Snake Road Renewal		$ 900,000				
CO-UN-2144	Upper Middle Road Active Transportation Facilities	RD-RA-1963	Upper Middle Road Renewal		$ 2,200,000			$ 2,800,000	
CO-UN-2145	Appleby Line Active Transportation Facilities	RD-RA-1969	Appleby Line Renewal			$ 1,700,000			
CO-UN-2146	King Road Active Transportation	RD-RA-1108	King Road Rehabilitation (King Forest Court to Top of Escarpment)				$ 2,200,000		
CO-UN-2150	James Street and Martha Street Active Transportation	RD-RA-1719	James Street and Martha Street Reconstruction					$ 2,400,000	
				$ 5,100,000	**$ 18,200,000**	**$ 6,600,000**	**$ 5,225,000**	**$ 9,700,000**	**$44,825,000**

Appendix E
Engagement Summary
(June 2023)

Burlington Integrated Mobility Plan: Engagement Summary

June 2023

DILLON CONSULTING

Introduction: Engagement Goals and Objectives

The engagement program for the Burlington Integrated Mobility Plan (IMP) was designed to meet the following set of goals and objectives that were established at the outset of the project:

- Consult a wide range of residents and interested & affected parties to confirm and refine the Vision, Values, and Goals of the study.
- Engage with key external agencies, including Halton Region, Ministry of Transportation, and Metrolinx.
- Strive for alignment with the broader provincial vision, recognizing that we are not seeking approval from external agencies, but do want to align where possible.
- Achieve a greater understanding of the user experience.
- Identify opportunities and barriers to achieve the future Vision for mobility.
- Solicit feedback on the priority networks.
- Understand priorities related to project implementation.
- Solicit feedback on the recommended strategy.
- Gather meaningful feedback to shape future policy and programs related to mobility.

Consultation and Engagement Activities

The engagement process was designed to solicit feedback and gather input from the community and interested & affected parties at key milestones in the planning process. Input and feedback received was integrated into decision-making at each stage.

The following sections provide a summary of the approach and purpose for each of the consultation and engagement activities completed as part of the Integrated Mobility Plan.

Project Engagement Page

The City of Burlington launched an online community engagement page at Get Involved Burlington (https://www.getinvolvedburlington.ca/imp) to be the central hub for engaging with the project. Through Get Involved Burlington people can learn more about the project, access the engagement activities, and read and download documents.

Project Notifications

Engagement Newsletter

The City of Burlington maintains an Engagement Newsletter to update members of the public about engagement opportunities and consultations for City projects. Engagement Newsletters are distributed every month. On the project engagement page, community members were able to sign up to be added to the contact list to receive project updates. Through this newsletter and

the project contact list, subscribers were notified of engagement opportunities related to the IMP. The engagement newsletter is circulated to approximately 6,500 people.

Project Newsletter
A project newsletter was developed to update interested and affected parties, and members of the public about project updates and engagement opportunities. The newsletter was sent to the project contact list to promote the StoryMaps. The project newsletter is sent to approximately 76 people who subscribed to the project mailing list.

Project Launch Event

To kick-off the project, the city hosted a launch event on Thursday, October 15, 2020, from 7 PM to 9 PM on Zoom. The event was moderated by Mary Rowe, President and CEO, Canadian Urban Institute and included a panel discussion by transportation experts from across the country. The panelists included:

- Dr. Dianne Saxe, Environmental and Climate Lawyer.
- Dr. Ahmed El-Geneidy, Professor, School of Urban Planning, McGill.
- Nancy Smith Lea, Director, The Centre for Active Transportation; and
- Todd Litman, Founder and Executive Director of the Victoria Transport Policy Institute.

The event was introduced by Kaylan Edgcumbe, Manager of Integrated Mobility at City of Burlington who was also available to answer questions.

Topics explored in the discussion included:

- The future of mobility.
- Opportunities and challenges related to public health and the environment.
- Social impacts of transportation; and
- How planning for a multi-modal transportation network will shape how Burlington residents will get around over the next 25 years.

The purpose of the Launch Event was to introduce the project to the public and set the stage for the IMP. The panelists explored the most pressing issues in transportation with the aim to inspire innovative and visionary thinking for the future of mobility in Burlington.

Approximately 180 people attended the event, and a recording of the event was posted on the project engagement page at Get Involved Burlington. The event was advertised widely through the City of Burlington website and event calendar, on the City's social media pages (Facebook, Twitter, and Instagram), through social media advertising, via email to the City's Engagement HQ subscribers, and through a media release. The event also promoted the Vision and Values Survey that launched concurrently with the event on the Get Involved Burlington Page.

Our Vision for the Future of Transportation in Burlington Survey

The first survey for the Burlington Integrated Mobility Plan (IMP) ran between October 15th and November 13th, 2020 on the City of Burlington's project engagement page at Get Involved Burlington.

A total of 504 respondents completed the survey. The purpose of the survey was to gather input on the draft Vision and Values that were to guide the IMP through soliciting feedback on potential actions that would help Burlington achieve its defined Vision for mobility. The survey did not solicit feedback on the Values directly, as they are positive statements that were anticipated to receive support. Rather, the survey was designed to solicit feedback on specific potential actions that would advance the Values that may become part of the IMP. These sample actions are not current recommendations from the IMP but are examples of actions taken by other communities that have supported similar mobility values. The survey was provided in English, French, Arabic, Spanish, Punjabi, Chinese and Russian.

Overall, feedback on the actions showed support for the Vision and Values. Feedback from the survey was used to finalize the Vision and Values for the IMP.

Map Your Feedback

A placed-based mapping survey was launched on December 1st, 2020 and ran until January 24th 2021 on the project engagement page. A total of 210 respondents placed pins on the map to provide feedback. The purpose of the mapping survey was to understand what needs to happen or change to help people get around and identify "hot spots" or "problem areas" where barriers to mobility are encountered.

Overall feedback included:

- Strong desire for better connectivity of active transportation networks. Respondents noted that there are many gaps in the network today and it is especially hard for active transportation users to cross physical barriers such as the CN rail line and the QEW.
- Desire for protected cycling infrastructure to make cyclists feel safer, more comfortable, and more secure.
- More space for all active transportation users on multi-use paths to facilitate passing opportunities.
- Better maintenance of active transportation facilities, especially in the winter, to ensure safe travel.
- Improve safety for people who are walking and cycling at intersections.
- Reduce vehicle speeds to lower the likelihood of collisions with vulnerable users.
- More coverage and more convenient service options for transit, which will in turn help improve active transportation usage.

Feedback from this survey helped us shape the Problem and Opportunity statements and develop Lived Experience Papers.

Public Engagement – Summer 2021

The City of Burlington Integrated Mobility Plan StoryMap was launched on July 23rd, 2021 using ESRI StoryMaps, an interactive multimedia webpage that uses text, images, and media to display information and data. A link to the StoryMap was posted on the project engagement page and was promoted through the City's engagement newsletter and social media pages and through advertising in local news outlets. The page has remained open throughout the project and has been relied upon as a valuable resource.

The StoryMap provides information on the project and invites participants to explore the project Vision, Values and Goals, the current transportation system in Burlington, and the Lived Experiences with Transportation stories. Feedback was received through a survey that launched concurrently with the StoryMap.

Lived Experience with Transportation Survey

The second survey for the Burlington Integrated Mobility Plan (IMP) ran between July 23rd and September 8th, 2021, on the project engagement page. The engagement page received approximately 920 visitors during that time.

The survey was launched concurrently with an interactive StoryMap, video and Lived Experience Papers. The interactive StoryMap and video outlined the visions, values and goals of the IMP, the transportation conditions in Burlington today, and provided an overview of the lived experience papers. The Lived Experience Papers highlight how different fictional Burlington residents navigate the city and the key mobility issues that impact their daily lives.

A link to the survey was provided on the StoryMap following the review of the Live Experience Papers. There were 144 respondents who completed the survey. The purpose of the survey was to gather input on the key current issues related to safe, accessible, sustainable, balanced, and liveable values identified by the IMP.

Feedback received through the survey indicated a strong support for road safety, access to different modes, transit incentives, congestion relief and interest in new transportation trends.

Public Engagement - Fall 2021

An update to the StoryMap was launched on October 26th, 2021. A link to the StoryMap was posted on the project engagement page and was promoted through the City's engagement newsletter, social media pages and through advertising in local news outlets. The StoryMap

update provided information on the Problem and Opportunity Statements and the Preferred Network Solution. Feedback was received through a survey that launched on November 3rd, 2021.

Preferred Network Solution Mapping Survey

A paced-based mapping survey was launched on November 3rd and ran until November 16, 2021, on the project engagement page. A total of 157 respondents placed pins on the map to provide feedback. The purpose of the mapping survey was to understand perspectives on the Preferred Network Solution. We asked people to tell us what they love, what we have missed and any other comments or ideas they have on the priority networks.

We received a total of 152 pins: 39 pins for walking, 78 for cycling, 18 for transit, 10 for cars, and 7 for trucks.

Overall, feedback on the Preferred Network Solution showed support for a pedestrian priority network, cycling priority network and transit priority network, but also asked to provide more transit and active transportation connections to major destinations and essential services, improve intersection conditions for all street users, and remove truck traffic from residential streets.

StoryMap Update - Future State of Transportation

An update to the StoryMap was launched on September 16, 2022, that summarized the Future State of Transportation White Paper. The White Paper was intended to provide the City of Burlington staff, Council, and public with information on new and emerging forms of mobility.

The key topics included in the paper and featured on the StoryMap include:

- E-Bicycles and Other Electric Micromobility Devices
- Shared Micromobility (Bike and Scooter Share)
- Car Share
- Ride Share and Ride Hailing

The update included a summary of each topic, relevant considerations and challenges to implementation.

Food for Feedback

A community engagement event, Food for Feedback, was hosted by the City of Burlington on Saturday September 17, 2022, from 12 PM to 3 PM at Brant Hills Park. The drop-in event provided residents the opportunity to explore and share their thoughts on current city projects, and initiatives in exchange for a free lunch. City staff from the IMP project team were in attendance to share information with interested residents. Staff spoke with over 150 residents about transportation issues our residents currently face, the future vision for mobility, and how

the City is working to enhance mobility options and improve quality of life through the completion and approval of the IMP. Food for Feedback was used to educate participants on the on-going work of the IMP and direct visitors to explore the StoryMap to learn more. A “dotmocracy” board was on display asking participants about their preferred mode(s) of travel when thinking about how they will get around in 25 years’ time. The majority of respondents indicated a preference for active modes and anecdotally, many discussions with residents revealed a strong desire to “age in place” within the city they called home, and a desire to be able to utilize multiple modes to get around the city. Discussions with school-aged children and young adults highlighted a need to be able to cycle safely throughout the city and access employment and recreation opportunities by bike and transit.

SUBJECT: Transit ridership data and preliminary analysis

TO: Community Planning, Regulation & Mobility Cttee.

FROM: Transit Department

Report Number: TR-03-23

Wards Affected: All

Date to Committee: October 31, 2023

Date to Council: November 14, 2023

Recommendation:

Receive and file transit department report TR-03-23 providing information/data on ridership regarding seniors, youth and SPLIT Pass as well as estimated costs and implementation matters that would need to be considered for future discussions around free transit for youth all day, every day.

PURPOSE:

Vision to Focus Alignment:

- Increase economic prosperity and community responsive city growth.
- Improve integrated city mobility.
- Support sustainable infrastructure and a resilient environment.

Background and Discussion:

At the Community Planning, Regulation and Mobility Committee meeting on June 27, report TR-04-23 was prepared for the purpose of free transit for seniors (65+ years of age) all day, every day, and free transit for youth (13 – 19 years of age) during evenings after 6pm and all hours on weekends.

During this meeting, the Committee requested Transit staff to provide additional information and ridership data for seniors, youth and Subsidized Passes for Low Income Transit (SPLIT), as well as cost estimates and implementation considerations for fare free transit for youth all day, every day.

There are many variables to take into account when considering significant changes to transit fares. This includes resources, capacity, plans, along with future needs and any funding requirements. The following information is provided with this in mind.

Burlington Transit Ridership Overview (2019 – 2023)

In September 2019, Burlington Transit restructured bus routes across the city towards a grid network, providing more frequency along major arterial roads. During the six months after the network change, ridership increased by 14% from September 2019 to February 2020. In March 2020, the pandemic was declared, and ridership was negatively impacted. Due to these variables, 2019 is established as the comparator year to understand how ridership is changing.

Overall ridership in 2020 plummeted by 39%. 2021 ridership remained 36% below 2019 ridership. In 2022, as COVID-19 pandemic restrictions were lifted, overall ridership increased; however, remained 9% lower than 2019 ridership.

Table 1 outlines actual and projected total ridership, broken out by concession fare categories. 2019 – 2022 provides actual ridership and the average percentage of ridership by concession. Historically, adults make up approximately 80% of all ridership, with the remaining 20% made up from child, youth and senior demographics combined. 2023 and 2024 illustrate estimated ridership and projected ridership growth based on historic concession percentages.

Table 1: Total Annual Ridership by Fare Concession

Year	Adult	Child	Youth/ Student	Senior	Total Ridership	% Change from previous year	% Change from 2019
2019	1,911,570	13,333	286,933	241,031	2,452,867	5%	-
2020	1,195,549	10,035	151,882	144,079	1,501,545	-39%	-39%
2021	1,256,128	21,940	134,078	154,859	1,567,005	4%	-36%
2022	1,787,193	56,506	230,372	149,102	2,223,173	42%	-9%
%	*79.4%*	*1.3%*	*10.4%*	*8.9%*	*100%*		
2023*	**2,223,647**	**36,810**	**290,415**	**249,129**	**2,800,000**	**26%**	**14%**
*2024***	*2,335,941*	*38,669*	*305,081*	*261,710*	*2,941,400*	*5%*	*20%*

**2023 ridership is estimated based on nine months of data (Jan. to Sep.) and annualized for the year.*
***2024 ridership is the projected ridership total illustrated within the Transit Five-Year Strategic Plan.*

Since the pandemic, Burlington Transit has returned to the ridership growth curve that was projected in the Transit Five-Year Strategic ("Plan") (2020-2024). In 2023, overall ridership is estimated to reach 2.8 million or approximately 14% increase from 2019 (pre-pandemic) ridership. The 2.8 million is in keeping with the anticipated total ridership provided to Council in the Plan and is consistent with planned ridership target of 2.9 million in 2024. In Table 1 above, the 2024 total annual projected ridership is

broken out by concession based on previous years' ridership experience for estimated comparison.

Burlington Transit is currently experiencing ridership growth in line with planned and projected growth estimates. Any additional increase to ridership and boardings should be done in a strategic and planned approach.

Information/Data on Ridership

The following sections provide Council with an update to existing free fare initiatives to date, including the planned SPLIT and Senior free fare, along with Youth free fare during weekdays after 6:00pm and all hours on weekends.

1. Subsidized Passes for Low Income Transit (SPLIT) Program

SPLIT Pass usage accounts for approximately 5% of Burlington Transit's total ridership, which is currently represented by 70% adults, 21% seniors and 9% youth.

Since August 1, 2023, seniors started to travel for free at all times and are no longer required to apply for any subsidy for public transit in the City of Burlington. It is also important to note that SPLIT usage changes from year to year and is guided by many community factors such as an individual's circumstances, current economy, employment, etc.

2. Free Transit for Seniors (65+ Years of Age)

Senior ridership demographic equates to 9% of total ridership for the City of Burlington. Starting May 2019, the Senior Free Midday fare pilot was introduced, and senior ridership initially increased by 41% during the first nine months (June 2019 to February 2020) of the pilot, until the pandemic.

As illustrated in Table 2 below, in 2020 overall senior ridership fell by 40% due to pandemic restrictions, and from 2020 to 2022, Burlington Transit did not see a return to pre-pandemic senior ridership levels. In 2023, based on the first nine months of ridership data, senior ridership is making a recovery to pre-pandemic levels with an estimated 3% increase from 2019.

Table 2: Burlington Transit Senior Annual Ridership

Concession/Year	2019	2020	2021	2022	2023*
Senior (65+ years of age)	241,031	144,079	154,859	149,102	249,129
Year over Year Percent Change (+/-)	22%	-40%	7%	-4%	67%
Percent Change from 2019 (Pre-pandemic) (+/-)		-40%	-36%	-38%	3%

**2023 Estimated based on January to September 2023 ridership and annualized for the full year.*

The current trend for senior ridership is reporting 27% higher in August 2023 from August 2019, and 28% higher in September 2023 from September 2019.

Seniors continue to travel during off-peak demand time of the day, which has minimal impact to ridership capacity during peak demand in the early morning and late afternoon/early evening hours. This is represented in Graph 1 below.

Senior free fare was approved by Council (TR-04-23) and the estimated $160,000 in lost revenue has been incorporated into the 2024 Financial Needs and Multi-Year Forecast. The 2024 rates and fees for senior fare concession has been adjusted to reflect the $0 fare.

3. Free Transit for Youth (13 – 19 Years of Age) Weekdays after 6pm and Weekends

Based on previous ridership data from 2019 – 2022, youth make up 10% of total Burlington Transit ridership. As shown in Table 3 below, again due to the pandemic, there was a reduction in youth ridership in 2020 and 2021. In 2022, youth ridership didn't fully return to pre-pandemic levels; however, the data illustrates that when students returned to school and pandemic restrictions were lifted, this ridership demographic returned to using Burlington Transit to get around. Based on 2023 estimates, staff are anticipating a 1% increase in youth ridership from 2019.

Table 3: Burlington Transit Youth Annual Ridership

Concession / Year	2019	2020	2021	2022	2023*
Youth / Student	286,933	151,882	134,078	230,372	290,415
Year over Year Percent Change	-6%	-47%	-12%	72%	26%
Percent Change from 2019 Pre-pandemic (+/-)		-47%	-53%	-20%	1%

**2023 Estimated based on January to September 2023 ridership and annualized for the full year*

Starting August 1, 2023, youth started to travel for free on Burlington Transit during weekdays after 6pm, and all hours on weekends. The free fare for youth was recommended to allow seniors to travel for free at all times, due to constraints of the PRESTO system, which can only support a single time of day concession. The youth free fare weekday and weekend hours were decided to ensure that weekday ridership capacity would not be negatively impacted.

Historically, data illustrates that youth ridership is lower during the months of July and August and increases in September to June of each year. This is consistent with ridership increasing during active school months.

Current trends are consistent with past experience showing that youth riders have returned to using Burlington Transit due to school starting in September. Table 4 below illustrates how youth use Burlington Transit during school months and less during the summer months. Staff are continuing to review ridership data to get a comprehensive understanding of how free ridership after 6pm on weekdays and all day on weekends is being used by this ridership demographic. At this time, there are only two months of

reported free ridership data, which is not enough to get a full understanding of how free fare is influencing the use of transit. Staff will continue to monitor and share information with Council.

Table 4: Burlington Transit Youth 2023 PRESTO Boardings – Weekdays Before 6:00pm, Weekdays After 6:00pm and Weekends All Hours

Month/Year	Weekdays Before 6:00pm	Weekdays After 6:00pm	Weekends All Hours
May	29,835	3,454	3,587
June	28,246	4,106	3,864
July	*14,933*	*4,407*	*5,040*
August	*15,830*	*5,603*	*4,788*
September	30,173	4,721	6,312

As illustrated in Graph 1 below, youth ridership data reports that this demographic uses transit during school bell hours, with bus boardings' peak demand at 7:00am and then from 2:00pm to 4:00pm.

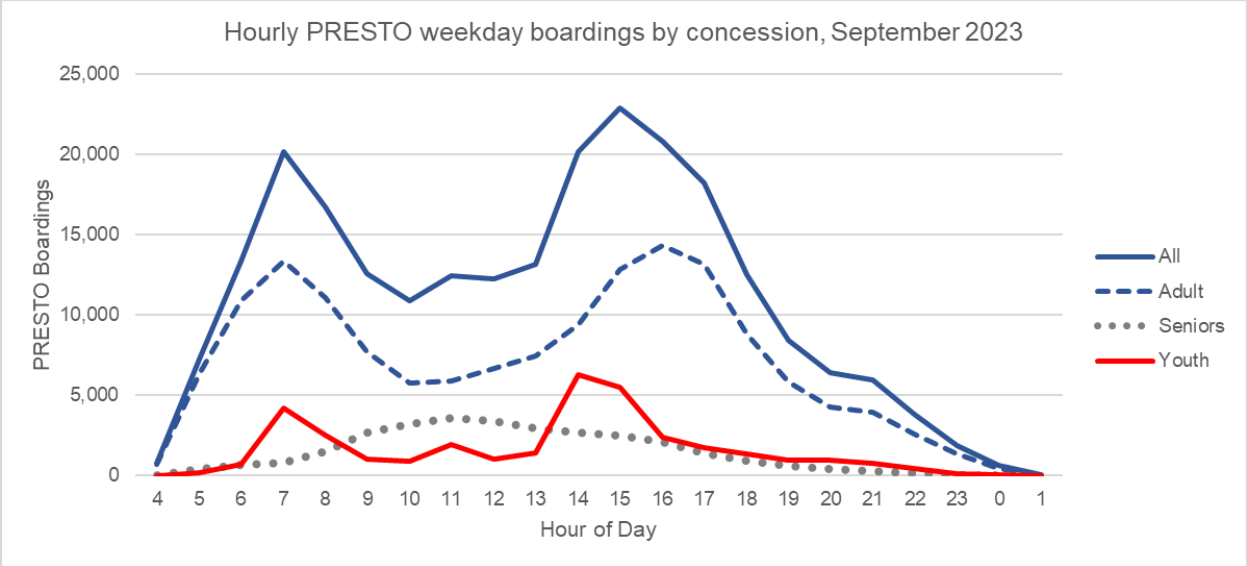
Time of Day Ridership Demand

The weekday hourly graph below represents when youth, seniors and adults are using Burlington Transit. While seniors tend to use Burlington Transit during off-peak times of day, usually between 9:00am to 1:00pm, youth travel during weekday peak travel times, which overlaps with adult morning and afternoon ridership demand hours.

During the morning and afternoon peak periods, especially in the afternoon, the ridership growth, along with heavy traffic, is causing increasing delays and crowding to some of Burlington Transit's busiest routes, such as the Routes 1, 2, 3, and 10. Burlington Transit staff are monitoring the situation closely and making service adjustments within existing resources in response to the changing demand. These routes also service many of the high schools in Burlington.

Implementing expansion to free transit for youth all day will require additional service during these peak periods, necessitating an expansion to Burlington Transit's bus fleet. The estimated fiscal impact is included in the financial impact section below.

Graph 1: Burlington Transit Boardings by Time of Day



Strategy/process/risk

Prior to any additional or expansion of free fares, Burlington Transit would recommend that a phased approach be considered to establish the foundation to support transit service delivery. The first phase would be to complete the implementation of the Transit Five-Year Strategic Plan. The second phase would be to work with a consultant to conduct a comprehensive analysis to include budgetary impacts, transit service requirements, PRESTO contract obligations, environmental benefits, and more. This would establish a strategic plan and objectives for any potential changes to ensure quality of transit service. The third phase would be to further review the Operating Metrolinx Agreement and the City's decision to renew the contract in 2027.

1. <u>Implementation of Burlington Transit Five-Year Strategic Plan</u>

Burlington Transit is currently working to fully implement the strategic objectives of the Transit Five-Year Strategic Plan (2020-2024). The strategies and initiatives defined in the Plan were established to allow for flexibility in timing and financials due to COVID-19 and the City's recovery from the global pandemic. Full implementation of the Plan has been delayed due to various reasons; however, it is an important first phase to complete this Plan before additional expansion of free fare ridership is considered. Council endorsed this plan in December 2020, following discussions and adaptations of the Plan to ensure transit ridership growth and service was practical and sustainable.

This Plan is a living document and provides the strategic roadmap to encourage continued ridership growth and the investment to support this growth. 2023 is the first year since the pandemic that Burlington Transit has returned to full service and is able to shift focus from adapting to a pandemic to implementing the strategic initiatives of the

Plan. While 2024 is the last year of the Plan, many of the strategic objectives will continue to be included in future years' budgets and built on as part of the next Five-year Plan.

At a minimum, to support current day and planned transit service and ridership growth, full implementation of the Plan's Organizational Structure and Staffing is required. Table 6 below illustrates the Plan's phased staffing approach to align with planned service expansion. Based on 2023 approved FTE, there are many positions that are still required to support this transit service expansion and growth. The last column represents the current gap in staffing resources.

Table 6: Burlington Transit Five-Year Strategic Plan Organizational Structure and Staffing by Year, 2023 Current FTE and FTE Shortfall.

Job Title / Year	2019	2020	2021	2022	2023	Staffing Plan 5-Year Total	2023 Approved FTE Total	Variance from Plan to Current FTE
Operators	111	119	119	127	135	143	127	**16**
Transit Supervisor	6	6	6	9	10	11	6	**5**
Motor Vehicle Mechanics (310T Licence)	8	8	8	9	9	10	9	**1**
Transit Maintenance Supervisor	1	1	1	1	1	1	1	**0**
Mechanic Helper	4	4	4	4	4	4	3	**1**
General Service Technician (FT)	0	0	6	6	7	8	6	**2**
General Service Technician (PT)	0	0	4	4	5	6	5	**1**
Customer Service (FT)	2	2	2	2	2	2	1	**1**
Customer Service (PT)	3	3	3	4	5	5	4	**1**
Maintenance Coordinator	0	0	0	1	1	1	0	**1**
Operations Dispatch	0	0	0	1	1	1	0	**1**
Total								**30**

2. Preliminary Analysis, Strategic Approach and Financials to Provide Free Transit for Youth

Additional infrastructure and resources would be required to support youth free fare and the increase in ridership demand. Before any additional or expansion to free fares is considered, a full and comprehensive review and strategic approach is required to ensure continued quality of transit service. In order to provide Council with the requested information and cost estimates for youth free fare at all times, the following

information is provided with two months of youth free ridership (weekdays after 6pm and weekends) experience.

Estimated Youth Ridership Increase and Risk

Based on the number of high school students who are currently not eligible or provided school bus transportation by the school boards in Burlington, free transit would result in a significant increase in annual youth ridership, which is estimated to be up to 1.1 million in boardings. This is based on 187 active school days within a school year. It is necessary to estimate the number of anticipated boardings to understand the potential demand in relation to capacity.

At this time, within existing resources, Burlington Transit does not have the capacity to add school specials or additional buses to routes that service high schools. Based on the expected increase in boardings and to accommodate this extra growth in ridership, it is estimated that additional infrastructure and staffing resources would be required to service this demand. It is important to note this would be in addition to the planned increase in staffing outlined in the Transit Five-Year Plan, illustrated in Table 6.

To sustain operations and provide free transit for youth at all times, the following additional resources and staff positions would be required to properly deploy this program:

- Four additional conventional buses
- Eight Operators
- One Rider Experience and Education Specialist
- One Operations Supervisor
- One Mechanic

Prior to any additional free fare programs being expanded or introduced, it is recommended that a comprehensive analysis be conducted. This would be part of the consultant review approved by Council through Staff Direction to report back in Q4 2024 (SD-31-23).

3. Operating Agreement for PRESTO By and Among Metrolinx (Nov. 2027)

Furthermore, the City of Burlington currently has contractual obligations through the Operating Agreement for PRESTO By and Among Metrolinx until November 2027. The contract binds the City to use only PRESTO as a fare payment system. A fare amount can be $0; however, a transit agency is required to achieve an adoption rate and aggregate fare revenue that is generated based on annual revenue ridership.

When staff consider the commitment to minimum revenue outlined in the Agreement, it will be necessary to better understand the financial impact to additional free fare and the PRESTO Agreement. This will be carefully reviewed with finance, corporate legal and PRESTO to ensure any additional fees required to be paid by the City of Burlington is

considered as part of the financial impact provided in Q4 2024. The PRESTO contract and fare integration impacts are outlined in the work that will be undertaken by the consultant, as per Staff Direction SD-31-23.

Financial Matters:

Transit Five-Year Strategic Plan – Capital and Operating Budget Investment

As previously noted, the Five-Year Plan has not been fully implemented, which includes the planned expansion of conventional buses from 63 buses in 2019 to a total of 79 buses by 2024 to support planned service and ridership growth. The last remaining eight expansion conventional buses are currently included in the Financial Needs and Multi-Year forecast for funding of four buses in 2024 ($4,045,000) and four buses in 2025 ($4,329,000). Capital Project VE-VN-1503 provides the total financial impact of $8,374,000. The planned expansion is partially funded through ICIP, with a total committed amount of $6,141,000 in approved funding.

It is important to note that a conventional bus takes one year to 18 months from procurement to delivery. Based on this timing, it will be 2026 to 2027 before the planned expansion for conventional buses is completed.

In addition to capital investment, the Plan also outlined an organization and staffing plan to support transit service growth. To date, the full implementation of the organization and staffing plan has been delayed due to various reasons, including timing of the Plan, duration of the pandemic, competing corporate priorities and available funding. Currently (2023) there is a shortfall of 30 positions that are still required, reference Table 6.

Of the 30 positions required, there are 11 FTE and other associated operating impacts included at a cost of $1.3 million for Council's consideration as part of the City's 2024 Financial Needs and Multi-year Forecast, while the balance is reflected in future years with an additional $3.17 million funding required for all associated costs.

Free Fare Transit Youth Financial Impact

To support free youth ridership would require additional resources, from an operating and capital investment.

<u>Free Youth Ridership Additional Conventional Bus Estimates</u>

It is estimated four additional conventional buses would be required in addition to the expansion planned in the Five-Year Transit Plan, to bring the total bus count from 79 planned to 83 conventional buses. Each bus currently costs approximately $1,046,000 for an additional financial impact of $4,188,000. This is not currently included in the Financial Needs and Multi-Year forecast and funding is not known.

Free Youth Ridership Additional FTE Estimates

To be ready for additional anticipated service demand of 1.1 million in increased boardings for free youth ridership, Table 7 below outlines 11 additional FTE resources that would be required to support this ridership demographic. It is estimated that an additional $1.68 million in salaries and other operating expenses would be required. This is in addition to any cost estimates to implement the Transit Five-Year Strategic Plan.

Table 7: Additional Staff Resources to support youth demographics.

Job Title	**2024**
Operators	8
Rider Experience and Education Support	1
Operations Supervisor	1
Mechanic	1
Total	**11**

Lost Revenue

In addition to the expenses noted above, it is estimated that there would be a loss in revenue of $580,000. This is based on the youth ridership and 2024 planned budget for fare concession revenue. This has not been included in the 2024 Financial Needs and Multi-Year Forecast.

Total Financial Impact

The total financial impact to provide free fare transit for youth is summarized below. The total fiscal impact includes the capital investment, ongoing operating investment and anticipated revenue loss.

Table 9: Youth Free Fare Budget Estimates

Description	**Operating $**	**Capital $**
Capital Infrastructure – 4 Additional Conventional Buses	-	$4,188,000
11 Additional FTE to Support Youth Free Ridership	$1,680,000	
Lost Revenue	$580,000	
Estimated Sub-total	**$2,260,000**	**$4,188,000**

The total cost to implement free transit to youth demographics is estimated to be $6,448,000. These costs are not currently included within the Financial Needs and Multi-year Forecast, and do not include associated operating costs, like fuel and maintenance. These costs are also in addition to full implementation of the Transit Five-Year Plan, which is still underway.

Source of Funding

The source of funding is unknown at this time, as all funding under the ICIP program has been allocated to the implementation of the Transit Five-Year Plan. Other transit funding sources such as Provincial and Federal Gas Taxes are currently dedicated to the renewal of the existing fleet.

Halton School Boards are provided provincial funding for student transportation. It would be beneficial to include this in the consultant's work to better understand any potential funding opportunities if the City is going to provide transit service where dedicated school bus transportation is provided, or partially subsidize public transit as a service to the school boards.

Other Resource Impacts

As noted above, the human resource impacts of implementing a free fare program for students would require additional support staff. Specifically:

- Transit Operations Supervisors to support additional capacity on buses, provide assistance at schools and to troubleshoot potential concerns and issues that arise.
- Rider Experience and Education Specialist is required to support travel training and student transit education program. This resource would plan and develop the travel training program and work with school boards to support travel behaviors.
- Transit Operators to support the increase in service hours required for increased transit service.
- Transit Mechanics to support additional infrastructure and increase use.

Other costs of the program may include:

- Increased maintenance costs due to expanded service hours, which would result in additional staffing.
- Fuel costs due to increased service hours.
- Additional maintenance costs to buses due to increased service hours.

Risks

Providing youth free fare transit at this time, without planned investment, has the potential to create the following risks:

- Overcrowded buses during peak periods and the potential of leaving people behind,
- Schedule delays from buses operating at crush loads,

- Poor customer service and increased complaints,
- Unsafe conditions due to overcrowding,
- Burlington Transit and the City's reputation,
- City's obligation to the PRESTO Operating Agreement,
- Reduced ridership due to poor customer service,
- Increased problematic behaviour due to overcrowding, decline in service, etc.

Climate Implications:

Public transit plays a critical role in local climate mitigation by providing residents with the opportunity to utilize public transit as a way to decrease greenhouse gas emissions (GHG) from automobiles for single use trips.

Public transit supports the City's targets to reduce carbon dioxide (CO_2) emissions. Every ride on Burlington Transit removes a car off the road and reduces CO_2 emissions and traffic congestion.

Each 40-foot bus (12.2 metres) seats 40 riders comfortably; however, can hold up to 60 passengers with standing room. Considering annual ridership totals divided by 40 riders provides staff with an average estimate of personal vehicles removed from roadways. Based on 2023 anticipated ridership, it is estimated that Burlington Transit will remove 70,000 single trip vehicles from the roadways.

Each standard passenger vehicle emits 4.6 cubic metres of CO_2 on average into the atmosphere each year. Based on 2023 anticipated ridership and the estimated number of vehicles removed from the roadways, this equates to approximately 322,000 $C0_2$ emissions being avoided.

Engagement Matters:

Residents and transit riders have engaged through the City's Customer Relationship Management (CRM), City events, the Transit Rider survey and transit forums.

Staff have started conversations with the City's finance department to better understand the full financial impact of free transit on the transit operating and capital budget.

To have a fulsome youth transit program, engagement with Halton School Boards at a political level is required to re-initiate the conversations that were started in 2019. The purpose would be to discuss funding opportunities to offset some of the costs to offer this program.

Conclusion:

It is recommended that the Transit Five-Year Strategic Plan is fully implemented to support current growth, projected growth and quality of service. It is estimated that full implementation will not take place prior to 2027, based on the Financial Needs and Multi-year Forecast.

Also, that any expansion of free fare programs be deferred until after the consultant study is completed. The consultant study will examine any associated costs, benefits and risks, impact to financial sustainability, service impacts, and potential funding sources, and will be provided to Council in Q4 2024, as per Staff Direction (SD-31-23).

Lastly, that the existing PRESTO Agreement be considered in regard to timing of any additional or expansion of free fare changes due to the City's contractual obligation.

Respectfully submitted,

Dawn Jarvis

Manager, Transit Planning & Business Services

Tony Zhuang

Supervisor, Transit Planning & Service Development

Report Approval:

All reports are reviewed and/or approved by Department Director, the Chief Financial Officer and the Executive Director of Legal Services & Corporation Counsel.

SUBJECT: Heritage response to Bill 23 - shortlist of designation candidates

TO: Community Planning, Regulation & Mobility Cttee.

FROM: Community Planning Department

Report Number: PL-35-23

Wards Affected: 1, 2 & 3

File Numbers: N/A

Date to Committee: October 31, 2023

Date to Council: November 14, 2023

Recommendation:

Direct the Director of Community Planning to retain a consultant to assess the eligibility of the following properties for potential heritage designation under Part IV of the Ontario Heritage Act, consult the Heritage Burlington Advisory Committee, and report back to Council with statements explaining the cultural heritage value or interest of qualifying properties prior to January 1, 2025:

1. 461 Elizabeth Street
2. 451 Elizabeth Street
3. 2137 Lakeshore Road
4. 472 Locust Street
5. 482 Elizabeth Street
6. 451 Nelson Avenue
7. 518 Hager Avenue
8. 562 Maple Avenue
9. 1406 Ontario Street
10. 1419 Ontario Street
11. 458 Elizabeth Street
12. 490 Elizabeth Street
13. 2464 Dundas Street
14. 2003 Lakeshore Road
15. 390 John Street
16. 2437 Dundas Street

17. 368 Brant Street
18. 550 Hurd Avenue
19. 2280 No. 2 Side Road
20. 6414 Walker's Line
21. 367 Torrance Street
22. 1433 Baldwin Street
23. 380 Brant Street; and

Approve an upset limit of $125,000 for the study, funded from the Tax Rate Stabilization Reserve Fund; and

Direct the Director of Community Planning to assess the eligibility of the following properties for potential heritage designation under Part IV of the Ontario Heritage Act, consult the Heritage Burlington Advisory Committee, and report back to Council with statements explaining the cultural heritage value or interest of qualifying properties prior to January 1, 2025:

24. 400 Brant Street
25. 2066 Kilbride Street.

PURPOSE:

Vision to Focus Alignment:

- Increase economic prosperity and community responsive city growth
- Building more citizen engagement, community health and culture

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Executive Summary:

Provincial Bill 23 amended the *Ontario Heritage Act* to take away the City's authority to list non-designated properties on the Heritage Register for more than two years. Any non-designated property that was on the Heritage Register on Jan. 1, 2023 when the legislation passed will be removed on Jan.1, 2025 and cannot be added back for five years. Over 200 properties face removal in 2025. This report presents a shortlist of the top 30 heritage designation candidates on the Burlington Municipal Heritage Register as determined by the Heritage Burlington Advisory Committee in collaboration with staff. The shortlist is diverse and includes landmarks like the Knox Presbyterian Church and Burlington Central High School); rare and unusual buildings like a former bank building at 2003 Lakeshore Road; exceptionally designed homes like the Laing Fisher House at 490 Elizabeth Street; and historic Burlington institutions like the former Public Library at 482 Elizabeth Street. The properties also range widely in age. The oldest was built in 1830 (2280 No. 2 Sideroad) and the youngest in 1947 (2003 Lakeshore Road).

Staff are recommending that 25 be studied for possible heritage designation. Five properties on Burlington Avenue are not recommended for individual study because they will be recommended for inclusion in a potential heritage conservation district (HCD) in the final report on the Downtown Burlington Heritage Study and Engagement Program in December.

Background and Discussion:

Bill 23 Impacts to Heritage Conservation in Burlington

The Province introduced Bill 23, the "*More Homes Built Faster Act, 2022*" on Oct. 25, 2022. It was passed by the Ontario Legislature and received royal assent on Nov. 28, 2022. The stated goal of the legislation is to facilitate the construction of 1.5 million new homes in Ontario by 2031. The omnibus bill amended multiple statutes including the *Planning Act, Ontario Heritage Act, Development Charges Act, Conservation Authorities Act, Ontario Land Tribunals Act* and others.

Bill 23 amended the *Ontario Heritage Act* to stipulate that the maximum amount of time a non-designated heritage property can remain on the Municipal Register of Cultural Heritage Resources (the "Heritage Register") is two years. The change took effect on Jan. 1, 2023 and as a result of this legislative change, over 200 of Burlington's heritage properties will be removed from the Heritage Register on January 1, 2025 unless they are designated before that time. On June 27, 2023 staff presented report PL-34-23 "Heritage Response to Bill 23" to the Community Planning, Regulation & Mobility Committee, which included a list of strategic actions. The main action was to review the Heritage Register and prioritize a shortlist of key properties using criteria including visibility from the street, integrity, style and population density around the property. Council approved the strategic actions in the report at its July 11, 2023 Council meeting.

Policy Context

The Draft New Provincial Planning Statement, 2023

This report has been prepared based on the current in-force Provincial Policy Statement, 2020 (the "PPS, 2020") and A Place to Grow: Growth Plan for the Greater Golden Horseshoe, 2020 ("A Place to Grow"). However, on April 6, 2023, the Province released the draft Provincial Planning Statement, which combines both documents and alters provincial policies about cultural heritage. According to the Province, the purpose of the combined document is to streamline the province-wide land use planning policy framework to help it meet the target of constructing 1.5 million new homes by 2031. The new document does not include the cultural heritage policies from A Place to Grow and alters a key cultural heritage policy from the PPS, 2020. Whereas the existing policy

directs municipalities to conserve "*significant built heritage resources"*, which is defined to include non-designated or designated properties, the new document directs municipalities to conserve only "*protected heritage properties",* defined to exclude non-designated properties. *Protected heritage properties* refers to properties designated under Part IV or Part V of the OHA*,* subject to a heritage easement, located in a heritage conservation district or those designated as provincially, federally or globally significant*.* While a municipality can still list a property on the Heritage Register for two years without designating, the Province is no longer directing municipalities to conserve them. The change narrows the scope of a municipality's heritage conservation obligations to focus on designated properties.

The proposed Provincial Planning Statement was released through ERO posting no. 019-6813 for public feedback. The comment period closed on Aug. 4, 2023.

At the time of preparation of this report, staff note that the proposed new Provincial Planning Statement has not come into force.

Provincial Policy Statement, 2020 (the "PPS, 2020")

Until the Provincial Planning Statement is approved, the Provincial Policy Statement, 2020 (PPS) continues to be the foundational policy document for land use planning in Ontario, which all other planning documents must be consistent with.

Section 2.6 of the PPS addresses cultural heritage. Policy 2.6.1 states "Significant built heritage resources and significant cultural heritage landscapes shall be conserved". Built heritage resources are defined as "*a building…that contributes to a property's cultural heritage value or interest as identified by a community"* and which *"may be included on local, provincial, federal and/or international registers."*

Growth Plan for the Greater Golden Horseshoe (2020)

The provincial Growth Plan for the Greater Golden Horseshoe was issued under the *Places to Grow Act 2005* and builds on the policy foundation of the PPS by providing more specific direction. Planning decisions in Burlington are required to conform to the plan. Section 4.2.7 of the plan directs that cultural heritage resources, including cultural heritage landscapes, be conserved to foster a sense of place and benefit communities, particularly in strategic growth areas.

City of Burlington Official Plan (1997) Policies

Section 8.0 of the Burlington Official Plan (1997) (the "Burlington OP") contains principles, objectives and policies for Cultural Heritage Resources. Principle 8.1 a) states:

> *Cultural heritage resources of significant cultural heritage value shall be identified and conserved.*

Policy 8.3.4 a) states:

> *The designation of individual cultural heritage properties and cultural heritage landscapes under the provisions of The Ontario Heritage Act shall be pursued to implement the cultural heritage conservation objectives and policies of this Plan.*

Policy 8.3.4 b) states:

> *The "Reason for Designation" statement shall outline the heritage attributes that define the heritage value of the cultural heritage resource.*

Official Plan (2020) Policies

The City's new Official Plan (OP, 2020) was adopted by Council on April 26, 2018, and approved by Halton Region on Nov. 30, 2020, but is largely under appeal. Cultural heritage policies are found under section 3.5 and many are carried over from OP, 1997.

At the time of preparation of this report, staff note that no determination has been made as to the appeal status of the relevant sections of Burlington Official Plan, 2020.

Strategy/process/risk

Heritage Designation Process

Under Part IV of the OHA, the City can designate a property using a municipal bylaw provided that the property meets prescribed criteria for determining whether a property is of cultural heritage value or interest. There are nine prescribed criteria found in Ontario Regulation 9/06 (O. Reg. 9/06) and organized into three categories of heritage value:

1. Design/physical value;
2. Historical/associative value; and
3. Contextual value.

If the property meets at least two of the criteria, a statement is prepared defining the property's heritage value, its character-defining heritage attributes and how each attribute contributes to the cultural heritage value or interest of the property. The municipal heritage committee must be consulted before Council can issue a "notice of intention to designate", which is served on the owner and published in a newspaper. A municipality's intention to designate is subject to appeal by a property owner. However, this notice voids any permit to alter or demolish the property, until the matter is appropriately resolved.

Once the designation process is completed, the owner must receive Council permission to demolish their building or alter the property's heritage attributes. Through the

Delegated Authority By-law (By-law 07-2022, Schedule C), Council has delegated to Community Planning staff the authority to approve heritage permits for alterations. Only Council may refuse a heritage permit for alteration or decide if it should be demolished or removed.

Criteria and Methodology for Determining Shortlist of Heritage Designation Candidates

Consistent with the strategic actions Council approved in July, staff and the Heritage Burlington Advisory Committee ("HBAC") created a spreadsheet of all non-designated heritage properties on the Heritage Register and evaluated them using the following criteria:

- **Architectural Style** (Classical revival, Victorian, Vernacular…etc)
- **Property Type** (Place of worship, institutional, house…etc)
- **Visibility From Street** (Highly Visible / Partly Visible / Not Visible)
- **Integrity** (Minor Alterations / Moderate Alterations / Major Alterations)
- # **Households within 400 metres** (a five-minute walk)
- **Potential # of O. Reg. 9/06 Criteria Met** (1-9) (Minimum two required to be met)

HBAC was instrumental in assisting staff in these evaluations with various members completing over 200 evaluations in four categories.

Exclusions

To narrow down the field of potential heritage designation candidates. Staff and HBAC eliminated some properties from consideration. Properties that had been demolished were identified and excluded. Cemeteries were excluded since they are provincially regulated and cannot be closed or altered without meeting extremely strict criteria. Properties that were in the queue for heritage designation were eliminated, as were properties that were not visible from the street, had major, irreversible alterations or if they were not believed to meet at least two heritage designation criteria.

Architectural Style & Property Type

Staff used an equity lens to assign scores to a property's type and architectural style. Under-represented property types and architectural styles received high scores, while common property types received lower scores. The top three most common types of non-designated heritage properties were:

1. Houses (58.5%)
2. Commercial Buildings (19%)
3. Farmhouses (7%)

The rarest three property types were infrastructure, mixed-use and multi-residential properties.

The top five identifiable architectural styles in the city were:

1. Victorian (15%)- c. 1850-1880
2. Gothic (14%)- c. 1850-1880
3. Vernacular (13%) c. 1900-1920
4. Edwardian (9.4%) c. 1900-1920
5. Classical Revival (7.1%) c. 1800-1830, 1900-1920

The rarest architectural styles were those represented by only one property on the Heritage Register, including Art Moderne, California bungalow, Dutch Colonial and four-square houses. There were also 34 properties (16%) that did not fit neatly into a style category and were classified as “unknown”.

Visibility from the Street

Properties were also classified according to visibility from the street. Properties that were not visible from any public vantage point were eliminated from further consideration, while properties that were partly visible were given a lower score than highly visible properties. Below are examples of properties in each category:

Left to right: Highly visible, partly visible, not visible

Properties left to right: 447-449 Locust Street, 2373 Dundas Street, 6103 Guelph Line

Integrity

The integrity evaluation criterion was based on how physically altered a property had been. Properties with major alterations were eliminated from consideration, while properties with moderate alterations were given a lower score than properties with minor alterations. Below are examples of properties in each category:

Left to right: Minor Alterations / Moderate Alterations / Major Alterations

Left to right: 6006 Guelph Line, 470 Maple Street, 2357 Lakeshore Road*

**2357 Lakeshore Road was originally a one-storey cottage, which was mostly demolished. The remaining walls and roof trusses were absorbed into the new two-storey building currently on the property.*

 # Households within 400 metres (a five-minute walk)

Heritage conservation is a public benefit, so the exercise prioritized those properties that are accessible by the largest number of residents. Using GIS (Geographic Information System) mapping, staff drew a 400 metre buffer or five-minute walking radius around individual properties and then generated a list of the total number of owner and renter households surrounding them using the public notification tool. Properties with a large number of households within a five-minute walking radius received higher scores.

Potential # of O. Reg. 9/06 Criteria Met (1-9) (Minimum 2 required to be met)

This criterion was a simple yes/no test of whether staff believed the property had potential to meet at least two of the nine criteria for heritage designation under Ontario Regulation 9/06. Because a detailed evaluation could not be undertaken, very few properties were excluded. If the property was well maintained and fit a recognizable style and was visible from the street, it was deemed to meet criteria #1 and #7:

- The property has design value or physical value because it is a rare, unique, representative or early example of a style, type, expression, material or construction method; and
- The property has contextual value because it is important in defining, maintaining or supporting the character of an area.

The 25 Candidates

A shortlist of 30 heritage designation candidates was agreed upon by staff and HBAC based on the total of the equally weighted scores for each of the criteria above. Staff are recommending that 25 be considered for heritage designation. Five properties on Burlington Avenue are not recommended for individual study because they will be

recommended for inclusion in a heritage conservation district (HCD) in the final report on the Downtown Burlington Heritage Study and Engagement Program in December.

The shortlist of 30 heritage designation candidates is attached in Appendix A. The full list of eligible non-designated properties is attached as Appendix C.

Options Considered

Most of the shortlisted properties are in Ward 2 because it is the most densely populated ward. Despite the over-representation of Ward 2 properties, staff and HBAC recommend the current list because it prioritizes the protection of properties that will be seen and appreciated by the largest number of Burlington residents.

An alternative approach is a shortlist of heritage designation candidate properties by ward. A ward-based shortlist is included under Appendix B. There are no candidates from Ward 5 at all because there were only two non-designated properties in that ward. One was a cemetery, and one was invisible from the street, so they were not included. The advantage of the ward-based approach is that properties from five out of six wards are included for study and the conservation effort is distributed equally over the whole City. A disadvantage is that some properties included are not very visible from the street and have few surrounding neighbours. They are unlikely to be seen and appreciated regularly by many people.

Financial Matters:

Cost of Part IV Evaluations

The total financial impact of the City's response to Bill 23 will vary depending on how large of a shortlist is selected for study. A Cultural Heritage Resource Assessment for an individual property costs an average of $5,000 and approximately 60 hours of work. Staff believe studying 25 properties is feasible. Staff have research and reasons for designation statements for at least two properties, which would leave 23 to be studied by a heritage consultant. Based on the figures above, the cost to have a consultant study 23 properties for possible designation is $115,000 and 1,380 hours of work (9 months).

Staff would recommend that $125,000 be allocated to this exercise to cover the study and any public and private meetings the consultant is asked to attend.

Cost of increased number of applicants to Heritage Property Tax Rebate Program

The average total amount of a heritage tax rebate is approximately $2,500 (city, region and boards), with 46 applicants per year, representing approximately 55% of all designated property owners. The city's portion of the cost is approximately $1,100 per applicant. If the City designated 25 additional properties in 2024, staff estimate that the total added cost would range from $33,000 per year if 55% of new owners participated to

$63,000 per year if all applicants applied, with the city portion ranging from $15,000 to $28,000 respectively.

Ontario Land Tribunal Appeals

If the City designates up to 25 properties under Part IV of the Ontario Heritage Act as recommended in this report, the owners of the designated properties will have the right to appeal the designations to the Ontario Land Tribunal. Staff would attempt to negotiate settlements of such appeals for consideration by Council, but should any proceed to a contested hearing, the City would be required to incur additional costs associated with defending the designations at the Tribunal.

Source of Funding

If Council is supportive of the recommended approach as outlined in this report, it is recommended that Council direct staff to fund this one-time work from a previous heritage related commitment of $125,000 in the Tax Rate Stabilization Reserve Fund to retain external consulting assistance to review and complete cultural heritage evaluation reports for a prioritized list of properties currently on the City's Cultural Heritage Register. The old funding commitment was dedicated to implementing the recommendations of the 2012 New Approach to Heritage report but has not been utilized since 2014.

Funding to study properties for Part IV designation is traditionally funded from the Policy Initiatives Reserve Fund; however, this Reserve Fund has insufficient balance to support this project. An increased provision to this reserve fund has been included in the 2024 Financial Needs and Multi-Year Forecast to improve financial sustainability.

As well, in future budgets consideration of additional operating funds may be required for the heritage rebate program if the program expands.

Other Resource Impacts

The proposed Bill 23 strategy will require significant staff time and resources between now and Jan. 1, 2025.

Climate Implications

Not applicable.

Engagement Matters:

The shortlist of 30 properties was discussed by the Heritage Burlington Advisory Committee (HBAC) at their Sept. 13, 2023 meeting, where they made the following motion:

> *Heritage Burlington recommends that Council endorse the proposed shortlist of 30 properties in the heritage planner presentation dated September 13, 2023 and recommend Council direct staff to have them studied for potential designation prior to January 25, 2025.*

HBAC believed that the Burlington Avenue properties should also be individually studied for designation.

HBAC also met on October 17, 2023 to discuss funding options for the Bill 23 study and made the following recommendation:

> *Heritage Burlington Advisory Committee recommends that Council direct staff to reallocate unused heritage commitments from the Tax Rate Stabilization Reserve Fund to work activities necessary to protect non-designated heritage properties on the Register while complying with the changes to the Ontario Heritage Act caused by Bill 23.*

Staff sent notices to all owners of non-designated heritage properties on the Heritage Register to notify them of the date this report would be discussed at the Community Planning Regulation & Mobility Committee. In the notice, staff detailed the City's incentives programs, explained the shortlist methodology and explained how owners could submit opinions.

Conclusion:

Bill 23 will result in the removal of over 200 non-designated heritage properties from the Heritage Register on Jan. 1, 2025 unless the City takes action. Because it is not possible to study all 200+ properties, staff worked with the HBAC to develop a shortlist of 30 properties that are good candidates for designation, and which are regularly seen and appreciated by numerous residents. Staff recommend that Council authorize retaining a heritage consultant to study 23 out of 25 properties for an upset limit of $125,000. Staff will study two properties and the remaining five on Burlington Avenue will be included in a future HCD study area.

Respectfully submitted,

John O’Reilly, MCIP, RPP, CAHP
Supervisor of Site Plan Review
(905) 335-7777 ext. 7427

Appendices:

A. Recommended List of Heritage Designation Candidates
B. Alternative Ward-Based list of Heritage Designation Candidates
C. Full Ranked List of Eligible Non-designated Properties

Notifications:

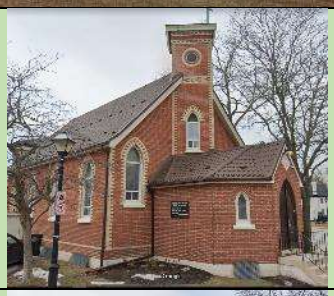
Not applicable

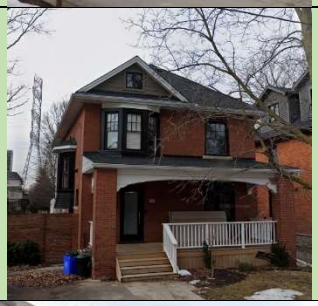
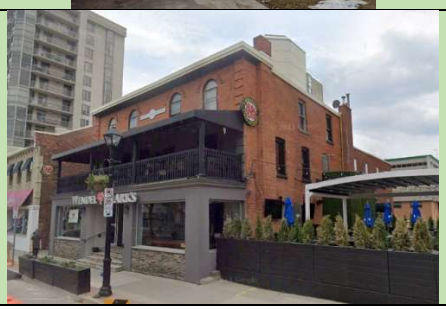
Report Approval:

All reports are reviewed and/or approved by Department Director, the Chief Financial Officer and the Executive Director of Legal Services & Corporation Counsel.

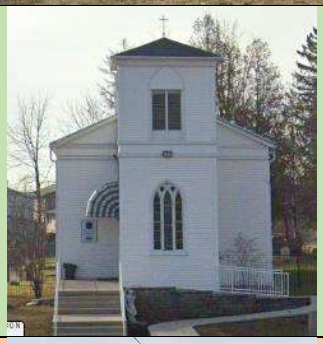
Appendix A- Recommended List of Heritage Designation Candidates (PL-35-23)

To be studied by consultant	
To be studied by staff	
Deferred	

Rank	Address	Ward	Year Built	Image
1	461 Elizabeth Street (Knox Presbyterian Church)	2	1845	
2	451 Elizabeth Street (The Former Methodist Episcopal Church The Iron Duke)	2	1868	
3	2137 Lakeshore Road (The Sewage Pumping Station)	2	1915	
4	472 Locust Street (L'Eglise St Philippe Originally Calvary Baptist Church)	2	1875	
5	482 Elizabeth Street (the Laing-Speers House, Former Burlington Public Library)	2	1873	

Rank	Address	Ward	Year Built	Image
6	472 Burlington Avenue (the George Blair House)	2	1885	
7	466 Burlington Avenue (The O.T. Springer House)	2	1907	
8	451 Nelson Avenue (The Thomas Rogers House)	2	1849	
9	518 Hager Avenue (The Calvary Baptist Church Manse)	2	1910	
10	380 Brant Street (Hotel Raymont)	2	1864	

Rank	Address	Ward	Year Built	Image
11	562 Maple Avenue (The Robert Lindley House)	1	1875	
12	1406 Ontario Street (The Robert John Allen House)	2	1875	
13	1419 Ontario Street (The O'Brien - Connell House)	2	1907	
14	460 Burlington Avenue (The Henry Foster House)	2	1885	
15	458 Elizabeth Street (The John Taylor House)	2	1876	
16	490 Elizabeth Street (The Laing Fisher House)	2	1855	

Rank	Address	Ward	Year Built	Image
17	400 Brant Street (Sherwood Inn)	2	1860	
18	426 Burlington Avenue (The William Emory House)	2	1922	
19	2464 Dundas Street (St. John's Anglican Church)	3	1839	
20	437 Burlington Avenue (Thomas Colling - Susan & Percy Dawson House)	2	1885	
21	2003 Lakeshore Road (A) Bell Telephone Exchange B) The Royal Bank	2	1947	

Rank	Address	Ward	Year Built	Image
22	390, 392 John Street (The Shaver Building)	2	1881	
23	2437 Dundas Street (Nelson United Church)	3	1859	
24	368 Brant Street (The Bell-Wiggins Boot and Shoe Store)	2	1867	
25	550 Hurd Avenue (The Hepton Weeks House)	2	1913	
26	2280 No. 2 Side Road (The Pitcher Homestead)	3	1830	

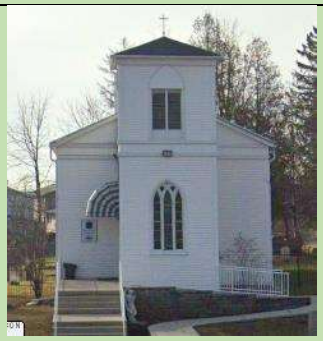
Rank	Address	Ward	Year Built	Image
27	6414 Walker's Line (The Donald McGregor Farmhouse)	3	1850	
28	2066 Kilbride Street (The Kilbride United Church)	3	1860	
29	367 Torrance Street	2	1889	
30	1433 Baldwin Street (The Burlington Central High School)	2	1922	

Appendix B- Alternative Ward-Based list of Heritage Designation Candidates (PL-35-23)

To be studied by consultant	
To be studied by staff	

#	Address	Ward	Year Built	Image
1	562 Maple Avenue	1	1875	
2	1264 Lemonville Road	1	1880s	
3	1134 Plains Road E	1	1814/83	
4	242 Plains Road E.	1	1906	

#	Address	Ward	Year Built	Image
5	444 Plains Road E	1	1890	
6	461 Elizabeth Street	2	1845	
7	451 Elizabeth Street	2	1868	
8	2137 Lakeshore Road	2	1915	
9	472 Locust Street	2	1875	

#	Address	Ward	Year Built	Image
10	482 Elizabeth Street	2	1873	
11	2464 Dundas Street	3	1839	
12	2437 Dundas Street	3	1859	
13	2280 No. 2 Side Road	3	1830	
14	6414 Walker's Line	3	1850	

#	Address	Ward	Year Built	Image
15	2066 Kilbride Street	3	1860	
16	304 Rossmore Blvd	4	1929	
17	3044 Lakeshore Road	4	1921	
18	3057 Lakeshore Road	4	1910	
19	207 Rossmore Blvd	4	1926	

#	Address	Ward	Year Built	Image
20	3093 Lakeshore Road	4	1919	
21	6507 Walker's Line	6	1857	
22	6391 Walker's Line	6	1853	
23	5071 No. 2 Side Road	6	1856	

#	Address	Ward	Year Built	Image
24	4197 Walker's Line	6	1842	
25	6409 Appleby Line	6	1860s	

Appendix C- Full Ranked list of Eligible Non-designated Properties (PL-35-23)

	Street_no_1	Street_no_2	Street_Name	Ward	Historic_Name & Photo	Year_Built	Architectural Style	Property Type	Visibility From Street Highly Visible / Partly Visible / Not Visible	Integrity* Minor Alterations / Moderate Alterations / Major Alterations	Households within 400m	Potential # of 9/06 Criteria Met (1-9)	Description
1	461		Elizabeth St	2	Knox Presbyterian Church	1845	Gothic	Place of Worship	Highly Visible	Minor Alterations	3632	Two or more	Solid brick structure with dichromatic pilasters, mullions, voussoirs, and heavy wooden doors with Gothic arches.
2	451		Elizabeth St	2	The Former Methodist Episcopal Church The Iron Duke	1868	Gothic	Place of Worship	Highly Visible	Minor Alterations	3561	Two or more	First Methodist Church in the Village. Gothic Revival vernacular brick structure.
3	2137		Lakeshore Rd	2	The Sewage Pumping Station aka 2137 Junction Street	1915	Classical Revival	Infrastructure	Highly Visible	Minor Alterations	2440	Two or more	One-storey brick structure dating back to 1915.
4	472		Locust St	2	L'Eglise St Philippe Originally Calvary Baptist Church	1875	Gothic	Place of Worship	Highly Visible	Minor Alterations	2873	Two or more	Church structure with a combination of Gothic Revival and Italianate styles.
5	482		Elizabeth St	2	The Laing - Speers House and former Burlington Public Library	1873	Classical Revival	Commercial	Highly Visible	Minor Alterations	3192	Two or more	Two-storey three-bay brick structure in Neo-Classic style.
6	472		Burlington Ave	2	The George Blair House	1885	Queen Anne	House	Highly Visible	Minor Alterations	4040	Two or more	Two-and-a-half storey structure built by George Blair one of Burlington's most eminent builders.
7	466		Burlington Ave	2	The O. T. Springer House	1907	Queen Anne	House	Highly Visible	Minor Alterations	4031	Two or more	Two-and-a-half storey structure in eclectic Queen Anne Revival style.
8	451		Nelson Ave	2	The Thomas Rogers House	1849	Victorian	House	Highly Visible	Minor Alterations	4181	Two or more	One-and-a-half storey front-gabled frame cottage in Victorian style.
9	518		Hager Ave	2	The Calvary Baptist Church Manse	1910	Edwardian	House	Highly Visible	Minor Alterations	3868	Two or more	Two-and-a-half storey structure in Edwardian vernacular style.
10	380		Brant St	2	The Hotel Raymond	1864	Classical Revival	Hotel	Highly Visible	Moderate Alterations	3251	Two or more	Three storey italianate former hotel building with historical value for its former hotel use and design value for its Italianate details
11	562		Maple Ave	1	The Robert Lindley House	1875	Gothic	House	Highly Visible	Minor Alterations	3848	Two or more	One-and-a-half storey end-gabled brick structure with gingerbread bargeboard.
12	1406		Ontario St	2	The Robert John Allen House	1884 /90	Edwardian	House	Highly Visible	Minor Alterations	3597	Two or more	One-and-a-half storey stretcher-bond brick structure with Edwardian elements.
13	1419		Ontario St	2	The O'Brien - Connell House	1907	Edwardian	House	Highly Visible	Minor Alterations	3551	Two or more	Two-and-a-half storey structure in Edwardian vernacular style.
14	460		Burlington Ave	2	The Henry Foster House	1885	Victorian	House	Highly Visible	Minor Alterations	3590	Two or more	One-and-a-half storey Victorian vernacular brick structure.
15	458		Elizabeth St.	2	The John Taylor - Heritage House	1876	Gothic	House	Highly Visible	Minor Alterations	3527	Two or more	
16	490		Elizabeth St	2	The Laing - Fisher House Shanston Hall (aka 2024 Maria St)	1855	Classical Revival	House	Highly Visible	Minor Alterations	3188	Two or more	Mid-Victorian Neo-Classic solid brick structure with Edwardian rear additions and second and third storey.
17	400		Brant St	2	Sherwood Inn, Formerly The Queens Hotel Originally the Zimmerman House	1860	Unknown	Hotel	Highly Visible	Moderate Alterations	3162	Two or more	Oldest structure that continuously operated as a hotel and public house in Burlington.
18	426		Burlington Ave	2	The William Emory House	1922	Craftsman	House	Highly Visible	Minor Alterations	2940	Two or more	1.5 storey craftsman bungalow with broad verandah and grouped square columns on masonry pedestals. Six-over-one sash windows
19	2464		Dundas St	3	St John's Anglican Church	1839	Gothic	Place of Worship	Highly Visible	Minor Alterations	680	Two or more	One-storey frame structure with two-storey square tower.

	Street_no_1	Street_no_2	Street_Name	Ward	Historic_Name & Photo	Year_Built	Architectural Style	Property Type	Visibility From Street Highly Visible / Partly Visible / Not Visible	Integrity* Minor Alterations / Moderate Alterations / Major Alterations	Households within 400m	Potential # of 9/06 Criteria Met (1-9)	Description
20	437		Burlington Ave	2	The Thomas Colling - Susan & Percy Dawson House	1885	Victorian	House	Highly Visible	Minor Alterations	3212	Two or more	Two-and-a-half storey Italianate style masonry dwelling. Red brick with buff brick accents around the window arches. Full arched windows at second storey with segmental arched windows at the ground-storey. Also features carved Victorian style trim in the main gable and decorative brackets.
21	2003		Lakeshore Rd	2	A) Bell Telephone Exchange B) The Royal Bank	A: ? B: 1947	Modernist	Commercial	Highly Visible	Moderate Alterations	2984	Two or more	A) 1800s or early 1900s two storey commercial building former Bell Telephone Exchange B) Rare example of a transitional style "modernist" bank with minimalist classical references including "fluted" pilasters. The building has a simplified cornice, sandstone exterior and original fenestration.
22	390	392	John St.	2	The Shaver Building	1881	Georgian	Commercial	Highly Visible	Moderate Alterations	3132	Two or more	Original two-and-a-half storey brick structure with Victorian gingerbread and arched windows.
23	2437		Dundas St	3	Nelson United Church and Cemetery	1859	Vernacular	Place of Worship	Highly Visible	Minor Alterations	435	Two or more	One-storey church in Neo-Classic meeting house style.
24	368		Brant St	2	The Bell - Wiggins Boot and Shoe Store The Parkin Barber Shop and Pool Hall	1867	Edwardian	Commercial	Highly Visible	Moderate Alterations	3152	Two or more	Two-storey commercial building.
25	550		Hurd Ave	2	The Hepton - Weeks House	1913	Edwardian	House	Highly Visible	Minor Alterations	2638	Two or more	Two-storey brick structure in vernacular style.
26	2280		No. 2 Side Rd	3	The Pitcher Homestead	1830	Classical Revival	Farmhouse	Highly Visible	Minor Alterations	42	Two or more	One-storey rubblestone structure in Regency style.
27	6414		Walker's Line	3	The Donald McGregor Farmhouse	1850	Classical Revival	Farmhouse	Highly Visible	Minor Alterations	34	Two or more	Flemish-bond brick structure in Regency style.
28	2066		Kilbride St	3	Kilbride United Church: Zion Methodist Church	1860	Unknown	Place of Worship	Highly Visible	Minor Alterations	144	Two or more	Frame structure with gothic-arched doors and rear windows.
29	367		Torrance St	2	The Torrance House	1889	Queen Anne	House	Highly Visible	Minor Alterations	2141	Two or more	Two-and-a-half storey structure with two level verandah dating back to 1889.
30	1433		Baldwin Street	2	Burlington Central High School	1922	Tudor	School	Highly Visible	Moderate Alterations	1763	Two or more	Public educational institution dating back to 1922.
31	1264		Lemonville Rd	1	A Lemon Family Farmhouse	1880s	Victorian	Farmhouse	Highly Visible	Minor Alterations	99	Two or more	Two-storey L-shaped brick structure dating back to the 1880s.
32	1134		Plains Rd E	1	The Davis Homestead	1814/83	Victorian	Commercial	Highly Visible	Minor Alterations	605	Two or more	Two-and-a-half storey brick structure. Home of Charles Davis a founder of the Union Burying Grounds.
33	5534		Guelph Line	3	The Thomas Colling Centennial Farmhouse	1880	Victorian	Farmhouse	Highly Visible	Minor Alterations	29	Two or more	Two-storey brick structure in Victorian vernacular style.
34	482		Burlington Ave	2	Maplelawn: The Gordon - Smith - Hyslop House	1905	Queen Anne	House	Highly Visible	Moderate Alterations	4181	Two or more	One-and-a-half storey brick structure built in 1905.
35	1391		Ontario St	2	The New George Allen House	1908	Edwardian	House	Highly Visible	Moderate Alterations	4197	Two or more	Two-and-a-half storey structure in vernacular Edwardian style.

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36	513		Locust St	2	The Elgin Harris House - A Different Drummer Books	1906	Victorian	Commercial	Highly Visible	Moderate Alterations	2540	Two or more	Two-storey vernacular house with victorian/gothic porch details, hipped roof, segmental arched ground floor windows and stone foundation.
37	1454		Birch Ave	2	The Edwin Thorpe Retirement House	1917	Edwardian	House	Highly Visible	Minor Alterations	1825	Two or more	Two-storey Edwardian Vernacular structure.
38	566		Locust St	2	The Harry Blessinger Retirement House	1922	Edwardian	House	Highly Visible	Minor Alterations	1813	Two or more	Two-storey Edwardian villa in Craftsman style.
39	2187		Lakeshore Rd	2	The Dalton - Bell House	1880	Queen Anne	House	Highly Visible	Minor Alterations	1410	Two or more	Two-and-a-half storey dichromatic brick structure.
40	524		Hager Ave	2	The Bamford House	1912	Edwardian	House	Highly Visible	Moderate Alterations	3873	Two or more	Two-and-a-half storey structure in Edwardian vernacular style.
41	620		Brant St	2	Unknown	Pre 1924	Four-square	House	Highly Visible	Minor Alterations	1085	Two or more	Two-and-a-half storey red-brick residential building with hipped roof and one-storey porch across the front elevation
42	518		Brant St	2	Unknown	Pre 1924	Edwardian	Commercial	Highly Visible	Moderate Alterations	1834	Two or more	Two-and-a-half storey red-brick residential-form building with a hipped roof and Queen Anne Revival style elements including a hexagonal bay window on the front elevation, and a shingled gable end punctuated by a palladian window.
43	524		Brant St	2	Unknown	Pre 1924	Edwardian	Commercial	Highly Visible	Moderate Alterations	1806	Two or more	Two-and-a-half storey red-brick residential-form building with hipped roof and Queen Anne Revival features including the projecting square bay topped with three-
44	242		Plains Rd E	1	The Roelfson House	1906	Dutch Colonial	House	Highly Visible	Minor Alterations	876	Two or more	Two-storey cross-gabled brick structure with an oval bull's-eye window.
45	532		Hager Ave	2	The Frank Coleman House	1912	Gothic	House	Highly Visible	Moderate Alterations	3804	Two or more	One-and-a-half storey cottage clad with stretcher-bond brick.
46	1401		Ontario St	2	John Ireland House	1870	Victorian	House	Highly Visible	Moderate Alterations	3794	Two or more	Two-and-a-half storey cross-gabled brick structure.
47	2429		Lakeshore Rd	2	The Halsted Inn	1840s	Georgian	Hotel	Highly Visible	Moderate Alterations	589	Two or more	Two-storey five-bay structure in early Georgian style.
48	1427		Ontario St	2	The Stock House - The Manse	PRE1881	Victorian	House	Highly Visible	Moderate Alterations	3747	Two or more	Two-storey cross-gabled brick structure with Italianate elements.
49	431		Pearl St	2	Unknown	c.1860	Vernacular	House	Highly Visible	Moderate Alterations	3597	Two or more	This two-storey vernacular homestead house with an asymmetrical façade and square headed, one-over-one sash windows
50	2201		Lakeshore Rd	2	Apple Villa, The William Dalton - J. C. Smith House	1872	Victorian	House	Highly Visible	Minor Alterations	1340	Two or more	Two-storey brick structure with dichromatic quoins and arches over windows.
51	433		Smith Ave	2	A Dalton - Smith House	1890	Gothic	House	Highly Visible	Minor Alterations	1281	Two or more	One-and-a-half storey brick farmhouse in vernacular late-Victorian style with Italianate decorative elements.

	Street_no_1	Street_no_2	Street_Name	Ward	Historic_Name & Photo	Year_Built	Architectural Style	Property Type	Visibility From Street Highly Visible / Partly Visible / Not Visible	Integrity* Minor Alterations / Moderate Alterations / Major Alterations	Households within 400m	Potential # of 9/06 Criteria Met (1-9)	Description
52	444		Plains Rd E	1	The John Horne House	1890	Victorian	House	Highly Visible	Minor Alterations	1301	Two or more	Two-storey end-gabled structure with decorative bargeboard.
53	2031		James St	2	The John Taylor - Heritage House	1876	Vernacular	House	Highly Visible	Moderate Alterations	3527	Two or more	
54	468		Elizabeth St	2	Unknown	Pre-1910	Edwardian	House	Highly Visible	Moderate Alterations	3370	Two or more	Built before 1910. This two-storey masonry building has historical value for its age and potential to yield information about Burlington's residential areas in the pre-war period. It is believed to have design value for its vernacular homestead and craftsman details.
55	435		Pearl St	2	Unknown	1866	Gothic	House	Highly Visible	Moderate Alterations	3519	Two or more	Two-storey gothic vernacular house with gingerbread trim accenting a peaked dormer in the roof. The dormer features a round arched window centred over the main entry.
56	225		St Paul St	2	Unknown	1938	Art Moderne	House	Highly Visible	Minor Alterations	491	Two or more	One of two examples of a structure in Art Moderne Style in Burlington.
57	304		Rossmore Blvd	4	The Wintemute - Neilson House	1929	Tudor	House	Highly Visible	Minor Alterations	552	Two or more	Two-and-a-half storey structure in Neo-Tudor style. Built on the site of Kate Greene's famous rose gardens after which Roseland was named.
58	422		Burlington Ave	2	Unknown	1936	Craftsman	House	Highly Visible	Moderate Alterations	2906	Two or more	1.5 storey craftsman bungalow characterized by a full width verandah with Tuscan columns. Asymmetrical façade with doorway to one side of a set of four six-over-one windows.
59	415	417	Elizabeth St	2	The Stinson - Morrine House	1850	Vernacular	House	Highly Visible	Moderate Alterations	3188	Two or more	One-and-a-half storey cottage clad with brick c.1888
60	423		Elizabeth St	2	The Bastedo - Redmond - John Kenter House	1855/80	Vernacular	House	Highly Visible	Moderate Alterations	3188	Two or more	One-and-a-half storey front-gabled structure of hand-made brick.
61	2022		Victoria Ave	2	The Bell Orchards Farmhouse	1915	Edwardian	Commercial	Highly Visible	Moderate Alterations	1166	Two or more	Two-and-a-half storey structure in Edwardian style.
62	458		Locust St	2	The Edgar Williamson House	c.1910	Edwardian	House	Highly Visible	Moderate Alterations	3031	Two or more	Two-storey masonry dwelling is believed to have architectural value for its Queen Anne revival style details.
63	3044		Lakeshore Rd	4	The W. D. Flatt House	1921	Tudor	House	Highly Visible	Minor Alterations	402	Two or more	Two-and-a-half storey masonry structure in Tudor style.
64	431		Burlington Ave	2	The William Graham - Margaret Rutherford House	1887	Victorian	House	Highly Visible	Moderate Alterations	3185	Two or more	Three original standing gas lamps. Two-and-a-half storey brick structure in Queen Anne Revival style.
65	3057		Lakeshore Rd	4	Lakehurst Villa Lodge	1910	Craftsman	House	Highly Visible	Minor Alterations	442	Two or more	One-and-a-half storey masonry structure with Craftsman style elements.
66	207		Rossmore Blvd	4	Unknown	1926	Georgian	House	Highly Visible	Minor Alterations	299	Two or more	Two-storey structure dating back to 1926.
67	2015	2017	Lakeshore Rd	2	The Shaver Building	1881	Victorian	House	Highly Visible	Moderate Alterations	3132	Two or more	Original two-and-a-half storey brick structure with Victorian gingerbread and arched windows.
68	468		Locust St	2	The Robert Kentner House	1884	Gothic	House	Highly Visible	Moderate Alterations	3078	Two or more	One-and-a-half storey brick structure in Gothic Revival style.
69	1245		Lakeshore Rd	1	The Joseph Brant House Museum *(duplicate, see 1240 Northshore Rd., Row 226)*	1937	Classical Revival	House	Highly Visible	Moderate Alterations	2739	Two or more	Replica of the original house built for Joseph Brant. Two-and-a-half storey frame structure in Georgian style.
70	2373		Dundas St	3	The Springer Homestead Hawthorne Lodge	1840	Classical Revival	House	Highly Visible	Minor Alterations	370	Two or more	Two-storey five-bay coursed-stone structure in vernacular Neo-Classic style.
71	471		Locust St	2	The Atkinson - Peart House	1900	Vernacular	House	Highly Visible	Moderate Alterations	2960	Two or more	Two-and-a-half storey brick structure dating back to 1900. Rented out to Lee J. Smith, Chief of Police in 1917.
72	248		Guelph Line	2	The Cotter - Odell House	1875	Gothic	House	Highly Visible	Minor Alterations	620	Two or more	One-and-a-half storey three-bay structure with gingerbread bargeboard decorations.

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73	5012		No. 2 Side Rd	6	The Zimmerman Homestead (4459, 5012 and 5071 all give the same location on Google maps)	1820/50	Georgian	Farmhouse	Partly Visible	Minor Alterations	38	Two or more	One-and-a-half storey frame structure in Georgian style.
74	6507		Walker's Line	6	The William Gastle Century Farmhouse	1857	Georgian	Farmhouse	Partly Visible	Minor Alterations	38	Two or more	Two-and-a-half storey end-gabled three-bay structure in Georgian style.
75	481		Plains Rd W	1	The David Blain House and Inn	1852	Vernacular	Hotel	Partly Visible	Minor Alterations	182	Two or more	One-and-a-half storey front-gabled brick structure with gingerbread bargeboard.
76	1382		Lemonville Rd	1	A Lemon Family Farmhouse	1880s	Classical Revival	Farmhouse	Partly Visible	Minor Alterations	109	Two or more	Two-storey brick structure with Classical Revival and Second Empire Elements.
77	6391		Walker's Line	6	Unknown	1853	Georgian	House	Highly Visible	Minor Alterations	42	Two or more	Two-storey dressed stone structure in Georgian style.
78	419		Burlington Ave	2	The Buntion - Knife - Flock House	1860s	Unknown	House	Highly Visible	Moderate Alterations	2913	Two or more	Oldest house on Burlington Avenue. Two-storey front-gabled frame structure clad with vertical board-and-batten siding.
79	1445		Ontario St	2	Unknown	1930s	Unknown	House	Highly Visible	Moderate Alterations	2910	Two or more	1.5-storey vernacular bungalow with covered porch supported with classical (Tuscan) columns. Features half bay window, gabled dormer with double-hung one-over-one sash windows.
80	3093		Lakeshore Rd	4	The Lamoureux House	1919	Edwardian	House	Highly Visible	Minor Alterations	302	Two or more	Two-and-a-half storey masonry structure with Craftsman style elements.
81	5726		Cedar Springs Rd	3	The Dakota Schoolhouse	1862	Vernacular	School	Partly Visible	Minor Alterations	51	Two or more	One storey coursed-stone structure.
82	1107		Dundas St	3	Unknown	1854	Classical Revival	House	Highly Visible	Minor Alterations	19	Two or more	Two-storey five-bay coursed dressed stone structure in Neo-Classic Style.
83	2057		Caroline St	2	The Hart House	1890	Second Empire	House	Partly Visible	Minor Alterations	2004	Two or more	Two-and-a-half storey solid brick structure built in Second-Empire Style.
84	6691		Guelph Line	3	The Emanuel Coulson House	1875	Vernacular	Farmhouse	Partly Visible	Minor Alterations	30	Two or more	Two-storey coursed-stone structure.
85	5071		No. 2 Side Rd	6	Springloam Farm: The Johnston Zimmerman House (4459, 5012 and 5071 all give the same	1856	Gothic	Farmhouse	Partly Visible	Minor Alterations	78	Two or more	Structure built in Gothic Revival style from rusticated limestone.
86	2063		Caroline St	2	The Ellis Hughes House	1893	Queen Anne	House	Partly Visible	Minor Alterations	2008	Two or more	Turreted brick structure built for E. H Cleaver (Reeve of Burlington 1898). First electrically heated house in Burlington.
87	5043		Mount Nemo Cres	3	The Samuel Harris - James Thomas Farm	1854/74	Victorian	Farmhouse	Partly Visible	Minor Alterations	79	Two or more	Two-storey brick structure with Regency style design elements.
88	4197		Walker's Line	6	The Corner - Sherwood House and Farm	1842 70s	Gothic	House	Highly Visible	Minor Alterations	33	Two or more	One-and-a-half storey field stone structure dating back to the 1870s.
89	6409		Appleby Line	6	Plumbrook Farm, The Hume Homestead	1860s	Gothic	House	Highly Visible	Minor Alterations	30	Two or more	One-and-a-half storey frame structure built in a Vernacular Gothic Revival style.
90	5284		Britannia Rd	6	The Abraham Bell House	1875	Gothic	House	Highly Visible	Minor Alterations	28	Two or more	One-and-a-half storey structure built of broken-coursed stone with centre gable over a gothic-arched window.
91	1421		Lakeshore Rd	2	The Graham House	1894	Victorian	House	Highly Visible	Moderate Alterations	2383	Two or more	Two-storey front-gable frame structure with front verandah and gingerbread bargeboard.
92	5542	5556	Bell School Line	6	The McGregor - Cartwright House	1870	Victorian	House	Highly Visible	Minor Alterations	33	Two or more	Original house is a one-and-a-half storey brick structure built in a Vernacular style. Two-storey front-gabled addition after 1880.
93	4249		Appleby Line	6	Nether Lane, The Henry P. Zimmerman House	1870	Unknown	House	Highly Visible	Minor Alterations	39	Two or more	The house is a remaining remnant of the authentic character of Zimmerman Village.

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94	560		Locust St	2	The Charlotte Pettit Retirement House	1917	Craftsman	House	Highly Visible	Moderate Alterations	1876	Two or more	One-and-a-half storey structure in Craftsman style with Neo-Classical details.
95	539		Hager Ave	2	The Jim Coleman House	1912	California Bungalow	House	Partly Visible	Moderate Alterations	3857	Two or more	One-and-a-half storey cottage in Edwardian style with Tudor and Craftsman style design elements.
96	524	0	Locust St	2	The Aaron Emory Retirement Home	1880	Victorian	House	Highly Visible	Moderate Alterations	2131	Two or more	1-storey Victorian vernacular house form building. Design value embodied in two-over-two windows, segmental arched windows, prominent sills, fieldstone foundation.
97	349		Smith Ave	2	A Dalton - Smith House	1890	Tudor	House	Partly Visible	Minor Alterations	1460	Two or more	One-and-a-half storey brick farmhouse in vernacular late-Victorian style with Italianate decorative elements.
98	404		Smith Ave	2	Unknown	1900 (est)	Gothic	House	Highly Visible	Moderate Alterations	1739	Two or more	One-and-a-half storey frame structure dating back to 1900.
99	590		Brant St	2	The Phil C. Patriarche House	1913	Queen Anne	House	Partly Visible	Minor Alterations	1231	Two or more	Two-and-a-half storey Edwardian brick structure in vernacular Queen Anne style.
100	3053		South Dr	4	The Duggen - Carter House	1924	Tudor	House	Partly Visible	Minor Alterations	1217	Two or more	Two-and-a-half storey villa with Craftsman style elements designed by the architect of Lakehurst Villa.
101	432		Burlington Ave	2	The Stuart Greer House	1885	Italianate	House	Partly Visible	Moderate Alterations	3377	Two or more	
102	2230		Lakeshore Rd	2	The Baxter - Fearman House	1881	Italianate	House	Partly Visible	Minor Alterations	1018	Two or more	Two-storey brick structure with decorative details in Italianate style.
103	367		Smith Ave	2	A Dalton - Smith House	1890	Victorian	House	Partly Visible	Minor Alterations	1595	Two or more	One-and-a-half storey brick farmhouse in vernacular late-Victorian style with Italianate decorative elements.
104	292	300	Plains Rd W	1	Unsworth and Son Building (aka 300 Plains Rd. W)	1925	Victorian	House	Partly Visible	Minor Alterations	1566	Two or more	Two-storey industrial building. Property of Unsworth and Son farm and greenhouses.
105	371		Beaver St	2	The Hugh Cotter - Wesley King Farmhouse	1855	Vernacular	House	Highly Visible	Moderate Alterations	1379	Two or more	One-and-a-half storey three-bay end-gabled brick farmhouse built in a Vernacular style.
106	306		Hart Ave	4	The Etta Foster House	1925	Craftsman	House	Highly Visible	Moderate Alterations	788	Two or more	One-and-a-half storey bungalow in Craftsman style with cobblestone chimney.
107	336		Plains Rd W	1	The Unsworth House	1930s	Unknown	House	Partly Visible	Minor Alterations	855	Two or more	Two-and-a-half storey with English Arts and Crafts design elements.
108	233		Rossmore Blvd	4	Unknown	1927	Tudor	House	Partly Visible	Minor Alterations	360	Two or more	Two-and-a-half storey structure dating back to 1927.
109	1053		Mohawk Rd	1	Unknown	1924	Craftsman	House	Highly Visible	Moderate Alterations	369	Two or more	Two-and-a-half storey stuccoed structure dating back to 1924.
110	1006		Plains Rd E	1	Bellview House	1873	Victorian	Commercial	Partly Visible	Moderate Alterations	1227	Two or more	One-and-a-half storey front-gabled frame structure dating back to 1873.
111	2290		Queensway Dr	2	The Gage - Baxter - Fothergill - Pettit House Balsam Lodge	1844/62	Victorian	House	Highly Visible	Moderate Alterations	712	Two or more	Two-storey brick structure with ornate bargeboard.
112	3166		Hampton Crt	4	Unknown	1928	Classical Revival	House	Highly Visible	Moderate Alterations	326	Two or more	
113	192		Plains Rd E	1	The Scheer - Read Farmhouse	1880	Victorian	House	Highly Visible	Moderate Alterations	633	Two or more	Two-storey frame farmhouse dating back to 1880.

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114	164		Townsend Ave	1	Herberton House: The Wyatt - Reid House	1847	Victorian	House	Partly Visible	Minor Alterations	544	Two or more	One-and-a-half storey flemish-bond brick structure dating back to 1847.
115	2065		Dundas St	3	The Jackson Featherstone Homestead	1850	Vernacular	House	Partly Visible	Minor Alterations	386	Two or more	One-and-a-half storey farmhouse of rough-cut stone laid in random fashion.
116	247		Malvern Rd	4	The Chisolm - Le Patourel	1856	Gothic	House	Highly Visible	Moderate Alterations	431	Two or more	Two-storey brick structure with ornate bargeboard above a gothic arched window.
117	3104		First St	4	Unknown	1928	Vernacular	House	Partly Visible	Minor Alterations	327	Two or more	English vernacular cottage.
118	3015		Dundas St	3	The McCulloch - Greer House	1885	Victorian	House	Highly Visible	Moderate Alterations	430	Two or more	One-and-a-half storey brick structure in vernacular style.
119	135		Crestwood Crt	4	Oak Bank: The Fowler House	1850/75	Vernacular	House	Highly Visible	Moderate Alterations	243	Two or more	Original one-and-a-half storey brick structure built c.1875.
120	3318		Lakeshore Rd	4	The Wilkins	1860/78	Victorian	House	Partly Visible	Minor Alterations	317	Two or more	One-and-a-half storey brick structure in vernacular style.
121	1111		Britannia Rd	3	The Newell House	1905	Edwardian	House	Partly Visible	Minor Alterations	50	Two or more	Two-storey brick structure in Edwardian vernacular style.
122	6627		Jane St	3	The Will -Baker - Small Farm and House (aka 6640 Frederick St.)	1852	Gothic	Farmhouse	Partly Visible	Moderate Alterations	131	Two or more	Home of William Panton and Francis Baker, founders of the Village of Kilbride.
123	2201		Kilbride St	3	The Kilbride Schoolhouse	1876	Vernacular	House	Partly Visible	Minor Alterations	115	Two or more	One-and-a-half storey coursed-stone schoolhouse. Educational institution dating back to 1876.
124	3144		Lakeshore Rd	4	The Thomas Crooks House	1916	Unknown	House	Highly Visible	Moderate Alterations	224	Two or more	Two-storey masonry structure dating back to 1916.
125	38		Mountain Brow Rd	1	Evergreen Lodge: The Billings - Horning House	1849	Gothic	House	Partly Visible	Minor Alterations	77	Two or more	One-and-a-half storey cut stone structure in Gothic Revival style.
126	5506		Blind Line	3	The John Foster Homestead	1864	Gothic	House	Partly Visible	Minor Alterations	51	Two or more	One-and-a-half storey coursed cut stone structure built in a vernacular style with a central peaked gable containing a Gothic-arched window.
127	5672		Cedar Springs Rd	3	The Flynn - Rasberry House	1861	Victorian	House	Partly Visible	Minor Alterations	82	Two or more	One-and-a-half storey coursed-stone structure.
128	1983		Snake Rd	1	The Davidson - Anderson House	1900	Victorian	House	Partly Visible	Minor Alterations	62	Two or more	Two-and-a-half storey structure in Queen Anne Revival style.
129	6500		Bell School Line	6	The Corrigan House	1860	Gothic	House	Highly Visible	Moderate Alterations	8	Two or more	One-and-a-half storey frame structure built in a Vernacular Style.
130	4459		No. 2 Side Rd	6	Barlanark: The Peter Zimmerman - Thomas Clagie House (4459, 5012 and 5071 all give the same location on Google maps)	1840/87	Victorian	House	Partly Visible	Minor Alterations	38	Two or more	Structure built in vernacular Victorian style.
131	1060		Mohawk Rd	1	Unknown	1929	Tudor	House	Partly Visible	Moderate Alterations	333	Two or more	Two-and-a-half storey stuccoed structure dating back to 1929.
132	6059		Walker's Line	6	The Charles Readhead House	1880	Victorian	House	Partly Visible	Moderate Alterations	42	Two or more	One-and-a-half storey multi-gabled brick structure dating back to 1880.

SUBJECT: Red Tape Red Carpet recommendations 2023

TO: Community Planning, Regulation & Mobility Cttee.

FROM: Burlington Economic Development

Report Number: ECDEV-05-23

Wards Affected: All

Date to Committee: October 31, 2023

Date to Council: November 14, 2023

Recommendation:

Receive and file Burlington Economic Development report ECDEV-05-23 regarding Red Tape Red Carpet (RTRC) recommendations and associated appendices; and

Direct the Executive Director of Burlington Economic Development, Executive Director of Community Planning Regulation and Mobility and Executive Director of Community Relations and Engagement to report back on the implementation plan in Q2 2024.

PURPOSE:

Vision to Focus Alignment:

- Increase economic prosperity and community responsive city growth
- Deliver customer centric services with a focus on efficiency and technology transformation

Executive Summary:

In 2019, Mayor Meed Ward and Councilor Galbraith launched and co-chaired the Red Tape Red Carpet Task Force initiative, which led to 22 recommendations to better serve the business and development communities, and work has been undertaken to implement those recommendations.

In 2022, we entered the new term of council and engagement was undertaken with the business community to understand where we have improved, what issues they face in doing business in Burlington and how we can make it easier for them to start, locate and grow in Burlington.

The engagement highlighted the need for ongoing work towards a more efficient, transparent, and customer-focused development process in Burlington that can provide faster turnaround times, improve communication, and facilitate business growth. Recommendations for draft prioritized actions for Red Tape Red Carpet for 2023 onwards can be found in Appendix A to this report.

The purpose of this report is to provide an opportunity to engage with members of committee on issues identified and emerging opportunities to improve the customer experience. During Q3 2023 staff have continued to refine the recommendations and this report outlines the evolution of the recommendations based on business engagement. One of the critical findings of the engagement was the need to 'purpose-fit' the methods of service to the varying needs of different business segments. To address this finding the following key initiatives have been identified:

- Continue to expand the functionality of the online portal, "MyFiles", to cover more application types and full end to end process of those applications;
- Expand the services provided by Burlington Economic Development to better support small businesses and the development industry; and,
- Scope the opportunity for enhanced service offered by the Customer Experience Manager by implementing Hi-Impact criteria to identify those development proposals which address areas of critical need within the city (ex. Affordable housing, significant employment-related tax assessment growth).

Moving forward these recommendations will be the updated and evolved recommendations for Red Tape Red Carpet replacing the original 2019 recommendations moving forward.

Background and Discussion:

Red Tape Red Carpet Key Achievements 2018-2022

In 2019 the Red Tape Red Carpet Taskforce collected insights and ideas from the Burlington business community, partner organizations and staff to better understand the challenges (reduce "red tape") to locating or expanding a business here, and to ideate around solutions that would better serve our businesses (roll out the "red carpet"). On September 23, 2019, City Council approved the 22 recommendations arising from the Mayor's Red Tape Red Carpet (RTRC) Task Force initiative to better serve our customers as part of the City's commitment to continuous improvement. A draft implementation plan was presented at the October 8, 2019, Planning and Development Committee via city manager report CM-24-19: Red Tape Red Carpet Update and approved by City Council on October 21, 2019.

The City of Burlington has achieved several key accomplishments in improving its development and customer service processes as part of the 2018-22 Red Tape Red Carpet recommendations. An update was provided to Community Planning, Regulation and Mobility Committee (CPRM) as part of report Burlington Economic Development report ECDEV-02-23. An online Red Tape Red Carpet Dashboard was launched and presented at the December 3, 2019, Planning and Development Committee to provide regular updates on implementation of the recommendations and ensure transparency and accountability. It breaks out each of the 22 recommendations and provides interactive tools to review the status and what's been done so far. The dashboard was last updated to reflect RTRC Implementation in Q2 2023 and is available for review at https://www.burlington.ca/en/council-and-city-administration/red-tape-red-carpet-progress-reporting.aspx.

In 2022, we entered the new term of council and engagement was undertaken with the business community to understand where we have improved, what issues they face in doing business in Burlington and how we can make it easier for them to start, locate and grow in Burlington. As part of this engagement, focus groups were held based on the following key segments of businesses that interact with the City of Burlington and Burlington Economic Development:

1. Industrial, Commercial, and Institutional (ICI) Realtors
2. Industrial, Commercial and Institutional Landowners and Developers
3. Residential Landowners and Developers
4. Existing Businesses (Non-Development Industry)
5. City of Burlington Staff

Detailed feedback received from each of these groups was presented as part of Burlington Economic Development report ECDEV-02-23 at the June 27, 2023, Community Planning, Regulation and Mobility Committee meeting.

In addition, Customer Service Requests (CSRs) completed by Burlington Economic Development were analyzed to look at key problems, feedback from businesses and the most common issues that businesses ran into when requesting economic development support in facilitating interactions with the City of Burlington.

The engagement highlighted the need for a more efficient, transparent, and customer-focused development process in Burlington that can provide faster turnaround times, improve communication, and facilitate business growth. Recommendations for draft prioritized actions for Red Tape Red Carpet for 2023 onwards can be found in Appendix B.

Draft Red Tape Red Carpet Updated Recommendations 2023

As part of ECDEV 02-23, draft RTRC recommendations were made. These were based on extensive feedback with businesses, staff and the development community. Over the summer staff have continued to development and refine the recommendations. The full list of RTRC recommendations presented to the Community Planning, Regulation and Mobility Committee on June 27, 2023, are included in Appendix A. This list of recommendations and prioritization criteria continues to be refined, and the following amendments to the recommendations are being made.

Expansion and finalization of HIGH IMPACT (HI) CRITERIA for business concierge services and council reporting

HIGH IMPACT (HI) ECONOMIC CRITERIA

- For industrial and commercial files:
  - $3.7+ million in new industrial tax assessment
  - $2.8+ million in new office tax assessment
  - $9.2+ million in new retail tax assessment
- For industrial and commercial files:
  - 50+ industrial jobs generated or retained
  - 20+ office jobs generated or retained
  - 30+ retail jobs generated or retained

HIGH IMPACT (HI) ATTAINABLE HOUSING CRITERIA

- As a minimum the development must meet the following criteria:
  - Consistency with Provincial Policy and conformity with Regional and Local policy frameworks.
  - Compliance with the City's Urban Design Guidelines and built form expectations, as outlined in the City's Official Plan(s).
  - Conservation and retention of existing Cultural Heritage Resources.
- In addition, the development must meet at least one of the following criteria to qualify as High Impact:
  - 30% units designated affordable in the proposed development.
  - 100% purpose-built rental units in a development with 10+ units in the proposed development
  - Apartment dwellings with 3 or more bedrooms in 35% of units in the proposed development.
  - Mixed Use Developments that contain 3+ land uses (i.e. residential, retail/commercial, office, employment, minimum 0.1 Ha parkland, public service facilities, etc.)

These criteria will apply to development files in the MTSA's. Once the Community Planning Permit System (CPPS) is approved the concierge service for development files covered under the CPPS will be revisited and modified if needed to achieve the desired effect of the HI criteria throughout the city.

HIGH IMPACT (HI) COMMUNITY CRITERIA

- Projects that have a high impact on community and deliver new services or supports to the community e.g., new city facilities, social support facilities, public services facilities, institutional facilities etc.

Files recognized as High Impact (HI) will be eligible to receive a Development Concierge service, which will include a tailored service to support applicants through the process. Depending on the types of applications required prioritization of HI files will not necessarily involve expediting of processes as legislated timelines will still need to be met across applications. However, the service will provide end to end coverage, ensuring smooth hand-off between staff teams and supporting maximized opportunity for concurrent reviews.

In addition, it is recommended that the HI criteria be integrated into the agenda setting process for the Committee of Adjustment with additional monthly meetings set aside to discuss HI files so that they can be provided with priority servicing.

Discussions are taking place on how the HI file reporting should be managed with the proposed new Standing Committee Pipeline to Permit. Reporting on the effectiveness of the HI criteria will be included with other development-related reporting to the appropriate Committee of Council. The new committee will also be a valuable resource for providing advice during continuous improvement evaluations of the HI criteria.

Direction on Joint Working Group with Landscape Ontario

At the June 27,2023 presentation of the draft Red Tape Red Carpet Recommendations a delegation was provided by Landscape Ontario and the following staff direction (SD-30-23) was approved to help address their concerns as part of the Red Tape Red Carpet recommendations.

Direct the City Manager in response to the formal request by Landscape Ontario (as included in briefing note dated June 19, 2023, and submitted on behalf of professional landscape member businesses serving the City of Burlington) to proceed as follows:

ACTIONS:

1. Establish a Joint Working Group to review outstanding issues and continuous improvement opportunities related to all facets of the City of

Burlington development application permitting process as it applies to professional landscaping services. In so doing, the City fully acknowledges the need for urgent stakeholder engagement with Landscape Ontario members as stated in the briefing note as follows *"The professional landscape business would like to work in collaboration with the City of Burlington to play key role in providing advice and feedback to Council";*

2. Confirm with Landscape Ontario the representation related to their member participation on the Working Group as well as City senior staff representation including but not limited to Community Planning, Engineering Services, Roads Parks and Forestry, Building Services, Burlington Digital Services and Community Relations and Engagement;

3. Prepare a high-level workplan in conjunction with the Working Group including key objectives, meeting frequency (i.e., biweekly minimum) and format (i.e. virtual), reporting timelines inclusive of a final report target to Council from the City Manager by Q3 2023 (i.e. September 12, 2023 CPRM Committee). In addition to the final report, ongoing updates on the progress of the Working Group (i.e., quick wins) will be reported out publicly on a timely basis whenever possible in the weekly Council Information Package (CIP);

Staff have worked with Landscape Ontario during Q2 and Q3 to address the staff direction. Two meetings were held with the Landscape Ontario working group to date – July 20th and Oct. 10th. In the first meeting on July 20th, Landscape Ontario representatives presented a number of concerns related to the review and permitting processes for all different types of landscape design and construction projects. Some of the Landscape Ontario issues have been addressed through the recent *My Files* Application which went live in May through the Streamlined Development Application Fund (SDAF) process improvements as well as internal departmental communications and other changes and efficiencies being implemented.

Staff are committed to continuing to work in collaboration with Landscape Ontario to address their concerns particularly related to development processing timelines and requirements. Appendix C provides the details of the discussions and progress made to date at the two working group meetings. In addition, other items have also recently emerged that will require further discussion and staff will undertake to further update committee as required over the next 6 months.

Role of Burlington Economic Development in addressing address gaps identified through stakeholder engagement and relationship management with residential business community

Burlington Economic Development and the City of Burlington have been working collaboratively to engage the residential development community over Q3 2023. This has included individual corporate calls with Burlington developers and joint events with WEHBA and BILD. Some examples of new joint activities are below, and we are continuing to explore the best ways for Burlington Economic Development to work with the City of Burlington to support our residential building community and achieving complete communities in our MTSAs.

- Connecting residential developers to business support and growth resources. Joint corporate calls have been undertaken between Community Planning and Economic Development. These have resulted in new connections to innovation resources through TechPlace.
- Engagement on the new Community Planning Permit System (CPPS) tool has taken place through Developer Roundtables hosted jointly by Burlington Economic Development and the Burlington Chamber of Commerce.
- A Building in Burlington Event was hosted by Burlington Economic Development jointly with WEHBA and BILD to engage in discussions on best practices from industry in achieving complete communities.

Delivering a Positive Customer Experience and Evolving Relationship Management

Recruitment has been completed for the Customer Experience Manager – Business Concierge with the role filled in mid-September 2023. Onboarding is currently underway including discussions on the roll out of HI file criteria and associated processes.

Expanding the mandate of Burlington Economic Development to support Main Street Businesses

During Q3 Burlington Economic Development undertook engagement with main street business support partners including Business Improvement Association, Halton Region Small Business Enterprise Centre, Burlington Chamber of Commerce and Tourism Burlington. These discussions have helped form a new scope for the Economic Development Officer – Main Street Business role. We are also engaging with other municipalities to look at best practices in mains street business supports. Discussions are taking place between municipal partners determining the key functions and identifying the most appropriate

manner in which to staff the position in early 2024. In the interim Burlington Economic Development is continuing to back fill the existing Special Business Area Coordinator (SBAC) business support functions within existing staffing while the position is vacant.

Continuous Improvement and Tools to support the evolution of the customer experience

One of the outcomes of the SDAF process was a new online portal for self-service capabilities of applications going through the Pre-Building Permit application process. The portal is known as Burlington MyFiles. Continuous improvement of this platform will entail enhancing the self-service capabilities, and expanding the service to eventually include all applications that are not eligible for HI processing. This tool will continue to grow as 'red carpet' tool for the greatest volume of applications, giving applicants and owners enhanced transparency and the ability to interact more directly in the processing of their application.

Staff are currently engaged in a proof of concept of an AI based file-review platform that has the potential to allow customers to explore design options and zoning compliance prior to formally submitting an application. The platform has the potential to automate some aspects of the processing of high-volume/low complexity files, freeing up staff resources to better serve complex files and tailored service for HI applications.

Ongoing process improvements and investment in technology are crucial to provide excellence in 'right-sized' customer service that is tailored to the nature of every application.

Implement Community Improvement Plans (CIPs) and other tools to support City-building initiatives.

The low-hanging fruit is to provide funding and direction to implement the existing Brownfield CIP which was approved in 2020 for the redevelopment of complex brownfield sites. In addition to developing CIPS that support the new attainable housing strategy. The multi-year budget simulation currently includes the CIP budget beginning in 2026 in keeping with the EPP prioritization and capacity work planning.

Strategy/process/risk

The 2019 recommendations brought forward by the Red Tape Red Carpet Taskforce involved extensive engagement with the business community. Additional work has been undertaken as part of the new term of council to engage customers and evolve the recommendations for Red Tape Red Carpet to meet current customer needs.

Ongoing feedback from the business community will be collected through the new city-wide Customer Feedback survey as well as through the work of the redesigned Customer Experience Manager – Business Development role to inform further strategies and recommendations to better support businesses to start, locate and grow in Burlington.

Financial Matters:

At this time, there are no financial impacts to the implementation of the Red Tape Red Carpet recommendations.

Climate Implications:

The implementation of the Red Tape Red Carpet Recommendations has the following climate implications:

As part of the Business Attraction Strategy, a focus will be on Cleantech will attract companies that provide solutions to climate and environmental issues. Burlington Economic Development's Business Attraction & Retention and policy initiatives also help support GHG emissions reduction through the GO Corridor Vision and Master Planning which will encourage increased employment density and mixed-use development. As well, initiatives are being developed with Burlington Transit to increase transit connectivity to employment areas and create more opportunities for employees to use public transit for their day-to-day commutes, thereby reducing the production of GHGs by private vehicles.

Engagement Matters:

These Red Tape Red Carpet recommendations were gathered through a public survey and through virtual feedback sessions with key segments of businesses that interact with the City of Burlington and Burlington Economic Development:

1. Industrial, Commercial, and Institutional (ICI) Realtors
2. Industrial, Commercial and Institutional Landowners and Developers
3. Residential Landowners and Developers
4. Existing Businesses (Non-Development Industry)
5. City of Burlington Staff

These sessions sought to identify the challenges and obstacles facing growth and the relocation/expansion of businesses in Burlington to develop actional solutions. Existing

businesses were asked largely about their experiences setting up in Burlington and how they feel the experience of other businesses in the future could be enhanced. The other groups were asked three main questions:

1. What are we doing well? What examples of good experiences or best practices have you experienced?
2. Where can we do better? Where can improvements be made? Are there any themes or recurrent issues you have experienced?
3. What do you feel has changed since the original RTRC discussions in 2018, if anything? What are other municipalities that you have worked with doing well that Burlington could learn from?

The feedback received from each session were provided in Appendix A of ECDEV -02-23.

Overall, the key themes that emerged across all sessions with ICI realtors, industrial, commercial, and institutional landowners, residential developers and landowners, and existing businesses were as follows:

- Frustration with delays in the development process, lack of transparency, and poor communication with City staff.
- Need for a more cohesive approach, stronger connections between the city and other agencies, and a focus on culture and customer service.
- Desire for realistic timing guarantees and process improvements, capacity building, and reward for staff efficiency.
- Importance of feedback and communication, empathy, transparency, and relationship-building, and learning from other municipalities.
- Negative perception of Burlington's brand and reputation, and the need for faster turnaround times to attract investment and revenue.
- Zoning and regulatory concerns, and the need for a clear and streamlined process, with a single point of contact to manage the relationships for high economic impact files, for small main street businesses, and support them in navigating the complex development process in Burlington.
- Development of a culture that enables and rewards staff to be problem solvers and work with customers to achieve goals together

The sessions took place at a time when the process improvements of SDAF had been implemented but applications had not had the opportunity to experience those improvements in the end to end processing of their applications. We recognize that many of the comments reflect the pre-SDAF processes, yet still provide valuable insights and emphasis on the value of continuous improvement and further investment opportunities as described in this report.

Once the processes outlined in this report have been in place for a period of time, staff will continue to engage with industry partners to monitory and evaluate the effectiveness of these measures. Beginning in Q2, 2024, Staff will report back to Council on a semi-annual basis regarding outcomes as well as adjusted and new measures to continuously improve the customer experience through the development application process.

Conclusion:

The implementation of the recommendations developed as part of the Mayor's Red Tape Red Carpet Taskforce initiative in 2018 are well underway, Stakeholder engagement in 2022/2023 has resulted in an updated and enhanced list of recommendations for Red Tape Red Carpet replacing the original 2019 recommendations moving forward.

A cross-departmental team of senior staff is developing a long-term implementation plan of 2023 recommendations. The new recommendations in this report will be reported on through an update Red Tape Red Carpet Dashboard available publicly at: https://www.burlington.ca/en/your-city/red-tape-red-carpet-task-force-progress.asp.

Respectfully submitted,

Anita Cassidy	Brynn Nheiley	Jacqueline Johnson
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Appendices:

A. Red Tape Red Carpet (RTRC) Recommendations presented at June 27, 2023 CPRM
B. Updated RTRC Recommendations for implementation by staff October 2023
C. Landscape Ontario Working Group update

Report Approval:

All reports are reviewed and/or approved by Department Director, the Chief Financial Officer and the Executive Director of Legal Services & Corporation Counsel.

APPENDIX A – RED TAPE RED CARPET RECOMMENDATIONS 2023 PRESENTED TO JUNE 27 2023 CPRM

Strategic focus on high impact outcomes

1. Develop prioritization criteria for file management and problem resolution with clear escalation process based on economic impact and the City's strategic goals. Possible Economic Impact criteria/KPIs to be used in prioritization of files are below. Criteria to be integrated into the next iteration of AMANDA to track economic impact criteria for all development applications. Example criteria are listed below and will continue to be refined. Staff discretion will also be used to escalate files as needed:

    - For industrial and commercial files:
        - $3.7+ million in new industrial tax assessment
        - $2.8+ million in new office tax assessment
        - $9.2+ million in new retail tax assessment
    - For industrial and commercial files:
        - 50+ industrial jobs generated or retained
        - 50+ office jobs generated or retained
        - 30+ retail jobs generated or retained
    - Residential developments proposing 6+ net new rental units to market or minimum investment values of renovations and enhancements
    - Additional residential criteria are being developed, including density of units, affordability, bedroom ratios.
    - Partnership/application by Not-For-Profit housing provider.
    - Community infrastructure development proposals.

    Files recognized as High Economic Impact (HEI) will be eligible to receive a Development Concierge service, which will include a higher level of service and access to staff from end to end of the application process. Prioritization of HEI files will not necessarily involve expediting of processes as legislated timelines will still need to be met across applications.

2. Determine the role that Burlington Economic Development should take to address gaps identified through stakeholder engagement including expansion of their business growth mandate to support residential growth in MTSAs and intensification areas. Determine the role between City of Burlington and Burlington Economic Development in high density residential business community engagement and relationship management.

3. Recognize the City has an endorsed Corporate Continuous Improvement Strategy and plan to action, implement and report on ongoing continuous improvement activities that demonstrate the application of the Lean Six Sigma training received by staff throughout 2022. Align improvement activities with the

Corporate Continuous Improvement strategy and its best practices, capturing the voice of the customer, identifying the value add within process and eliminating waste. Continue engaging in regular Plan Do Check Act cycles between staff and customers, making visible further opportunities for improvement and reinforcing a solutions-oriented service culture. Support psychological safety by encouraging experimentation, rewarding innovative thinking, celebrating small successes and framing failed experiments as great learning opportunities. Report on improvements and service delivery outcomes using quality data and results-based accountability practices.

4. Form a senior team that can be pulled together quickly with decision makers for new investments from the City, Economic Development and other partner agencies to problem solve and roll out the red carpet for businesses that meet HEI criteria.

5. Complete a review of records management and staff onboarding/off boarding procedures to improve file handover and consistency in responses to customers. Integrate culture of staff as problems solvers enabling Burlington's economic growth throughout onboarding and training of existing and new staff. Encourage staff freedom for flexibility in interpretation of regulations, particularly those known to be outdated and those which do not consider the modern digital business environment.

Delivering a Positive Customer Experience and Evolving Relationship Management

6. Design and evolve our organization for customer experience to provide a clear ambassador role with ability to influence files and work in closer partnership with Burlington Economic Development to build relationships with the business community. Achieve this by redesigning Customer Experience Manager – Business Development to manage the integrated customer experience for high impact/low volume files as identified through the proposed prioritization criteria. Actions may include:

    - Managing monthly review of HEI files with key city staff via the Development Control Committee (DCC) monthly meetings to prioritize processing and identify risks.
    - Developing and managing a triage system for how customer requests for both high impact/lower volume and low impact/higher volume files are managed.
    - Jointly managing with Economic Development, the integration of HEI files into a system to track customers interactions and common issues including customer service metrics to create a common baseline for our success in improving the customer experience.
    - Providing monthly file tracking updates and advance issue identification updates to Council and senior staff for high economic impact files.

- Championing the integration of Customer Feedback to deliver an improved customer experience.

    - Using tools from the disciplines of Customer Experience, Human Centered Design, and journey mapping to fully understand the customer and build empathy.
    - Further refining of customer service standards for responding to customers questions, emails, and voicemails.
    - Defining turnaround times for reviews that are not currently legislated, such as the pre-consultation process.
    - Managing the collection of customer feedback for HEI files. Working with the broader customer experience team to integrate this data into broader customer service analytics collecting and sharing analytics from the new City-wide Customer Feedback Survey, including measures of Net Promoter Score (NPS) and Customer Effort Score (CES).

7. Recognize the importance of Small Main Street Businesses to Burlington's economic growth by:

    - Expanding the mandate of Burlington Economic Development to support Main Street Businesses
    - Redeveloping the Small Business Coordinator Role as a Small Business Support role under Economic Development focused on:

        - Developing a main street business support strategy
        - Supporting BIAs in policy and strategy development
        - Providing a concierge/ambassador function supporting main street businesses through regulatory processes
        - Determining opportunities to provide additional main street businesses supports including exploring new BIAs for Burlington's intensification and growth areas

Proactive Marketing, Communications and Partnerships

8. Continue Burlington's commitment to proactive investment attraction and building a strong reputation for Burlington as an attractive city to locate, start and grow a business including implementation of the One Brand project.

9. Align City of Burlington and Burlington Economic Development communication strategies and work plan focusing on Burlington's evolution to a complete community and the benefits that development of our MTSAs and intensification areas will bring to the community and businesses. Partner with development industry organizations on communications to help support the story telling of the benefits new development will bring to Burlington including highlighting

information on walkability, public and private amenities and community investments to support existing and future residents.

10. Review the existing communications resources available to building and development customers to help explain Burlington's processes and how they can move their applications forward. Develop a joint communications plan between the City of Burlington and Economic Development for new communications resources including process guides and FAQs for businesses that are looking to lease, buy or develop/redevelop a site. Work to proactively communicate these resources to businesses and update regularly based on customer feedback on gaps/usefulness of information.

11. Continue to proactively communicate and engage with the development community as end-to-end development processes are improved including integration with partner agencies.

12. Work with the development community to address barriers post approval, including servicing. Engage with Halton Region to proactively map and budget for servicing in intensification areas to ensure servicing is in place for development approvals coming online.

Continuous Improvement and Tools to support the evolution of the customer experience

13. Review current staff resourcing and structure for file processing and determine if any updates to resourcing and/or staff specializations are needed to support the processing of high economic impact/low volume files and low economic impact/high volume files. Consider alternative structures including separate intake streams and staffing resources assigned to each, among other options.

14. Continue to Invest in technologies to support business processes and file management including implementation of online submissions system that allows visibility of files to customers (Myfiles) and file management (AMANDA).

15. Evaluate risks and risk tolerance of the corporation of adjusting the level of technical review being undertaken on files that have been submitted by professionals with accreditation and any opportunities to redevelop processes recognizing the professional standards of accreditation. e.g., engineer, architect. Consider pre-qualification of experts to reduce resources directed at reviewing professionally stamped submissions from trusted experts.

16. Identify flexibility through Director of Community Planning interpretations in how zoning is applied in the interim period until an updated zoning by-law is approved.

17. Review parking standards in intensification areas

18. Implement Community Improvement Plans (CIPs) and other tools to support City-building initiatives. The low-hanging fruit is to provide funding and direction to implement the existing Brownfield CIP which was approved in 2020 for the redevelopment of complex brownfield sites. Additional funding and resources are required to develop a Comprehensive CIP Strategy with actionable incentive programs that may include City-Building components of:

    - Housing – Attainable, Affordable, Assisted and Special Needs
    - Continued Downtown Improvement and Business Attraction in both the Downtown and Aldershot BIAs
    - Commercial Office Attraction/Improvement/Revitalization/Development
    - Employment
    - Sustainability in the Major Transit Station Areas (MTSAs)
    - Rural Economic Development

APPENDIX B – UPDATED RED TAPE RED CARPET RECOMMENDATIONS OCTOBER 2023

Strategic focus on high impact outcomes

1. Develop prioritization criteria for file management and problem resolution with clear escalation process based on economic impact and the City's strategic goals. Possible Economic Impact criteria/KPIs to be used in prioritization of files are below. Criteria to be integrated into the next iteration of AMANDA to track economic impact criteria for all development applications. Example criteria are listed below and will continue to be refined. Staff discretion will also be used to escalate files as needed:

HIGH IMPACT (HI) ECONOMIC CRITERIA

- For industrial and commercial files:
  - $3.7+ million in new industrial tax assessment
  - $2.8+ million in new office tax assessment
  - $9.2+ million in new retail tax assessment
- For industrial and commercial files:
  - 50+ industrial jobs generated or retained
  - 20+ office jobs generated or retained
  - 30+ retail jobs generated or retained

HIGH IMPACT (HI) ATTAINABLE HOUSING CRITERIA

- As a minimum the development must meet the following criteria
  - Consistency with Provincial Policy and conformity with Regional and Local policy frameworks.

- Compliance with the City's Urban Design Guidelines and built form expectations, as outlined in the City's Official Plan(s).
- Conservation and retention of existing Cultural Heritage Resources.
- In addition the development must meet at least one of the following criteria to qualify as High Impact
- 30% units designated affordable in the proposed development.
- 100% purpose-built rental units in a development with 10+ units in the proposed development
- Apartment dwellings with 3 or more bedrooms in 35% of units in the proposed development.
- Mixed Use Developments that contain 3+ land uses (i.e. residential, retail/commercial, office, employment, minimum 0.1 Ha parkland, public service facilities, etc.)

These criteria will apply to development files in the MTSA's. Once the Community Planning Permit System (CPPS) is approved the concierge service for development files covered under the CPPS will be revisited and modified if needed to achieve the desired effect of the HI criteria throughout the City.

HIGH IMPACT (HI) COMMUNITY CRITERIA

- Projects that have a high impact on community and deliver new services or supports to the community eg new city facilities, social support facilities, public services facilities, institutional facilities etc

Files recognized as High Impact (HI) will be eligible to receive a Development Concierge service, which will include a tailored service to support applicants through the process. Depending on the types of applications required

prioritization of HI files will not necessarily involve expediting of processes as legislated timelines will still need to be met across applications. However, the service will provide end to end coverage, ensuring smooth hand-off between staff teams and supporting maximized opportunity for concurrent reviews.

In addition it is recommended that the HI criteria be integrated into the agenda setting process for the Committee of Adjustment with additional monthly meetings set aside to discuss HI files so that they can be provided with priority servicing.

Discussions are taking place on how the HI file reporting should be managed with the proposed new Standing Committee Pipeline to Permit. Reporting on the effectiveness of the HI criteria will be included with other development-related reporting to the appropriate Committee of Council. The new committee will also be a valuable resource for providing advice during continuous improvement evaluations of the HI criteria.

2. Determine the role that Burlington Economic Development should take to address gaps identified through stakeholder engagement including expansion of their business growth mandate to support residential growth in MTSAs and intensification areas. Determine the role between City of Burlington and Burlington Economic Development in high density residential business community engagement and relationship management.

3. Recognize the City has an endorsed Corporate Continuous Improvement Strategy and plan to action, implement and report on ongoing continuous improvement activities that demonstrate the application of the Lean Six Sigma training received by staff throughout 2022. Align improvement activities with the Corporate Continuous Improvement strategy and its best practices, capturing the voice of the customer, identifying the value add within process and eliminating waste. Continue engaging in regular Plan Do Check Act cycles between staff

and customers, making visible further opportunities for improvement and reinforcing a solutions-oriented service culture. Support psychological safety by encouraging experimentation, rewarding innovative thinking, celebrating small successes and framing failed experiments as great learning opportunities. Report on improvements and service delivery outcomes using quality data and results-based accountability practices.

4. Identify senior leads across various departments that can be pulled together quickly with decision makers for new investments from the City, Economic Development and other partner agencies to problem solve and roll out the red carpet for businesses that meet HEI criteria.

5. Complete a review of records management and staff onboarding/off boarding procedures to improve file handover and consistency in responses to customers. Integrate culture of staff as problems solvers enabling Burlington's economic growth throughout onboarding and training of existing and new staff. Encourage staff freedom for flexibility in interpretation of regulations, particularly those known to be outdated and those which do not consider the modern digital business environment.

Delivering a Positive Customer Experience and Evolving Relationship Management

6. Design and evolve our organization for customer experience to provide a clear ambassador role with ability to influence files and work in closer partnership with Burlington Economic Development to build relationships with the business community. Achieve this by redesigning Customer Experience Manager – Business Development to manage the integrated customer experience for high impact/low volume files as identified through the proposed prioritization criteria. Actions may include:

- Managing monthly review of HEI files with key city staff via the Development Control Committee (DCC) monthly meetings to prioritize processing and identify risks.
- Developing and managing a triage system for how customer requests for both high impact/lower volume and low impact/higher volume files are managed.
- Jointly managing with Economic Development, the integration of HEI files into a system to track customers interactions and common issues including customer service metrics to create a common baseline for our success in improving the customer experience.
- Providing monthly file tracking updates and advance issue identification updates to Council and senior staff for high economic impact files.
- Championing the integration of Customer Feedback to deliver an improved customer experience.

    - Using tools from the disciplines of Customer Experience, Human Centered Design, and journey mapping to fully understand the customer and build empathy.
    - Further refining of customer service standards for responding to customers questions, emails, and voicemails.
    - Defining turnaround times for reviews that are not currently legislated, such as the pre-consultation process.
    - Managing the collection of customer feedback for HEI files. Working with the broader customer experience team to integrate this data into broader customer service analytics collecting and sharing analytics from the new City-wide Customer Feedback Survey, including measures of Net Promoter Score (NPS) and Customer Effort Score (CES).

7. Recognize the importance of Small Main Street Businesses to Burlington's economic growth by:

- Expanding the mandate of Burlington Economic Development to support Main Street Businesses
- Redeveloping the Small Business Coordinator Role as a Small Business Support role under Economic Development focused on:

    - Developing a main street business support strategy
    - Supporting BIAs in policy and strategy development
    - Providing a concierge/ambassador function supporting main street businesses through regulatory processes
    - Determining opportunities to provide additional main street businesses supports including exploring new BIAs for Burlington's intensification and growth areas

Proactive Marketing, Communications and Partnerships

8. Continue Burlington's commitment to proactive investment attraction and building a strong reputation for Burlington as an attractive city to locate, start and grow a business including implementation of the One Brand project.

9. Align City of Burlington and Burlington Economic Development communication strategies and work plan focusing on Burlington's evolution to a complete community and the benefits that development of our MTSAs and intensification areas will bring to the community and businesses. Partner with development industry organizations on communications to help support the story telling of the benefits new development will bring to Burlington including highlighting information on walkability, public and private amenities and community investments to support existing and future residents.

10. Review the existing communications resources available to building and development customers to help explain Burlington's processes and how they can

move their applications forward. Develop a joint communications plan between the City of Burlington and Economic Development for new communications resources including process guides and FAQs for businesses that are looking to lease, buy or develop/redevelop a site. Work to proactively communicate these resources to businesses and update regularly based on customer feedback on gaps/usefulness of information.

11. Continue to proactively communicate and engage with the development community as end-to-end development processes are improved including integration with partner agencies.

12. Work with the development community to address barriers post approval, including servicing. Engage with Halton Region to proactively map and budget for servicing in intensification areas to ensure servicing is in place for development approvals coming online.

Continuous Improvement and Tools to support the evolution of the customer experience

13. Review current staff resourcing and structure for file processing and determine if any updates to resourcing and/or staff specializations are needed to support the processing of high economic impact/low volume files and low economic impact/high volume files. Consider alternative structures including separate intake streams and staffing resources assigned to each, among other options.

14. Continue to Invest in technologies to support business processes and file management including implementation of online submissions system that allows visibility of files to customers (Myfiles) and file management (AMANDA).

15. Evaluate risks and risk tolerance of the corporation of adjusting the level of technical review being undertaken on files that have been submitted by

professionals with accreditation and any opportunities to redevelop processes recognizing the professional standards of accreditation. e.g., engineer, architect. Consider pre-qualification of experts to reduce resources directed at reviewing professionally stamped submissions from trusted experts.

16. Identify flexibility through Director of Community Planning interpretations in how zoning is applied in the interim period until an updated zoning by-law is approved.

17. Review parking standards in intensification areas

18. Implement Community Improvement Plans (CIPs) and other tools to support City-building initiatives. The low-hanging fruit is to provide funding and direction to implement the existing Brownfield CIP which was approved in 2020 for the redevelopment of complex brownfield sites. Additional funding and resources are required to develop a Comprehensive CIP Strategy with actionable incentive programs that may include City-Building components of:

    - Housing – Attainable, Affordable, Assisted and Special Needs
    - Continued Downtown Improvement and Business Attraction in both the Downtown and Aldershot BIAs
    - Commercial Office Attraction/Improvement/Revitalization/Development
    - Employment
    - Sustainability in the Major Transit Station Areas (MTSAs)
    - Rural Economic Development

19. Recommendations from joint working group with Landscape Ontario to be updated once work is completed.

Landscape Ontario/City of Burlington Working Group Meetings
Summary of Issues and Actions as of October 10, 2023

Appendix C to ECDEV-05-23

Issue/Item	Relates to which process?	Comments/Concerns	City Response	Recommended Changes to City DAP/Actions	Target Dates/Timelines
1. Development Application Process	Planning (Zoning) Forestry Grading and Drainage	LO: Pre-screening time causes extended delays, and this time is not included in prescribed timelines (pre-screening can take months). LO: Deficiencies identified during pre-screening are extreme (i.e., told to move tree protection by 2”). LO: Pre-screening timelines – when does the clock start, what are the targeted timelines, proper communication with homeowners and COB needed (i.e., original date of submission for pre-screening must be communicated, not official application submission date).	New Pre- building permit (PBP) process was implemented in May 2023**.** Pre-screening occurs within a week after submission to ensure application completeness and applicant is advised. New online *My Files* visibility tool has been created and available on-line as of May 2023 to allow applicants (and property owners) to follow application progress. Pre building permit process webpage link: *https://www.burlington.ca/en/planning-and-development/pre-building-approval-application.aspx?_mid_=10921* *Information session to explain.* Pools are major part of LO services and are currently not part of the PBP process as they do not require a building permit. Opportunity to explore expansion for integrated landscape projects including pools. Pool webpage: *link*:https://www.burlington.ca/en/building-and-renovating/pool-permits.aspx	Process has been improved through SDAF project. Separate process streams for three major applicant types and approvals • Zoning • Grading and drainage and • Forestry Pre-screening of application occurs within 5 days. Start time begins when application is deemed complete, and payment is received. Updated webpage. Expectations of applicant for timing. Two different processes for construction of pools vs structures. City staff to investigate opportunity for expanded use of *MyFiles* for pools and fully integrated landscape projects (i.e., including structures requiring building permit). By-Law Compliance Dept to review and implement pool approval process improvements. Landscape Contractors request to be able to schedule inspections online through *MyFiles* portal. Needs to be confirmed with BDS, whether *MyFiles* has this capacity. If not, we can work out another method. For now, we are using email and phone calls.	**Application Process Improvements completed May 2023 with priority upgrades and enhancements to be implemented in 2024 and future years.**
2. Forestry Related Forms and Arborist Reports	All	LO: Private tree inventory & compensation form → duplicate form, takes a lot of time. LO: Arborist is not privy to project planning/reports and therefore requires extra time to communicate changes. Landscape Architect plans show all trees, including those that will not be impacted by construction... Why must non-impacted trees be protected?	New PBP process has consolidated form. There is an on-line checklist to follow and only one form that covers Planning/Development Eng/Forestry sections. Pools now utilize a consolidated form as well. This was implemented in Dec 2021 with a checklist and guide document. Arborist needs to be part of the entire landscape design and construction planning process, with plans drawn to scale. Plans are to demonstrate how regulated trees will be protected through the duration of the project, while also identifying	Opportunity for ongoing education and outreach with Landscape Ontario members through an information session on the new process. City Forestry staff will follow-up directly with ED of Landscape Ontario to provide more information and schedule session.	**Complete by Q4 2023**

		LO: Could COB pre-certify arborists to help make process faster (trust professionals).	those to be impacted, either through encroachment or removal. New online guide has been developed to explain Tree bylaw and provide examples of plans and other visuals. Staff have updated checklists for requirements needed for complete applications and have streamlined the permit and approval process based on project scope. For PBP files, under the new process tree barriers now do not need to be erected until the building permit is issued. If pool projects are delayed until spring, staff already have a mechanism in place to allow barriers to be installed closer to build. Declaration form was launched at the end of 2021. Pool inspections for tree protection barriers are completed ASAP, or can be provided through photographic evidence, depending on scope. The city recommends hiring a Qualified Tree Professional as defined in the City's Private Tree Bylaw. Introducing a pre-qualification process will introduce unintended administrative steps that could lengthen the process.		
3. Topographic surveys, grading & drainage	Development Engineering	LO: Topographic surveys should not be required for simple structures/small projects – cost is prohibitive ($3K for topo surveys). Costs have increased to $10-12K per survey in some cases.	City will provide updated materials online (Q&A or table) that clarifies when topographic surveys is required/not required. City to address legacy issues with respect to the existing grading and drainage by-law. Bylaw will be amended to ensure surveys are required for applications only where needed.	Bring forward for Council approval amendments to grading and drainage by-law and improve communications with LO members and other customers about requirements. By-law amendments completed to-date: Silt fence not required for: • Front porches • Basement walkouts • Second storey additions • Fire/damage repairs	**Complete by Q1 2024**
4. Silt Fencing	Development Engineering	LO: Should be used for wetlands/waterways only. LO: Length of time for inspections is extensive. Removal of fencing/protection at project completion – length of time it takes for final inspection impacts contractor being paid by customer. This should not hold up the process, can we use photos?	Engineering does not agree that silt fencing should only be used for wetlands/waterways. Silt fencing is also required for other projects to ensure no impact to neighbouring lands during construction. Not required for: • Front porches • Basement walkouts • Second storey additions	City staff support that opportunity for photo evidence to speed up process. Need to determine criteria for acceptable photo evidence. Improve communications about requirements and provide demonstration photos to ensure acceptable photo submissions.	**Complete by Q1 2024**

			• Fire/damage repairs Engineering already accepts photo evidence for smaller projects already. Photo evidence is accepted at the discretion of inspector and depending on project. Photo evidence is more difficult to provide for larger projects, however, video evidence can be added to *MyFiles* online portal.		
5. Pool Enclosures	Bylaw	LO: Needs standardization of pool fencing requirements (i.e., circle one of 3 types of fencing).	City agrees with the LO comment. Improve communications and information sharing. Expand fencing requirements and include checklist. .	Pool By-law is currently being updated and will be brought forward for council approval including review other municipalities' fencing requirements/processes.	**Complete in Q2 2024**
6. Construction Products	Building	LO: Engineered wood products for exterior use is not receiving approvals during permitting process. LO: Need list of approved products.	Use of Engineered wood products is a building code issue and is only a recommendation by the professional Engineer – they approve structural use, not manufacture of product (all relates to indoor vs. outdoor use). Recommendations must come from Engineer. Building Department currently maintains and makes available a list of manufacturers that comply with our policy. Designers and contractors can contact Building to obtain that information.	Building Dept prepared on as required basis to work with and advise LO of approved use of engineering wood products.	**Ongoing as Required**
7. Other Items Raised at Meetings		General comments: • Enforcement – good contractors are the ones being penalized. • Technology – use WhatsApp rather than email to submit photo evidence. • Homeowners need to be educated by COB on steps, timelines, processes, and benefits of permits. • Trusted contractor program/designation	City overall agrees and supports these comments made by LO members at the working group meetings. In particular, the importance of timely approval of development permits was acknowledged.	City prepared to work closely with LO to promote public awareness of hiring professionals. City understands the fact that timely approvals is critical to LO members particularly given the limited construction season and is prepared to continue to work to develop targets for application review and approvals. Specifically with the implementation of new *MyFiles* application will provide performance data on approval cycle times that can be utilized to develop approval targets.	**Ongoing as Required** **Complete by Q2 2024**