City of Hamilton
PUBLIC WORKS COMMITTEE
AGENDA

Meeting #:	23-004
Date:	April 3, 2023
Time:	1:30 p.m.
Location:	Council Chambers Hamilton City Hall 71 Main Street West

Carrie McIntosh, Legislative Coordinator (905) 546-2424 ext. 2729

Pages

1. CEREMONIAL ACTIVITIES

2. APPROVAL OF AGENDA

   (Added Items, if applicable, will be noted with *)

3. DECLARATIONS OF INTEREST

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b. Aznive Mallett, Advisory Committee for Persons with Disabilities 37

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Members of the public can contact the Clerk’s Office to acquire the documents considered at this meeting, in an alternate format.

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15. PRIVATE AND CONFIDENTIAL

16. ADJOURNMENT

Members of the public can contact the Clerk’s Office to acquire the documents considered at this meeting, in an alternate format.

PUBLIC WORKS COMMITTEE
MINUTES 23-003
1:30 p.m.
Monday, March 20, 2023
Council Chambers
Hamilton City Hall
71 Main Street West

Present: Councillors N. Nann (Chair), E. Pauls (Vice-Chair), J. Beattie, C. Cassar, J. P. Danko, M. Francis, T. Jackson, C. Kroetsch, T. McMeekin, M. Spadafora, A. Wilson, M. Wilson

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THE FOLLOWING ITEMS WERE REFERRED TO COUNCIL FOR CONSIDERATION:

1. 2022 Annual Drinking Water Report (PW23014) (City Wide) (Item 9.2)

(Jackson/Pauls)
That Report PW23014, respecting 2022 Annual Drinking Water Report, be received.

Result: **MOTION, CARRIED by a vote of 11 to 0, as follows**:

Yes - Ward 1 Councillor Maureen Wilson
Not Present - Ward 2 Councillor Cameron Kroetsch
Yes - Ward 3 Councillor Nrinder Nann
Yes - Ward 5 Councillor Matt Francis
Yes - Ward 6 Councillor Tom Jackson
Yes - Ward 7 Councillor Esther Pauls
Yes - Ward 8 Councillor J. P. Danko
Yes - Ward 10 Councillor Jeff Beattie
Yes - Ward 12 Councillor Craig Cassar
Yes - Ward 13 Councillor Alex Wilson
Yes - Ward 14 Councillor Mike Spadafora
Yes - Ward 15 Councillor Ted McMeekin

2. Annual Watermain Break Report - 2022 (City Wide) (PW23015) (Item 9.3)

(Danko/Jackson)
That Report PW23015, respecting Annual Watermain Break Report – 2022, be received.

Result: **MOTION, CARRIED by a vote of 10 to 0, as follows**:

Yes - Ward 1 Councillor Maureen Wilson
Yes - Ward 2 Councillor Cameron Kroetsch
Yes - Ward 3 Councillor Nrinder Nann
Yes - Ward 5 Councillor Matt Francis
Not Present - Ward 6 Councillor Tom Jackson
Not Present - Ward 7 Councillor Esther Pauls
Yes - Ward 8 Councillor J. P. Danko
Yes - Ward 10 Councillor Jeff Beattie
Yes - Ward 12 Councillor Craig Cassar
Yes - Ward 13 Councillor Alex Wilson
Yes - Ward 14 Councillor Mike Spadafora
Yes - Ward 15 Councillor Ted McMeekin

3. Protected Bike Lane Curbs (PW23016) (City Wide) (Outstanding Business List Item) (Item 9.4)

(Beattie/Kroetsch)
That Report PW23016, respecting Protected Bike Lane Curbs, be received.

Result: **MOTION, CARRIED by a vote of 12 to 0, as follows**:

Yes - Ward 1 Councillor Maureen Wilson
Yes - Ward 2 Councillor Cameron Kroetsch
Yes - Ward 3 Councillor Nrinder Nann
Yes - Ward 5 Councillor Matt Francis
Yes - Ward 6 Councillor Tom Jackson
Yes - Ward 7 Councillor Esther Pauls
Yes - Ward 8 Councillor J. P. Danko
Yes - Ward 10 Councillor Jeff Beattie
Yes - Ward 12 Councillor Craig Cassar
Yes - Ward 13 Councillor Alex Wilson
Yes - Ward 14 Councillor Mike Spadafora
Yes - Ward 15 Councillor Ted McMeekin

4. 2022 Year End Report on Community Bookings at Tim Hortons Field (PW18075(b)) (Ward 3) (Item 9.5)

(Pauls/Nann)
That Report PW18075(b), respecting 2022 Year End Report on Community Bookings at Tim Hortons Field, be received.

Result: **MOTION, CARRIED by a vote of 12 to 0, as follows**:

Yes - Ward 1 Councillor Maureen Wilson
Yes - Ward 2 Councillor Cameron Kroetsch
Yes - Ward 3 Councillor Nrinder Nann
Yes - Ward 5 Councillor Matt Francis
Yes - Ward 6 Councillor Tom Jackson
Yes - Ward 7 Councillor Esther Pauls
Yes - Ward 8 Councillor J. P. Danko
Yes - Ward 10 Councillor Jeff Beattie
Yes - Ward 12 Councillor Craig Cassar
Yes - Ward 13 Councillor Alex Wilson
Yes - Ward 14 Councillor Mike Spadafora
Yes - Ward 15 Councillor Ted McMeekin

5. Temporary "Road Official" Role (PW21013(a)) (City Wide) (Item 9.6)

(Spadafora/Beattie)
That Report PW21013(a), respecting Temporary “Road Official” Role, be received.

Result: **MOTION, CARRIED by a vote of 12 to 0, as follows**:

Yes - Ward 1 Councillor Maureen Wilson
Yes - Ward 2 Councillor Cameron Kroetsch
Yes - Ward 3 Councillor Nrinder Nann
Yes - Ward 5 Councillor Matt Francis
Yes - Ward 6 Councillor Tom Jackson
Yes - Ward 7 Councillor Esther Pauls
Yes - Ward 8 Councillor J. P. Danko
Yes - Ward 10 Councillor Jeff Beattie
Yes - Ward 12 Councillor Craig Cassar
Yes - Ward 13 Councillor Alex Wilson
Yes - Ward 14 Councillor Mike Spadafora
Yes - Ward 15 Councillor Ted McMeekin

6. Emerald Ash Borer (EAB) Management Plan (10-year Summary) (PW21023(a)) (City Wide) (Item 9.7)

(Danko/Pauls)
That Report PW21023(a), respecting Emerald Ash Borer (EAB) Management Plan (10-year Summary), be received.

Result: **MOTION, CARRIED by a vote of 12 to 0, as follows**:

Yes - Ward 1 Councillor Maureen Wilson
Yes - Ward 2 Councillor Cameron Kroetsch
Yes - Ward 3 Councillor Nrinder Nann
Yes - Ward 5 Councillor Matt Francis
Yes - Ward 6 Councillor Tom Jackson
Yes - Ward 7 Councillor Esther Pauls
Yes - Ward 8 Councillor J. P. Danko
Yes - Ward 10 Councillor Jeff Beattie
Yes - Ward 12 Councillor Craig Cassar
Yes - Ward 13 Councillor Alex Wilson
Yes - Ward 14 Councillor Mike Spadafora
Yes - Ward 15 Councillor Ted McMeekin

7. Intersection Control List (PW23001) (Wards 1, 3, 4) (Item 9.8)

(Kroetsch/A. Wilson)
That the appropriate By-law be presented to Council to provide traffic control as follows:

Intersection			Stop Control Direction		Class	Comments / Petition	Ward
	Street 1	Street 2	Existing	Requested			
Section "E" Hamilton							
(a)	Dunsmure Road	Belview Avenue	WB/EB	All-way	A	Warranted for an all-way stop	3
(a)	Forsyth Place	Forsyth Avenue North	None	WB	A	Currently an uncontrolled intersection	1
(a)	Troy Avenue	Tate Avenue	None	WB	A	Currently an uncontrolled intersection	4
(a)	Troy Avenue	Dunn Avenue	None	EB	A	Currently an uncontrolled intersection	4

Legend

No Control Existing (New Subdivision) - **NC**
Intersection Class:
A - Local/Local **B** - Local/Collector **C** - Collector/Collector **D** – Local/Arterial

Result: **MOTION, CARRIED by a vote of 11 to 0, as follows**:

Yes - Ward 1 Councillor Maureen Wilson
Yes - Ward 2 Councillor Cameron Kroetsch
Yes - Ward 3 Councillor Nrinder Nann
Yes - Ward 5 Councillor Matt Francis
Yes - Ward 6 Councillor Tom Jackson
Yes - Ward 7 Councillor Esther Pauls
Yes - Ward 8 Councillor J. P. Danko
Not Present - Ward 10 Councillor Jeff Beattie
Yes - Ward 12 Councillor Craig Cassar
Yes - Ward 13 Councillor Alex Wilson
Yes - Ward 14 Councillor Mike Spadafora
Yes - Ward 15 Councillor Ted McMeekin

8. Accessing the Keep Hamilton Clean & Green Committee Reserve (Citizen Committee Report) (Item 11.1)

(Pauls/M. Wilson)
The Keep Hamilton Clean & Green Committee recommends accessing the reserve budget in the amount of $9,955.30 to have the Community Clean Trailers re-wrapped in Vinyl, as well as a marketing budget not to exceed $2,000 to promote the Community Clean Trailer Program.

Result: **MOTION, CARRIED by a vote of 11 to 0, as follows**:

Yes - Ward 1 Councillor Maureen Wilson
Yes - Ward 2 Councillor Cameron Kroetsch
Yes - Ward 3 Councillor Nrinder Nann
Yes - Ward 5 Councillor Matt Francis
Yes - Ward 6 Councillor Tom Jackson
Yes - Ward 7 Councillor Esther Pauls
Yes - Ward 8 Councillor J. P. Danko
Not Present - Ward 10 Councillor Jeff Beattie
Yes - Ward 12 Councillor Craig Cassar
Yes - Ward 13 Councillor Alex Wilson
Yes - Ward 14 Councillor Mike Spadafora
Yes - Ward 15 Councillor Ted McMeekin

9. Standardization of Waste Mobile and Web Application (PW23013) (City Wide) (Item 11.2)

(A. Wilson/McMeekin)
(a) That Council approve the standardization of the Recycle Coach Mobile and Web Waste Application (Waste App) provided by Municipal Media Inc.

pursuant to Procurement Policy #14 – Standardization, for five years from the expiration date of the existing contract with the vendor; and

(b) That the General Manager, Public Works Department, or their designate, be authorized to negotiate, enter into and execute any required contract and any ancillary documents required to give effect thereto with Municipal Media Inc., in a form satisfactory to the City Solicitor.

Result: **MOTION, CARRIED by a vote of 11 to 0, as follows**:

Yes - Ward 1 Councillor Maureen Wilson
Yes - Ward 2 Councillor Cameron Kroetsch
Yes - Ward 3 Councillor Nrinder Nann
Yes - Ward 5 Councillor Matt Francis
Yes - Ward 6 Councillor Tom Jackson
Yes - Ward 7 Councillor Esther Pauls
Yes - Ward 8 Councillor J. P. Danko
Not Present - Ward 10 Councillor Jeff Beattie
Yes - Ward 12 Councillor Craig Cassar
Yes - Ward 13 Councillor Alex Wilson
Yes - Ward 14 Councillor Mike Spadafora
Yes - Ward 15 Councillor Ted McMeekin

10. Wastewater Quality Management System Operational Plan Summary Report (PW23017) (City Wide) (Item 11.3)

(Jackson/Francis)

(a) That Appendix “A” to Report PW23017 respecting the Wastewater Quality Management System Operational Plan Summary Report be approved; and

(b) That the Mayor, City Clerk, General Manager, Public Works and Director, Hamilton Water, be authorized and directed to execute the Wastewater Quality Management System Operational Plan Summary Report by signing the Commitment and Endorsement page within the Summary Report.

Result: **MOTION, CARRIED by a vote of 11 to 0, as follows**:

Yes - Ward 1 Councillor Maureen Wilson
Yes - Ward 2 Councillor Cameron Kroetsch
Yes - Ward 3 Councillor Nrinder Nann
Yes - Ward 5 Councillor Matt Francis
Yes - Ward 6 Councillor Tom Jackson
Yes - Ward 7 Councillor Esther Pauls
Yes - Ward 8 Councillor J. P. Danko
Not Present - Ward 10 Councillor Jeff Beattie

Yes - Ward 12 Councillor Craig Cassar
Yes - Ward 13 Councillor Alex Wilson
Yes - Ward 14 Councillor Mike Spadafora
Yes - Ward 15 Councillor Ted McMeekin

11. Drinking Water Quality Management System (DWQMS) Operational Plan Summary Report (PW23019) (City Wide) (Item 11.4)

(Jackson/Francis)

(a) That Appendix “A” attached to Report PW23019 respecting the Drinking Water Quality Management System Operational Plan Summary Report be approved; and

(b) That the Mayor, City Clerk, General Manager of Public Works, and Director of Hamilton Water, be authorized and directed to execute the Drinking Water Quality Management System Operational Plan Summary Report by signing the Commitment and Endorsement page within the Summary Report.

Result: **MOTION, CARRIED by a vote of 11 to 0, as follows**:

Yes - Ward 1 Councillor Maureen Wilson
Yes - Ward 2 Councillor Cameron Kroetsch
Yes - Ward 3 Councillor Nrinder Nann
Yes - Ward 5 Councillor Matt Francis
Yes - Ward 6 Councillor Tom Jackson
Yes - Ward 7 Councillor Esther Pauls
Yes - Ward 8 Councillor J. P. Danko
Not Present - Ward 10 Councillor Jeff Beattie
Yes - Ward 12 Councillor Craig Cassar
Yes - Ward 13 Councillor Alex Wilson
Yes - Ward 14 Councillor Mike Spadafora
Yes - Ward 15 Councillor Ted McMeekin

12. Alternation to Kenora Avenue and Bancroft Street for GO Confederation Station Construction (PW23018) (Ward 5) (Item 11.5)

(Francis/Pauls)

(a) That the intersection of Kenora Avenue and Bancroft Street be modified to permit through north-south vehicle movements on Kenora Avenue, and to close off the east and west approaches of Bancroft Street to maintain compliance with Transport Canada Grade Crossing Standards as it pertains to the construction of the Confederation GO Station; and

(b) That the General Manager of Public Works, or their designate, be authorized and directed to negotiate and enter into an agreement with Canada National Railway (CNR) and Metrolinx to design and reconstruct the intersection.

Result: **MOTION, CARRIED by a vote of 11 to 0, as follows**:

Yes - Ward 1 Councillor Maureen Wilson
Yes - Ward 2 Councillor Cameron Kroetsch
Yes - Ward 3 Councillor Nrinder Nann
Yes - Ward 5 Councillor Matt Francis
Yes - Ward 6 Councillor Tom Jackson
Yes - Ward 7 Councillor Esther Pauls
Yes - Ward 8 Councillor J. P. Danko
Not Present - Ward 10 Councillor Jeff Beattie
Yes - Ward 12 Councillor Craig Cassar
Yes - Ward 13 Councillor Alex Wilson
Yes - Ward 14 Councillor Mike Spadafora
Yes - Ward 15 Councillor Ted McMeekin

13. Review of Level of Service for Winter Control in Alignment with the Principles of Vision Zero (Item 12.1) (REVISED)

(Spadafora/M. Wilson)
WHEREAS, the City of Hamilton's vision is to be the best place to raise a child and to age successfully;

WHEREAS, the City of Hamilton has adopted Vision Zero to guide its approach to road safety;

WHEREAS, children and the elderly are the most vulnerable road users, particularly around vehicles;

WHEREAS, the City of Hamilton is continuing its commitment to a ten-year transit plan and year-round access to transit stops and bus boarding is necessary to support this strategic investment;

WHEREAS, the City of Hamilton's climate action strategy identifies the importance of reducing transportation disruption due to extreme weather events and improve the safety of travel on roads, sidewalks, and trails;

WHEREAS, the City of Hamilton recorded seven ice related events during the 2022-2023 winter season, an increase from one event in the 2021-2022 winter

season, impacting the municipality's snow clearing experience and residents' safe and equitable mobility;

WHEREAS, the City of Hamilton implemented a level of service enhancement for sidewalk snow clearing along priority 1 and 2A roadways where transit operates and for all transit stops to aid residents in accessing transit options City-wide during winter months;

WHEREAS, during the 2022-2023 winter service period, residents in all new service areas have been filing concerns about child safety and challenges in pedestrian mobility due to the piling up of snow and ice from road plows; and

WHEREAS, any changes in service levels to the City of Hamilton's snow clearance contract to support accessibility and Hamilton's commitment to Vision Zero would have to be made in advance of August 31, 2023.

THEREFORE, BE IT RESOLVED:

(a) That staff undertake a review of the City of Hamilton's current level of service for winter control and provide options on how operations could be adapted to enhance accessibility and safety in alignment with the principles of Vision Zero, thereby protecting the interests of vulnerable road users;

(b) That staff report back to the Public Works Committee with the results of the review of the City of Hamilton's current level of service for winter control in advance of August 31, 2023, with possible level of service revisions and best practices including any cost and resourcing implications; and

(c) That the staff ensure the following areas of focus are included in the review of the City of Hamilton's current level of service for winter control;

    (i) HSR transit stops including boarding access;

    (ii) Controlled crosswalks, crosswalks with stationed crossing guards, school crossings, sidewalks with sloped access, neighbourhood pedestrian and multimodal pathways; and

    (iii) School zones.

(d) That staff consult with the Advisory Committee for Persons with Disabilities and the Seniors Advisory Committee when reviewing snow clearing needs of the community; and

(e) That staff report back in full the comments and opinions of the disability and senior's communities including the Committee for Persons with Disabilities and the Seniors Advisory Committee.

Result: **MOTION, CARRIED by a vote of 11 to 0, as follows**:

Yes - Ward 1 Councillor Maureen Wilson
Yes - Ward 2 Councillor Cameron Kroetsch
Yes - Ward 3 Councillor Nrinder Nann
Yes - Ward 5 Councillor Matt Francis
Yes - Ward 6 Councillor Tom Jackson
Yes - Ward 7 Councillor Esther Pauls
Yes - Ward 8 Councillor J. P. Danko
Not Present - Ward 10 Councillor Jeff Beattie
Yes - Ward 12 Councillor Craig Cassar
Yes - Ward 13 Councillor Alex Wilson
Yes - Ward 14 Councillor Mike Spadafora
Yes - Ward 15 Councillor Ted McMeekin

14. Beverly Community Park, 680 Hwy. No. 8 (Flamborough), Pathway Proposal by the Rockton Lions Club (Ward 13) (Item 12.2)

(A. Wilson/Cassar)
WHEREAS, Beverly Community Park is located at 680 Hwy. No. 8 (Flamborough), Hamilton;

WHEREAS, this park is a rural community park maintained by the Rockton Sub-Committee;

WHEREAS, the Rockton Lions Club has submitted a proposal to fund the development of a new pedestrian walkway at Beverly Community Park;

WHEREAS, this proposal recognizes public access to health (PATH) as a guiding principle, recognizing the challenges of rural communities' access to sidewalks;

WHEREAS, this proposed path will also benefit the park amenity users;

WHEREAS, City of Hamilton staff will assist with in-kind project management and detailed design of the proposed path, and any permits required by the Hamilton Conservation Authority; and

WHEREAS, an agreement would be required between the Rockton Lions Club (donor) and the City of Hamilton to formalize the project details.

THEREFORE, BE IT RESOLVED:

(a) That staff be directed to review the feasibility and design of a new pedestrian path at Beverly Community Park located at 680 Hwy. No. 8 (Flamborough) and to support the development of agreements as needed for the donation to be funded by the Rockton Lions Club;

(b) That staff be directed to report back with estimates for construction and ongoing operating costs and related financing plan upon completion of the review of the feasibility and design of a new pedestrian path at Beverly Community Park located at 680 Hwy. No. 8 (Flamborough); and

(c) That the General Manager of Public Works be authorized and directed to approve and execute any and all required agreements and ancillary documents related to the review of the feasibility and design of a new pedestrian path at Beverly Community Park located at 680 Hwy. No. 8 (Flamborough).

Result: **MOTION, CARRIED by a vote of 11 to 0, as follows**:

Yes - Ward 1 Councillor Maureen Wilson
Yes - Ward 2 Councillor Cameron Kroetsch
Yes - Ward 3 Councillor Nrinder Nann
Yes - Ward 5 Councillor Matt Francis
Yes - Ward 6 Councillor Tom Jackson
Yes - Ward 7 Councillor Esther Pauls
Yes - Ward 8 Councillor J. P. Danko
Not Present - Ward 10 Councillor Jeff Beattie
Yes - Ward 12 Councillor Craig Cassar
Yes - Ward 13 Councillor Alex Wilson
Yes - Ward 14 Councillor Mike Spadafora
Yes - Ward 15 Councillor Ted McMeekin

15. Community Garden and Outdoor Natural Ice Rink Water Infrastructure Improvements at Birge Park, 167 Birge Street, Hamilton (Ward 3) (Item 12.3)

(Nann/Jackson)
WHEREAS, the neighborhoods surrounding Birge Park, 167 Birge Street, Hamilton, are underserved for park and greenspace;

WHEREAS, Birge Park has the ability to be an all-season community hub, where residents can skate in the winter; swim, garden, and play basketball in the summer, and use the play structure year-round;

WHEREAS, local residents have an established a community garden at Birge Park in the warmer months and have requested support to create a community rink in the winter months;

WHEREAS, there is no water source in the park to allow for watering the gardens and flooding the rink; and

WHEREAS, staff have identified the infrastructure needs to allow for a water source and the safe construction of a community rink.

THEREFORE, BE IT RESOLVED:

(a) That the water infrastructure improvements for a community garden and natural outdoor ice rink, including an ice rink hut, at Birge Park, 167 Birge Street, Hamilton, be funded from the Ward 3 Special Capital Re-investment Reserve Fund (#108053) at an upset limit, including contingency, not to exceed $150,000;

(b) That the annual operating impacts for the required maintenance and repairs for the natural outdoor ice rink and water infrastructure at Birge Park, 167 Birge Street, Hamilton, in the amount of $8,000, be included in the 2024 Public Works Department base operating budget; and

(c) That the Mayor and City Clerk be authorized and directed to approve and execute required agreements and ancillary documents related to the water infrastructure improvements for a community garden and natural outdoor ice rink at Birge Park, 167 Birge Street, Hamilton, with such terms and conditions in a form satisfactory to the City Solicitor.

Result: **MOTION, CARRIED by a vote of 11 to 0, as follows**:

Yes - Ward 1 Councillor Maureen Wilson
Yes - Ward 2 Councillor Cameron Kroetsch
Yes - Ward 3 Councillor Nrinder Nann
Yes - Ward 5 Councillor Matt Francis
Yes - Ward 6 Councillor Tom Jackson
Yes - Ward 7 Councillor Esther Pauls
Yes - Ward 8 Councillor J. P. Danko
Not Present - Ward 10 Councillor Jeff Beattie
Yes - Ward 12 Councillor Craig Cassar
Yes - Ward 13 Councillor Alex Wilson
Yes - Ward 14 Councillor Mike Spadafora
Yes - Ward 15 Councillor Ted McMeekin

16. Basketball Court Improvements at Powell Park, 53 Birch Avenue, Hamilton (Ward 3) (Item 12.4)

(Nann/Jackson)
WHEREAS, Powell Park, 53 Birch Avenue, Hamilton, was once home to a complete basketball court facility with two nets and backboards until the 1990s when it served as a dynamic community space for friendly competition, game play and gathering among neighbors and friends after school and on weekends;

WHEREAS, basketball provides a routine, purpose, and fosters community among young residents and newcomers alike, many who want to contribute to community space in Powell Park;

WHEREAS, the removal of the second hoop has led to this court not being used properly and discourages kids from enjoying the purpose of play;

WHEREAS, Powell Park is slated for reconstruction, with consultation beginning in 2024 and residents have requested a temporary restoration of the basketball court to include two nets;

WHEREAS, a full basketball court will allow kids to play better, build confidence and further develop skills to use on and off the court; and

WHEREAS, City staff have assessed the feasibility of installing a second basketball net and backboard and recommended installing fencing to prevent the basketballs from impacting the pathway.

THEREFORE, BE IT RESOLVED:

(a) That the installation of a second basketball net and additional court fencing at the Powell Park basketball court, 53 Birch Avenue, Hamilton, to be funded from the Ward 3 Special Capital Re-Investment Discretionary Fund (#3302109300) with an upset limit of $10,000 be approved;

(b) That the Mayor and City Clerk be authorized and directed to approve and execute required agreements and ancillary documents, with such terms and conditions in a form satisfactory to the City Solicitor, related to the installation of a second basketball net and additional court fencing at the Powell Park basketball court, 53 Birch Avenue, Hamilton.

Result: **MOTION, CARRIED by a vote of 10 to 0, as follows**:

Yes - Ward 1 Councillor Maureen Wilson

Yes - Ward 2 Councillor Cameron Kroetsch
Yes - Ward 3 Councillor Nrinder Nann
Not Present - Ward 5 Councillor Matt Francis
Yes - Ward 6 Councillor Tom Jackson
Yes - Ward 7 Councillor Esther Pauls
Yes - Ward 8 Councillor J. P. Danko
Not Present - Ward 10 Councillor Jeff Beattie
Yes - Ward 12 Councillor Craig Cassar
Yes - Ward 13 Councillor Alex Wilson
Yes - Ward 14 Councillor Mike Spadafora
Yes - Ward 15 Councillor Ted McMeekin

17. Installation of Pride Crosswalks at the intersection of King William Street and Ferguson Avenue North (Ward 2) (Item 12.5)

(Kroetsch/M. Wilson)
WHEREAS, Council approved a Decorative Crosswalk Guideline on July 17, 2020 which promotes and enables the installation of decorative crosswalks in the City; and

WHEREAS, the International Village Business Improvement Area (BIA) applied for and received funding through the My Main Street Community Activator grant to fund the majority of this work.

THEREFORE, BE IT RESOLVED:

(a) That Transportation Operations and Maintenance staff be authorized and directed to install four Pride Crosswalks at the intersection of King William Street and Ferguson Avenue North in 2023;

(b) That all costs associated with the installation of four Pride Crosswalks at the intersection of King William Street and Ferguson Avenue North not to exceed $5,000, be funded from the Ward 2 Area Rating Reserve Fund (108052);

(c) That $400 for the annual maintenance of the four Pride Crosswalks at the intersection of King William Street and Ferguson Avenue North be added to the Transportation Operations and Maintenance Division’s 2024 annual base operating budget; and

(d) That the Mayor and City Clerk be authorized and directed to execute any required agreement(s) and ancillary documents, with such terms and conditions in a form satisfactory to the City Solicitor, related to the installation of four Pride Crosswalks at the intersection of King William Street and Ferguson Avenue North.

Result: **MOTION, CARRIED by a vote of 10 to 0, as follows**:

Yes - Ward 1 Councillor Maureen Wilson
Yes - Ward 2 Councillor Cameron Kroetsch
Yes - Ward 3 Councillor Nrinder Nann
Yes - Ward 5 Councillor Matt Francis
Yes - Ward 6 Councillor Tom Jackson
Yes - Ward 7 Councillor Esther Pauls
Not Present - Ward 8 Councillor J. P. Danko
Not Present - Ward 10 Councillor Jeff Beattie
Yes - Ward 12 Councillor Craig Cassar
Yes - Ward 13 Councillor Alex Wilson
Yes - Ward 14 Councillor Mike Spadafora
Yes - Ward 15 Councillor Ted McMeekin

18. Crime Prevention Through Environmental Design Review of the City-Owned Escarpment Staircases (Item 12.6)

(Nann/Kroetsch)
WHEREAS, in the United Nations report Cities Alive: Designing Cities That Work For Women published in October 2022, it is stated that “without a gender-responsive approach to urban planning, cities often compound gender inequalities that restrict women’s social and economic opportunities, health and wellbeing, sense of safety and security, and access to justice and equity”;

WHEREAS, the rate of police-reported sexual assaults in Canada has reached its highest levels since 1996;

WHEREAS, Hamilton’s sexual assault centre has seen a ‘dramatic increase’ in calls to their 24-hour support line over the past three years;

WHEREAS, the City of Hamilton is responsible for five escarpment staircases to provide recreational facility and active transportation links between the mountain and lower city;

WHEREAS, in December 2021, an unknown man approached a resident, Tara McFadyen, and attempted to sexually assault her during her morning daylight workout on the escarpment stairs; and

WHEREAS, other residents who have survived sexual violence that has occurred on the escarpment stairs have raised the alarm bell on the need for the City of Hamilton to do better and be responsive.

THEREFORE, BE IT RESOLVED:

That staff be directed to conduct a Crime Prevention Through Environmental Design (CPTED) review of the five City-owned escarpment staircases and report back on recommendations to improve the safety of escarpment staircase use specifically to prevent sexual violence, including any considerations to be referred to the 2024 budget process for consideration.

Result: **MOTION, CARRIED by a vote of 10 to 0, as follows**:

Yes - Ward 1 Councillor Maureen Wilson
Yes - Ward 2 Councillor Cameron Kroetsch
Yes - Ward 3 Councillor Nrinder Nann
Not Present - Ward 5 Councillor Matt Francis
Yes - Ward 6 Councillor Tom Jackson
Yes - Ward 7 Councillor Esther Pauls
Yes - Ward 8 Councillor J. P. Danko
Not Present - Ward 10 Councillor Jeff Beattie
Yes - Ward 12 Councillor Craig Cassar
Yes - Ward 13 Councillor Alex Wilson
Yes - Ward 14 Councillor Mike Spadafora
Yes - Ward 15 Councillor Ted McMeekin

FOR INFORMATION:

(a) APPROVAL OF AGENDA (Item 2)

The Committee Clerk advised of the following changes to the agenda:

6. DELEGATION REQUESTS

6.2 Delegation Requests respecting Item 12.1 - Motion respecting Review of Level of Service for Winter Control in Alignment with the Principles of Vision Zero (for today's meeting)

(a) Aznive Mallett
(b) Tim Nolan, Accessibility Hamilton Alliance

13. NOTICES OF MOTION

13.1 Playground Improvements at Henry & Beatrice Warden Park, 55 Lake Avenue North, Hamilton (Ward 5)

13.2 Pathway Improvements at Sam Manson Park, 80 Nash Road North, Hamilton (Ward 5)

13.3 Ottawa Street North and Maple Avenue Pedestrian Crossing (Wards 3 and 4)

14. GENERAL INFORMATION / OTHER BUSINESS

14.1 Amendments to the Outstanding Business List

(b) Items Requiring a New Date

(a) Municipal Class Environmental Assessment and Conceptual Design of Ancaster Elevated Water Reservoir
Item on OBL: AAP
Current Due Date: June 2023
Proposed New Due Date: Q4 2024

(b) Results of Parks Security Patrol Pilot Program
Item on OBL: ABG
Current Due Date: Q1 2023
Proposed New Due Date: May 1, 2023

(c) Management of the Aviary at 85 Oak Knoll Drive
Item on OBL: AAY
Current Due Date: Q1 2023
Proposed New Due Date: Q2 2023

(d) Security Report on Theft and Vandalism Prevention in City-Owned Spaces - Results of 2-Year Pilot Program
Item on OBL: ADC
Current Due Date: February 15, 2023
Proposed New Due Date: May 1, 2023

(e) Update to Parks By-law 01-219
Item on OBL: ADK
Current Due Date: Q1 2023
Proposed New Due Date: August 16, 2023

(Francis/Spadafora)
That the Agenda for the March 20, 2023 Public Works Committee meeting be approved, as amended.

Result: **MOTION, CARRIED by a vote of 9 to 0, as follows**:

Not Present - Ward 1 Councillor Maureen Wilson
Yes - Ward 2 Councillor Cameron Kroetsch
Yes - Ward 3 Councillor Nrinder Nann
Yes - Ward 5 Councillor Matt Francis
Yes - Ward 6 Councillor Tom Jackson
Yes - Ward 7 Councillor Esther Pauls
Not Present - Ward 8 Councillor J. P. Danko
Yes - Ward 10 Councillor Jeff Beattie
Not Present - Ward 12 Councillor Craig Cassar
Yes - Ward 13 Councillor Alex Wilson
Yes - Ward 14 Councillor Mike Spadafora
Yes - Ward 15 Councillor Ted McMeekin

(b) DECLARATIONS OF INTEREST (Item 3)

There were no declarations of interest.

(c) APPROVAL OF MINUTES OF PREVIOUS MEETING (Item 4)

(i) February 13, 2023 (Item 4.1)

(M. Wilson/A. Wilson)
That the Minutes of the February 13, 2023 meeting of the Public Works Committee be approved, as presented.

Result: **MOTION, CARRIED by a vote of 10 to 0, as follows**:

Yes - Ward 1 Councillor Maureen Wilson
Yes - Ward 2 Councillor Cameron Kroetsch
Yes - Ward 3 Councillor Nrinder Nann
Yes - Ward 5 Councillor Matt Francis
Yes - Ward 6 Councillor Tom Jackson
Yes - Ward 7 Councillor Esther Pauls
Not Present - Ward 8 Councillor J. P. Danko
Yes - Ward 10 Councillor Jeff Beattie
Not Present - Ward 12 Councillor Craig Cassar
Yes - Ward 13 Councillor Alex Wilson
Yes - Ward 14 Councillor Mike Spadafora
Yes - Ward 15 Councillor Ted McMeekin

(d) COMMUNICATION ITEMS (Item 5)

(i) Citizen Committee Member Resignations – Hamilton Cycling Committee (Item 5.1)

(M. Wilson/Pauls)
That the following Citizen Committee Member Resignations from the Hamilton Cycling Committee, be received.

(a) Cathy Sutherland
(b) Marko Maric
(c) Jessica Merolli

Result: **MOTION, CARRIED by a vote of 11 to 0, as follows**:

Yes - Ward 1 Councillor Maureen Wilson
Yes - Ward 2 Councillor Cameron Kroetsch
Yes - Ward 3 Councillor Nrinder Nann
Yes - Ward 5 Councillor Matt Francis
Yes - Ward 6 Councillor Tom Jackson
Yes - Ward 7 Councillor Esther Pauls
Yes - Ward 8 Councillor J. P. Danko
Yes - Ward 10 Councillor Jeff Beattie
Not Present - Ward 12 Councillor Craig Cassar
Yes - Ward 13 Councillor Alex Wilson
Yes - Ward 14 Councillor Mike Spadafora
Yes - Ward 15 Councillor Ted McMeekin

(e) DELEGATION REQUESTS (Item 6)

(McMeekin/Pauls)
That the following Delegation Requests be approved for a today's meeting:

(i) Mandi Smith respecting the Logistics of Maintaining Alleys in the Barton, Cannon, Birch, Sherman Grid (Item 6.1)

(ii) Delegation Requests respecting Item 12.1 - Motion respecting Review of Level of Service for Winter Control in Alignment with the Principles of Vision Zero (Item 6.2)

(a) Aznive Mallett
(b) Tim Nolan, Accessibility Hamilton Alliance

Result: **MOTION, CARRIED by a vote of 11 to 0, as follows**:

Yes - Ward 1 Councillor Maureen Wilson
Yes - Ward 2 Councillor Cameron Kroetsch
Yes - Ward 3 Councillor Nrinder Nann
Yes - Ward 5 Councillor Matt Francis
Yes - Ward 6 Councillor Tom Jackson
Yes - Ward 7 Councillor Esther Pauls
Yes - Ward 8 Councillor J. P. Danko
Yes - Ward 10 Councillor Jeff Beattie
Not Present - Ward 12 Councillor Craig Cassar
Yes - Ward 13 Councillor Alex Wilson
Yes - Ward 14 Councillor Mike Spadafora
Yes - Ward 15 Councillor Ted McMeekin

(f) DELEGATIONS (Item 7)

(i) Angela Zheng, respecting Funding for a Staircase to Facilitate Access to a Commuter Trail Connecting University Gardens and Westdale (Item 7.1)

Angela Zheng addressed the Committee respecting funding for a staircase to facilitate access to a commuter trail connecting University Gardens and Westdale, with the aid of a PowerPoint presentation.

(ii) Brenda Duke, GALA Community Planning Team, respecting Support for Maintenance of Gardens within the Public Parks (Item 7.2)

Brenda Duke, GALA Community Planning Team, addressed the Committee respecting support for maintenance of gardens within the public parks.

(iii) Brenda Duke, GALA Community Planning Team, respecting Waste Pickup Procedures and Support for Community Cleanups (Item 7.3)

Brenda Duke, GALA Community Planning Team, addressed the Committee respecting waste pickup procedures and support for community cleanups.

(iv) Mymoon Bhuiyan, McMaster EcoCAR, respecting EV in Hamilton (Item 7.4)

Mymoon Bhuiyan, McMaster EcoCAR, addressed the Committee respecting Electric Vehicles in Hamilton.

(v) Mandi Smith respecting the Logistics of Maintaining Alleys in the Barton, Cannon, Birch, Sherman Grid (Item 7.5)

Mandi Smith addressed the Committee respecting the Logistics of Maintaining Alleys in the Barton, Cannon, Birch, Sherman Grid.

(vi) Delegation Requests respecting Item 12.1 - Motion respecting Review of Level of Service for Winter Control in Alignment with the Principles of Vision Zero (Item 7.6)

The following delegates addressed the Committee respecting Item 12.1 – Motion respecting Review of Level of Service for Winter Control in Alignment with the Principles of Vision Zero:

(a) Aznive Mallett
(b) Tim Nolan, Accessibility Hamilton Alliance

(A. Wilson/M. Wilson)
That the following delegations, be received:

(i) Angela Zheng, respecting Funding for a Staircase to Facilitate Access to a Commuter Trail Connecting University Gardens and Westdale

(ii) Brenda Duke, GALA Community Planning Team, respecting Support for Maintenance of Gardens within the Public Parks

(iii) Brenda Duke, GALA Community Planning Team, respecting Waste Pickup Procedures and Support for Community Cleanups

(iv) Mymoon Bhuiyan, McMaster EcoCAR, respecting EV in Hamilton

(v) Mandi Smith respecting the Logistics of Maintaining Alleys in the Barton, Cannon, Birch, Sherman Grid

(vi) Item 12.1 – Motion respecting Review of Level of Service for Winter Control in Alignment with the Principles of Vision Zero:

(a) Aznive Mallett
(b) Tim Nolan, Accessibility Hamilton Alliance

Result: **MOTION, CARRIED by a vote of 11 to 0, as follows**:

Yes - Ward 1 Councillor Maureen Wilson
Yes - Ward 2 Councillor Cameron Kroetsch
Yes - Ward 3 Councillor Nrinder Nann

Yes - Ward 5 Councillor Matt Francis
Yes - Ward 6 Councillor Tom Jackson
Yes - Ward 7 Councillor Esther Pauls
Yes - Ward 8 Councillor J. P. Danko
Yes - Ward 10 Councillor Jeff Beattie
Not Present - Ward 12 Councillor Craig Cassar
Yes - Ward 13 Councillor Alex Wilson
Yes - Ward 14 Councillor Mike Spadafora
Yes - Ward 15 Councillor Ted McMeekin

(g) CONSENT ITEMS (Item 9)

(i) Various Advisory Committee Minutes (Item 9.1)

(Pauls/Beattie)
That the following Advisory Committee Minutes, be received:

(a) Hamilton Cycling Committee (Item 9.1(a))

(1) Minutes – December 7, 2022 (Item 9.1(a)(a))
(2) No quorum report – January 4, 2023 (Item 9.1(a)(b))
(3) Minutes – February 1, 2023 (Item 9.1(a)(c))

(b) Keep Hamilton Clean and Green Committee (Item 9.1(b))

(1) Minutes – January 17, 2023 (Item 9.1(b)(a))

Result: **MOTION, CARRIED by a vote of 11 to 0, as follows**:

Yes - Ward 1 Councillor Maureen Wilson
Yes - Ward 2 Councillor Cameron Kroetsch
Yes - Ward 3 Councillor Nrinder Nann
Yes - Ward 5 Councillor Matt Francis
Yes - Ward 6 Councillor Tom Jackson
Yes - Ward 7 Councillor Esther Pauls
Yes - Ward 8 Councillor J. P. Danko
Yes - Ward 10 Councillor Jeff Beattie
Not Present - Ward 12 Councillor Craig Cassar
Yes - Ward 13 Councillor Alex Wilson
Yes - Ward 14 Councillor Mike Spadafora
Yes - Ward 15 Councillor Ted McMeekin

(h) MOTIONS (Item 12)

Councillor Nann relinquished the Chair to Councillor Pauls in order to introduce the following Motions:

(i) Community Garden and Outdoor Natural Ice Rink Water Infrastructure Improvements at Birge Park, 167 Birge Street, Hamilton (Ward 3) (Item 12.3)

For disposition of this matter, refer to Item 15.

(ii) Basketball Court Improvements at Powell Park, 53 Birch Avenue, Hamilton (Ward 3) (Item 12.4)

For disposition of this matter, refer to Item 16.

(iii) Crime Prevention Through Environmental Design Review of the City-Owned Escarpment Staircases (Item 12.6)

For disposition of this matter, refer to Item 18.

Councillor Nann assumed the Chair.

(h) NOTICES OF MOTION (Item 13)

Councillor Jackson, in Councillor Francis' absence, introduced the following Notice of Motion:

(i) Playground Improvements at Henry & Beatrice Warden Park, 55 Lake Avenue North, Hamilton (Ward 5) (Item 13.1)

WHEREAS, the parks in Ward 5 provide valuable recreation and connectivity opportunities to residents;

WHEREAS, Henry & Beatrice Warden Park is located in the Riverdale West neighbourhood, 55 Lake Avenue North, Hamilton;

WHEREAS, the City of Hamilton's Parks & Cemeteries 2022/2023 Capital Workplan includes replacement and upgrades to the playground equipment; and

WHEREAS, additional funding is needed to replace and relocate the existing swing area.

THEREFORE, BE IT RESOLVED:

(a) That the design and installation of a replacement swing area, including safety surfacing, at Henry & Beatrice Warden Park, 55 Lake Avenue North, Hamilton, to be funded from the Ward 5 Special Capital Re-Investment Reserve Fund (#108055) to an upset limit of $32,000, be approved;

(b) That the General Manager of Public Works be authorized and directed to approve and execute all required agreements and ancillary documents, with such terms and conditions in a form satisfactory to the City Solicitor related to the design and installation of a replacement swing area, including safety surfacing, at Henry & Beatrice Warden Park, 55 Lake Avenue North, Hamilton.

Councillor Jackson, in Councillor Francis' absence, introduced the following Notice of Motion:

(ii) Pathway Improvements at Sam Manson Park, 80 Nash Road North, Hamilton (Ward 5) (Item 13.2)

WHEREAS, the parks in Ward 5 provide valuable recreation and connectivity opportunities to residents;

WHEREAS, Sam Manson Park, is located in the Kently neighbourhood, 80 Nash Road North, Hamilton; and

WHEREAS, the existing Sam Manson park pathway has deteriorated and would benefit from replacement.

THEREFORE, BE IT RESOLVED:

(a) That the replacement of the asphalt pathways located in Sam Manson Park, 80 Nash Road North, Hamilton, to be funded from the Ward 5 Special Capital Re-Investment Reserve Fund (#108055) to an upset limit of $90,000, be approved;

(b) That the General Manager of Public Works be authorized and directed to approve and execute all required agreements and ancillary documents, with such terms and conditions in a form satisfactory to the City Solicitor related to the replacement of the asphalt pathways located in Sam Manson Park, 80 Nash Road North, Hamilton.

Councillor Nann relinquished the Chair to Councillor Pauls in order to introduce the following Notice of Motion:

(iii) Ottawa Street North and Maple Avenue Pedestrian Crossing (Wards 3 and 4) (Item 13.3)

WHEREAS, the Ward 3 Complete Streets Report identified areas of concerns and recommendations to provide a safer environment for all road users on neighbourhood roads based on Vision Zero and Complete Streets principles;

WHEREAS, the need for safe pedestrian crossing at Maple Avenue and Ottawa Street North was identified by residents in the Crown Point area as a safety concern hotspot in Ward 3 Complete Streets Report;

WHEREAS, at the top of the hierarchy of need in Vision Zero principles is the child pedestrian;

WHEREAS, many school routes require children, the most vulnerable road users to cross at major arterial roads to get to school and the intersection of Maple Avenue and Ottawa Street North is an active pathway for children to get to Memorial City School;

WHEREAS, Ottawa Street is the boundary of Ward 3 and Ward 4 and both offices are prepared to jointly invest in the best technical solution to ensure safe crossing; and

WHEREAS, the Transportation Operations & Maintenance Division completed an assessment of the intersection and determined that an intersection pedestrian signal (IPS) is warranted.

THEREFORE, BE IT RESOLVED:

(a) That the design and installation of an intersection pedestrian signal at the intersection of Ottawa Street North and Maple Avenue be funded equally from the Ward 3 Capital Re-Investment Reserve #108053 and the Ward 4 Capital Re-Investment Reserve #108054 at an upset limit, including contingency, not to exceed $200,000; and

(b) That the Mayor and City Clerk be authorized and directed to execute any required agreement(s) and ancillary documents, with such terms and conditions in a form satisfactory to the City Solicitor related to the design and installation of an intersection pedestrian signal at the intersection of Ottawa Street North and Maple Avenue.

Councillor Nann assumed the Chair.

Councillor Kroetsch introduced the following Notice of Motion:

(iv) Waste Pickup for Large Community Cleanups (Item 13.4)

WHEREAS large community park and alleyway cleanups have been coordinated across the City of Hamilton for many years; and

WHEREAS the City does not currently fully support waste pickup for large community cleanups.

THEREFORE, BE IT RESOLVED:

That City staff report back to the May 15, 2023 meeting of the Public Works Committee on what would be needed to ensure that the City can fully support waste pickup for large community cleanups including the need for safety and equipment training.

Councillor Nann relinquished the Chair to Councillor Pauls in order to introduce the following Notice of Motion:

(v) Maintenance and Beautification of Birch Avenue Greenspace and Gardens (Ward 3) (Item 13.5)

WHEREAS, local residents have put time, money and effort into beautifying the Birch Avenue Greenspace over the past number of years;

WHEREAS, this has become a beautiful space to welcome folks to Hamilton who enter the City along Birch Avenue, coming south from Burlington Street East;

WHEREAS, the Birch Avenue Greenspace has become a gathering space and point of pride for local community;

WHEREAS, the GALA Planning Committee has identified individuals willing to provide maintenance to the Birch Avenue Greenspace at a paid rate for the 2023 growing season; and

WHEREAS, Kiwanis is willing to provide funding to the up-keep of the Birch Avenue Greenspace for $1,000 as long as there is matching funding provided from another source.

THEREFORE, BE IT RESOLVED:

(a) That $1,000 of matching funds to be allocated from the Ward 3 Bell Tower Funds Non-Property Tax Revenue Account (3301609603) to

GALA Planning Committee towards the efforts of maintaining the Birch Avenue Greenspace;

(b) That staff be directed to review the delegation requests from the Public Works Committee on March 20, 2023 regarding support for water access to help maintain the Birch Avenue Greenspace and report back with possible recommendations that could also be applied city wide where applicable; and

(c) That the Mayor and City Clerk be authorized and directed to execute any required agreement(s) and ancillary documents, with such terms and conditions in a form satisfactory to the City Solicitor

Councillor Nann assumed the Chair for the remainder of the meeting.

(h) GENERAL INFORMATION / OTHER BUSINESS (Item 14)

(i) Amendments to the Outstanding Business List (Item 14.1)

(A. Wilson/M. Wilson)
That the following amendments to the Public Works Committee's Outstanding Business List, be approved.

(1) Items Considered Complete and Needing to be Removed (Item 14.1(a))

(i) HSR Fare Incentives for Ridership Recovery (Item 14.1(a)(a))
Addressed as Item 8, PW Report 22-015 (PW21056(a))
Item on OBL: ACC

(ii) Protected Bike Lane Curbs (Item 14.1(a)(b))
Addressed as Item 9.4 (PW23016) (on today's agenda)
Item on OBL: ACA

(2) Items Requiring a New Due Date (Item 14.1(b))

(i) Municipal Class Environmental Assessment and Conceptual Design of Ancaster Elevated Water Reservoir (Item 14.1(b)(a))
Item on OBL: AAP
Current Due Date: June 2023
Proposed New Due Date: Q4 2024

(ii) Results of Parks Security Patrol Pilot Program (Item 14.1(b)(b))

Item on OBL: ABG
Current Due Date: Q1 2023
Proposed New Due Date: May 1, 2023

(iii) Management of the Aviary at 85 Oak Knoll Drive (Item 14.1(b)(c))
Item on OBL: AAY
Current Due Date: Q1 2023
Proposed New Due Date: Q2 2023

(iv) Security Report on Theft and Vandalism Prevention in City-Owned Spaces - Results of 2-Year Pilot Program (Item 14.1(b)(d))
Item on OBL: ADC
Current Due Date: February 15, 2023
Proposed New Due Date: May 1, 2023

(v) Update to Parks By-law 01-219 (Item 14.1(b)(e))
Item on OBL: ADK
Current Due Date: Q1 2023
Proposed New Due Date: August 16, 2023

Result: **MOTION, CARRIED by a vote of 9 to 0, as follows**:

Yes - Ward 1 Councillor Maureen Wilson
Not Present - Ward 2 Councillor Cameron Kroetsch
Yes - Ward 3 Councillor Nrinder Nann
Not Present - Ward 5 Councillor Matt Francis
Yes - Ward 6 Councillor Tom Jackson
Yes - Ward 7 Councillor Esther Pauls
Yes - Ward 8 Councillor J. P. Danko
Not Present - Ward 10 Councillor Jeff Beattie
Yes - Ward 12 Councillor Craig Cassar
Yes - Ward 13 Councillor Alex Wilson
Yes - Ward 14 Councillor Mike Spadafora
Yes - Ward 15 Councillor Ted McMeekin

(i) ADJOURNMENT (Item 16)

(A. Wilson/Cassar)
That there being no further business, the meeting adjourned at 5:11 p.m.

Result: **MOTION, CARRIED by a vote of 9 to 0, as follows**:

Yes - Ward 1 Councillor Maureen Wilson

Not Present - Ward 2 Councillor Cameron Kroetsch
Yes - Ward 3 Councillor Nrinder Nann
Not Present - Ward 5 Councillor Matt Francis
Yes - Ward 6 Councillor Tom Jackson
Yes - Ward 7 Councillor Esther Pauls
Yes - Ward 8 Councillor J. P. Danko
Not Present - Ward 10 Councillor Jeff Beattie
Yes - Ward 12 Councillor Craig Cassar
Yes - Ward 13 Councillor Alex Wilson
Yes - Ward 14 Councillor Mike Spadafora
Yes - Ward 15 Councillor Ted McMeekin

Respectfully submitted,

Councillor Nann, Chair,
Public Works Committee

Carrie McIntosh
Legislative Coordinator
Office of the City Clerk

6.1

Request to Speak to Committee of Council

Fri, 03/10/2023 - 12:56

==Committee Requested==
Committee: Public Works Committee

Will you be delegating in person or virtually? Virtually

Will you be delegating via a pre-recorded video? No

==Requestor Information==
Name of Individual: Rosemary Lukosius

Name of Organization: Ainslie Wood Community Association

Contact Number: [redacted]

Email Address: [redacted]

Mailing Address:
[redacted]

Reason(s) for delegation request: Would like waste calendar to be distributed in September.

Will you be requesting funds from the City? No

Will you be submitting a formal presentation? Yes

6.2(a)

Request to Speak to Committee of Council

Submitted on Thu, 03/23/2023 - 15:48

==Committee Requested==

Committee: Public Works Committee

Will you be delegating in person or virtually? Virtually

Will you be delegating via a pre-recorded video? No

==Requestor Information==

Name of Individual: Edward Reece

Name of Organization: Council of Canadians, Hamilton Chapter

Contact Number: [redacted]

Email Address: [redacted]

Mailing Address:
[redacted]

Reason(s) for delegation request: To ask that Council consider the establishment of a committee of Council to examine how the City of Hamilton can make the Hamilton Street Railway (HSR) frequent, electric and free. This request is for the April 19th meeting of the General Issues Committee.

Will you be requesting funds from the City? No

Will you be submitting a formal presentation? Yes

6.2(b)

Request to Speak to Committee of Council

Submitted on Wed, 03/29/2023 - 07:26

==Committee Requested==

Committee: Public Works Committee

Will you be delegating in person or virtually? Virtually

Will you be delegating via a pre-recorded video? No

==Requestor Information==

Name of Individual: Jason Hindle

Name of Organization: Hamilton 350

Contact Number: [redacted]

Email Address: [redacted]

Mailing Address:

[redacted]

Reason(s) for delegation request: To ask that a Committee of Council be created, to study how to make the HSR "Free, Frequent, and Electric". This is a joint campaign from Hamilton 350, of which I'm a member, and the Council of Canadians Hamilton Chapter. My presentation will focus on the Electric Bus portion of our campaign.

Will you be requesting funds from the City? No

Will you be submitting a formal presentation? Yes

6.2

Request to Speak to Committee of Council

Fri, 03/10/2023 - 11:31

==Committee Requested==

Committee: Public Works Committee

Will you be delegating in person or virtually? Virtually

Will you be delegating via a pre-recorded video? Yes

==Requestor Information==

Name of Individual: Susanne Craig

Name of Organization: Adult Community Support Program

Contact Number: [redacted]

Email Address: [redacted]

Mailing Address:
[redacted]

Reason(s) for delegation request: Ongoing DARTS issues

Will you be requesting funds from the City? No

Will you be submitting a formal presentation? Yes

6.3(a)

Request to Speak to Committee of Council

Thu, 03/23/2023 - 17:19

==Committee Requested==
Committee: Public Works Committee

Will you be delegating in person or virtually? Virtually

Will you be delegating via a pre-recorded video? No

==Requestor Information==
Name of Individual: Aznive Mallett

Name of Organization: Advisory Committee for Persons with Disabilities

Contact Number: [redacted]

Email Address: [redacted]

Mailing Address:
[redacted]

Reason(s) for delegation request: To ensure persons with disabilities have the same opportunities as all citizens by having their health/medical needs met.

Will you be requesting funds from the City? No

Will you be submitting a formal presentation? No

6.3(b)

Request to Speak to Committee of Council

Submitted on Fri, 03/24/2023 - 09:03

==Committee Requested==

Committee: Public Works Committee

Will you be delegating in person or virtually? In-person

Will you be delegating via a pre-recorded video? No

==Requestor Information==

Name of Individual: Tim Nolan

Name of Organization: Accessibility Hamilton Alliance

Contact Number: [redacted]

Email Address: [redacted]

Mailing Address:

[redacted]

Reason(s) for delegation request: Response to the ATS Report

Will you be requesting funds from the City? No

Will you be submitting a formal presentation? No

6.3(d)

Request to Speak to Committee of Council

Submitted on Fri, 03/24/2023 - 09:54

==Committee Requested==

Committee: Public Works Committee

Will you be delegating in person or virtually? Virtually

Will you be delegating via a pre-recorded video? No

==Requestor Information==

Name of Individual: Tiffany Garvie

Name of Organization: Accessibility Hamilton Alliance

Contact Number: [redacted]

Email Address: [redacted]

Mailing Address:
[redacted]

Reason(s) for delegation request: Wish to speak up on a few issues regarding snow removal proper access for Darts transportation and hamilton taxi services

Will you be requesting funds from the City? No

Will you be submitting a formal presentation? No

6.3(d)

Request to Speak to Committee of Council

Submitted on Fri, 03/24/2023 - 09:54

==Committee Requested==

Committee: Public Works Committee

Will you be delegating in person or virtually? Virtually

Will you be delegating via a pre-recorded video? No

==Requestor Information==

Name of Individual: Tiffany Garvey

Name of Organization: Accessibility Hamilton Alliance

Contact Number: [redacted]

Email Address: [redacted]

Mailing Address:
[redacted]

Reason(s) for delegation request: Wish to speak up on a few issues regarding snow removal proper access for Darts transportation and hamilton taxi services

Will you be requesting funds from the City? No

Will you be submitting a formal presentation? No

INFORMATION REPORT

TO:	Chair and Members Public Works Committee
COMMITTEE DATE:	April 3, 2023
SUBJECT/REPORT NO:	HSR Public Safety Update (PW23025) (City Wide)
WARD(S) AFFECTED:	City Wide
PREPARED BY:	Ali Sabourin (905) 546-2424 Ext. 1858
SUBMITTED BY: **SIGNATURE:**	Maureen Cosyn Heath Director, Transit Public Works Department 

COUNCIL DIRECTION

N/A

INFORMATION

The purpose of this report is to provide Council with an overview regarding public safety measures on HSR, including the launch of a customer awareness safety campaign.

Background

Safety is the top priority for staff and customers on HSR, and Transit uses a variety of measures to promote and maintain public and Operator safety.

Acts of violence, discrimination, hate and other types of inappropriate behaviors on transit are unacceptable and HSR is committed to providing a safe and welcoming environment for all. Transit should be a safe public space for the community at large. The development of appropriate policies, programs and education are vital steps to achieving this.

HSR Safety Technology

All HSR buses are equipped with computer-aided dispatch (CAD) software that connects buses to the transit control center and enables the control center to see the location of the buses in real-time (known as automated vehicle location or AVL). Among other benefits, the system provides important information for emergency response.

All HSR buses are equipped with a closed-circuit camera system which records both video and audio with multiple placements in the vehicle. The video system is useful to identify offenders involved in on-board incidents and assist police with investigations. Video footage is stored for 72 hours.

HSR Staffing, Policies and Procedures

The Frank A. Cooke Transit Terminal currently uses a third-party security guard vendor that is managed under contract by the City's Energy, Fleet and Facilities Management Division. The primary role of the security guards at this location includes maintaining a presence on the terminal property 24 hours a day, through both technology observation and foot patrols of the terminal and platform areas. Security guards also engage the support and response emergency services (medical, fire and law enforcement) to promote overall public safety.

Transit Operators are expected to be professional and provide quality customer service, while safely operating a transit bus in varying weather and traffic conditions and adhering to the schedule. HSR ensures these expectations are met through recruitment, training, customer feedback and performance management.

It is important to acknowledge that Operators themselves are vulnerable to conflict in a seated position and sometimes their personal safety is compromised in dealing with disruptive customers. Incidents of this nature may result in an Operator escalating the situation to the Control Centre and on road Inspector staff, or 911 calls based on the severity of the incident. When observed or alerted, Operators also aid customers in medical or critical emergencies by contacting 911 for assistance. As may be necessary, the City's Trespass By-Law may be used for both property that is owned/operated by the City for HSR operations, and well as HSR buses.

The most serious threats to safety for customers and Operators involve criminal activities which take place on transit and in the community alike. Criminal activities are a police matter and as such, they are investigated and processed by Hamilton Police Services (HPS). HSR cooperates fully with HPS and will provide video footage upon request to assist with criminal investigations, noting investigation outcomes are not shared with HSR.

In January 2023, HSR began tracking contacts related to bias and discrimination. If sufficient information is provided, HSR will action the information as appropriate to the event. This involves internal action steps but does not include reporting to external agencies.

Courtesy Stop Request Program

HSR offers customers a courtesy stop request program. After dark, customers may request for a non-stop location (i.e.: between two regular bus stops), and the Operator will honour the request, providing it is safe to do so in the Operator's professional discretion.

The customer is asked to make the request at least one stop ahead of the desired exit and to exit by the front door. The program is available on local routes, but is not typically done on B Line or Route 20 - A Line since these are express service routes

Customer Awareness Safety Campaign

Following a hate incident onboard an HSR bus in early August 2022, HSR consulted with corporate and community stakeholders, including HPS and Hamilton Anti-Racism Resource Centre to determine next steps. One initial outcome is HSR's safety awareness campaign, similar to campaigns used by other Transit agencies, such as "See Something Say Something".

HSR's "Speak Up, Speak Out" campaign aims to encourage transit customers to step forward and report harassment and hate concerns directly to Hamilton police by either calling 911 for an active event, or by calling the non-emergency reporting number. The ad also features a QR code that links to the non-emergency police reporting form. The campaign launches in the spring and includes messaging at transit shelters, onboard every bus, on HSR's digital channels (i.e.: website and social media) and through customer service channels. A sample "Speak Up, Speak Out" campaign poster is attached as Appendix "A" to Report PW23025.

HSR is also keen to support Hamilton for All, a community-led anti-discrimination campaign led by the "No Hate in the Hammer Coalition" that will launch in the spring of 2023. The campaign aims to create awareness about discrimination and hate, as well as build capacity to combat it in Hamilton. The campaign is co-developed by the City of Hamilton, Hamilton Immigration Partnership Council, Hamilton Anti-Racism Resource Centre, Hamilton Community Legal Clinic, and No Hate in the Hammer. The City of Hamilton is preparing a broad communication plan, and HSR plans to feature campaign messaging on its social media channels.

Measuring Customer Perception of Safety

The HSRNow app is one channel used by HSR to collect customer satisfaction data. HSR hosts a customer survey to "rate my ride", and in 2022, 302 customers completed the survey which includes a question on feelings of safety. To the question "I felt safe", 62% of responding customers felt either "very safe" or "safe", which is two points above the minimum target.

The customer satisfaction survey has expanded to include in-person data collection and HSR will continue to monitor customer safety perception.

Corporate Training

Working with the Corporate Organizational Development and Learning Team, HSR reviewed existing training materials to include in both existing Operator training as well as new Operator refresher training that launched in March 2023. The two Operator training offerings include the protocol for gender identity and gender expression and features a full day of non-violent crisis intervention training (for conflict resolution and de-escalation). Operator training also covers customer service and accessible customer service standards in accordance with the Accessibility for Ontarians with Disabilities Act (AODA).

HSR will leverage upcoming corporate-wide EDI training planned for the latter part of 2023 which includes a module specific to anti-racism / anti-oppression. In addition, the Hamilton for All campaign website will feature an anti-hate toolkit which HSR will review to incorporate into ongoing staff communication such as internal electronic boards, newsletters, staff notices and customer service knowledge articles.

Transit Safety App

An upcoming report will address a Council direction to review options for a transit safety app within the context of HSR's safety program (Outstanding Business List item MM, General Issues Committee 22-018 Item 16).

Conclusion

Transit plays an important role in city-building and offers the community an important public space. HSR honours the City and Council's equity, diversity, and inclusion (EDI) priority, which is echoed in HSR's EDI guiding principle, and further formalized through HSR's desired outcome statement "everyone has a right to feel welcome and safe while using transit."

HSR continues to take steps to improve public safety and is committed to implementing important corporate initiatives that aim to mitigate hate, and promote equity, diversity and inclusion.

APPENDICES AND SCHEDULES ATTACHED

Appendix "A" to Report PW23025 - "Speak Up, Speak Out" campaign poster

Speak up, **speak out.**

Your safety is our top priority at HSR.

If you experience or witness any type of harassment or hate, **report it to Hamilton Police.**

For emergencies or a crime in progress:

Call 911

For all non-emergencies:

Call 905-546-4925

Report online
hamiltonpolice.on.ca

HSR supports the City of Hamilton's focus to make Hamilton a more welcoming, equitable and inclusive community.
We condemn racism in all forms and are opposed to any imagery, speech or action that is hate-motivated or discriminatory in any shape or form.

Hamilton

HAMILTON POLICE

INFORMATION REPORT

TO:	Chair and Members Public Works Committee
COMMITTEE DATE:	April 3, 2023
SUBJECT/REPORT NO:	HSR Vibration Study (PW23022) (City Wide)
WARD(S) AFFECTED:	City Wide
PREPARED BY:	Mark Williams (905) 546-2424 Ext. 1857
SUBMITTED BY: **SIGNATURE:**	Maureen Cosyn Heath Director, Transit Public Works Department 

COUNCIL DIRECTION

N/A

INFORMATION

In the first quarter of 2019, the Operations section of the Transit Division met with Human Resources (Return to Work Services and Health, Safety & Wellness) to better understand the growing list of medical accommodations being requested by Operators related to a particular series of bus. Initial consultation with Return to Work Services determined that Transit needed additional information to assess the basis for the accommodation requests as the medical documentation provided by employees was often vague. It was agreed that an assessment of an Operator's exposure to vibration would help to respond to these accommodation requests.

As a result of the global COVID 19 pandemic, this assessment was placed on hold as maintaining reliable and safe transit operations during the pandemic became a priority. The matter was revisited in 2022 and in Q3 of 2022, Human Resources engaged Abilitech to assess a total of 30 buses in the fleet, comprised of different makes and models. The City requested that Abilitech measure and assess both whole-body vibration and hand-arm vibration exposure for Operators when operating a selection of the six different types of buses currently in the Transit fleet on both open routes (i.e.,

with regular passenger pickup along the route) and closed routes (i.e., without regular passenger pickup).

To develop the testing protocol with Abilitech, HSR's management team and Human Resources consulted with the Joint Health and Safety Committee (composed of worker and management members) and included ATU Local 107 union executives in the discussions. The group provided input into the design of the testing strategy to ensure that the data collected was representative of an Operator's exposure to vibration.

The goal of the assessment conducted by Abilitech was to complete a statistical examination of the vibration data collected for each type of bus in order to ascertain whether a specific style of bus may be superior in terms of vibration mitigation for the Operators responsible for driving these vehicles. In addition, the vibration data collected for each type of bus was compared to the ISO standards for both whole-body vibration (ISO 2631) and hand-arm vibration (ISO 5349).

The data collection for both whole-body vibration (WBV) and hand arm-vibration (HAV) was completed on a total of thirty, randomly selected HSR buses. These buses were comprised of six different models and 4 manufacturers. Testing for all buses was conducted over 15 days from July 4, 2022 to July 22, 2022. Two buses were tested per day, allowing for all 30 buses associated with this study to be tested during the 15-day window.

The City's Health, Safety & Wellness team received the report in October 2022 and reviewed the findings with the consultant who prepared the report. The report was subsequently shared and reviewed with Transit management to gain a better understanding of the results and any technical questions were addressed in further meetings with the consultant. Based on the technical nature of the report and complexity of the findings, further detailed review was undertaken from Transit management that included the General Manager of Public Works. The results of the report were shared with the Joint Health and Safety Committee on December 1, 2022 and the consultant met with the committee on December 15, 2022 to review the study report.

There are limitations on how the test results may be applied to an actual Operator's schedule. The study collected data for 4-hour running times for each bus tested, the results were extrapolated over an 8-hour day and compared against standards predicated on 8 hours of solid driving time. However, in normal operations, Operator shifts vary widely, from 7.5 hours to 9 hours, and split shifts with both morning and afternoon work assignments. While a standard shift for an Operator is approximately 8 to 8.5 hours in length, the shift time does not reflect the scheduled recovery time. Each scheduled trip on a route is provided with scheduled recovery time at the end of each trip to allow for the bus to catch up on time if the bus is running late and for the Operator to get out of their seat to stretch, use the bathroom or eat or drink. Based on the

embedded recovery time, no driver is operating a vehicle for 8 hours straight. As an example, from the summer 2022 board when the testing was conducted, the average total shift time was 7 hours and 10 minutes, driving time average was 5 hours and 59 minutes with 1 hour and 10 minutes of recovery throughout the shift. Therefore, an average shift represents 80% productive driving time and 20% recovery (break) time, with recovery time at the end of every loop.

Key highlights of the Abilitech report are as follows:

- Results are based on singular trips on controlled routes and have been extrapolated over a continuous 8-hour period.
- Some routes tested both WBV and HAV and resulted in levels of vibration that were above the upper limits according to ISO. For example, in Table 1 within the report, Route 2 and Route 4 both had multiple buses exceed the 1.15 WBV limit outlined by ISO. Likewise, in Table 2 Route 1, 2 and 4 all had multiple buses exceed the recommended 5.0 vibration limit for HAV exposure. In these instances, Operators may be exposed to elevated risk when driving for 8 hours without recovery.
- The report indicates that there were no statistically significant differences in terms of WBV exposure by make and model of bus in the standard bus and articulated bus size; however, the smaller Vicinity buses performed better than all others in terms of WBV and appeared to mitigate poor road conditions better than the other vehicles tested.
- Under good road conditions, none of the bus models in the fleet would expose an Operator to any elevated risks associated with WBV.
- For HAV, the results indicated that under optimal road conditions, none of the bus models in the fleet would expose an Operator to any elevated risks associated with HAV. However, under less optimal road conditions there were several statistically significant differences between the bus models for HAV.
- Generally, both the Nova and 60’ Excelsior model buses were most impacted by less optimal road conditions for HAV, with the Nova models being the most affected and the Vicinity buses being least affected. Under less optimal road conditions, an Operator is exposed to elevated risks associated with HAV.
- Overall, the vibration analysis indicates that road conditions had the most impact on both WBV and HAV for the Operator.

Based on the findings of the report, Transit management and Human Resources, in consultation with the Joint Health and Safety Committee (JHSC), are working towards a number of mitigation strategies to promote wellness and the safety of staff. Transit is taking the following steps:

- Working with Transportation Operations & Maintenance (TOM) staff to develop a reporting and repair mechanism for potholes and other road repairs where

conditions may be of concern, guided by O.Reg. 239/02: Minimum Maintenance Standards for Municipal Highways;

- Working with Engineering Services to provide a list of bus routes and frequencies to cross reference with state of good repair and planned capital projects;
- Developing a series of steps for Operator education, including:

    - General reminders through postings and newsletters that overall health and wellness and physical activity outside of working hours positively impacts comfort at work.
    - Incorporated seat positioning, steering wheel adjustment, mirror adjustments and ergonomic principles in Operator refresher training;
    - Distribution of materials provided from corporate Health and Safety on WAV and HAV through in-person information sessions performed by JHSC members;
    - Distribution and posting of stretching for Operators to decrease risk of repetitive body positioning and strain at both the Mountain Transit Centre and Frank A. Cooke Transit Terminal;
    - Seat adjustment for optimal ergonomic posture is provided on board each bus;
    - Stretching guide provided on board each bus for Operator use during recovery periods; and
    - JHSC members and frontline Supervision have been provided all materials to assist with support for Operators;

Transit Management and the JHSC will continue to meet on the matter and develop additional action plans as may be appropriate.

APPENDICES AND SCHEDULES ATTACHED

N/A

INFORMATION REPORT

TO:	Chair and Members Public Works Committee
COMMITTEE DATE:	April 3, 2023
SUBJECT/REPORT NO:	ATS Eligibility Audit Management Response Report (PW21055(b)) (City Wide)
WARD(S) AFFECTED:	City Wide
PREPARED BY:	Michelle Martin (905) 546-2424 Ext. 2765
SUBMITTED BY: **SIGNATURE:**	Maureen Cosyn Heath Director, Transit Public Works Department 

COUNCIL DIRECTION

At its meeting on November 18, 2019, the Public Works Committee approved the following (Item 10.6):

WHEREAS, the number of riders has increased by 78% since 2013;

WHEREAS, 17,000 clients are registered and about half use the service;

WHEREAS, in 2019, 787,226 trips were taken, so the average person uses it 87 times per year;

WHEREAS, cost has increased significantly in recent years;

WHEREAS, the Accessibility for Ontarians with Disabilities Act, 2005 (AODA), requires we only charge the same as a bus fare; and

WHEREAS, since the service started in 1975, we have done no reassessment of any of the 17,000 clients, which AODA permits.

THEREFORE, BE IT RESOLVED: That the City Auditor General be requested to complete an eligibility audit of clients registered for the Disabled and Aged

Regional Transportation Service (DARTS) and report back to the Public Works Committee in Q1 2020.

Audit outcomes (AUD20009) were presented by the Office of the City Auditor to the Public Works Committee at its meeting on December 7, 2020. At this meeting, the Committee approved the following (Item 9.1):

(a) That Appendices “A”, “C”, and “D” of Report AUD20009, respecting the Accessible Transportation Service (ATS) Eligibility Audit Report, be received;

(b) That the Management Responses as detailed in revised Appendix “B” be approved; and

(c) That the General Manager of Public Works, be directed to instruct the appropriate staff to have the Management Responses implemented.

Following presentation of PW21055(a), the Public Works Committee approved the following at its meeting on April 22, 2022 (Item 8.1)

(a) That the Director of Transit be given delegated authority to create and administer a Policy for applications to Accessible Transportation Services (ATS) services, including making subsequent revisions to the Policy and associated forms and ancillary documents in their reasonable discretion as may be required, so that ATS can conduct a records management exercise for the safety of its clients, expected to conclude by June of 2023.

(b) That no eligibility re-assessments be undertaken during the above process as set out in (a).

(c) That the Director of Transit be given delegated authority to update and revise the existing 2005 Accessible Transportation Services Policy entitled Trip No Shows, Late Cancellations and Excessive Cancellations (Appendix “A” attached to Report PW05051 – Policy 2005-01) on an ongoing basis in their reasonable discretion.

(d) That staff be directed to report back to Public Works Committee and the Advisory Committee for Persons with Disabilities on a quarterly basis respecting Accessible Transportation Services (ATS).

(e) That staff be directed to undertake a (Re)envision-based voice of customer consultation process to consider service design and customer experience for users of Accessible Transit Services (ATS) and that this

consultation will include broad stakeholder engagement, including, but not limited to, existing ATS registrants, DARTS, ACPD and SAC and any other applicable groups.

INFORMATION

This report will highlight key steps taken to date to implement AUD20009 recommendations (revised Appendix "B" attached to Report AUD20009), related consultant recommendations (Appendix "A" attached to Report PW21055) and the directions from Public Works Committee as outlined above. A more detailed summary table of AUD20009 recommendations and progress to date are found in Appendix "A" attached to Report PW21055(b).

The continuation of the COVID-19 pandemic emergency, including the reassignment of three ATS staff to the city-wide COVID-19 vaccination effort, has resulted in a delay to implement some AUD20009 recommendations, as has the unplanned work undertaken by ATS in support of the Auditor General as they investigated both contractor vehicle safety (AUD22007) and misuse of the Taxi Scrip program (AUD22009).

Demand for ATS trips remain well below pre-pandemic levels, and at the time of writing, sit at approximately 54% of 2019 demand, and approximately 79% (454,617 trips completed) of the 2022 budget. It is therefore anticipated that all expenditures outlined below can be accommodated in the existing 2023 budget.

In Q3 of 2023, ATS will present an update to this report regarding the recommendations from AUD 20009 and related consultant recommendations that will impact the 2024 budget. These include:

- increase the trip conditions that are applied when making determinations of conditional eligibility;
- upgrade existing scheduling software and software training to enable effective application of trip conditions when determining eligibility for individual trips according to client functional ability;
- allow for in-person, on-site evaluation of functional ability to use transit;
- reassess all existing clients at regular intervals;
- pilot integration of specialized and conventional transit on two HSR corridors; and
- implement an in-house, expanded travel training program to support improvements to conventional transit accessibility.

Application Process

Eligibility for Accessible Transportation Services is determined through an application process. As described in PW21055(a) - Accessible Transportation Services Eligibility

Audit Management Response, ATS has implemented some immediate improvements to its application form, including:

- more clarity around the nature of the door-to-door service provided;
- updated language in notices regarding the collection and sharing of personal information, and in the sections where consent is signed;
- the removal of Recreational Therapist from the list of care providers who can sign Part Two of the application and the addition of regulated, licensed Social Worker (Master of Social Work); and
- a shorter version of the application form for residents of Long-Term Care facilities, as residents of LTC are unconditionally eligible.

Prior to the release of the updated application form last spring, ATS customer care representatives received training on privacy, confidentiality and consent with the City Corporate Privacy Specialist. Procedures for staff to support contacts with clients, and/or their healthcare professionals and agencies, including follow up with incomplete or outdated applications, were created (AUD20009 Recommendations 5 and 14).

Once applications are received and prior to approval, there is an occasional need to have the application reviewed by a third party for assessment purposes. Following the end of the contract with the previous vendor in 2020, and through a request for proposal procurement process in 2022, ATS has contracted to Bayshore Healthcare (Bayshore) to provide third-party functional assessments for ATS eligibility as required, where information from the application form is insufficient to allow a determination of eligibility. Bayshore has just begun the work of clearing the backlog of approximately 100 ATS applicants flagged for assessment since the start of the COVID-19 pandemic, who were assigned temporary eligibility status until in-person assessment could resume. Once the backlog is cleared, Bayshore will begin assessing new files as they are received (AUD20009 Recommendations 1, 3, 5 and 6).

Now that Bayshore is on board, a second revision of the ATS application forms will happen in consultation with the expertise of the Occupational Therapists employed by Bayshore, once they have used the current application long enough to identify any further gaps or opportunities for improvement (AUD20009 Recommendations 2 and 14). ATS is targeting Q3 of 2023 for the next application form update.

In October of 2022, ATS hired a Supervisor of Accessible Transportation Services with a background in disability supports and assessment, at no impact to budget. The ATS Manager and Supervisor oversee referrals to Bayshore and validate invoices for this service. ATS will also implement a formal internal application processing quality control procedure to be overseen by the ATS Supervisor (AUD20009 Recommendations 3, 4, 6, 12 and 14) in Q1 of 2023.

ATS has been able to allocate internal resources to update existing records through a reapplication process to begin Q1 of 2023, and its internal procedure for this purpose aligns with the Public Works Committee direction above that no eligibility reassessments be undertaken during this exercise, at this time (AUD20009 Recommendation 7).

Travel Training

Travel training is a program designed to support people to use accessible conventional transit successfully, and focuses on how to safely board, alight, transfer and use HSR schedules and travel applications. In Q1 of 2021, ATS contracted the development of a virtual and streamlined program during COVID, within the existing 2021 budget and at a lower cost than the previous contract which focused on intensive, in-person training for persons with intellectual/developmental disabilities. Overall, results of this virtual training program were inconclusive, with a total of 28 participants completing training out of the 50 who attended classes, and not enough participants completing both pre- and post-questionnaires to adequately assess whether knowledge gained would effectively divert trips from ATS to conventional transit on the HSR.

Though ATS is not renewing this contract, we are providing direction to the vendor in Q1 of 2023 for their continued use of the City-funded curriculum they developed under the terms of the original signed agreements, to continue to support individuals with intellectual/ developmental disabilities to review community safety and travel skills as part of their own suite of services, rather than as a program funded by the HSR.

The report prepared by Dillon Consulting had recommended bringing oversight for travel training in-house and tying it to the introduction of integrated transit and training for applicants who can execute part of their trip on accessible, conventional transit (Appendix “A” to Report PW21055). ATS is targeting Q4 of 2023 to review options for travel training delivery as part of an integrated transit pilot (see below) (AUD 20009 Recommendations 8 and 11).

Integrated Transit

HSR will develop a pilot for integrated transit in 2023. This pilot will identify potential on-demand transit zones and transfer points suitable for integrated trips, determine the specific vehicle requirements needed to deliver them, and identify next steps to implementing an integrated service delivery plan (AUD20009 Recommendation 8). To this end, HSR has applied for Investing in Canada Infrastructure Program (ICIP) funding to acquire smaller accessible transit vehicles for deployment in potential geographic zones where integrated service can be piloted (PW19083(a)/FCS18048(b)), including the purchase of accessible Supervisor vehicles to support emergency and incident

management, as recommended by Dillon consulting (Appendix "A" to Report PW21055).

ATS will also investigate using this fleet as part of a contingency plan to support the delivery of specialized transit when contractor service is interrupted, as part of our response to AUD22007 (contractor vehicle safety) recommendations.

Trip No Shows and Late Cancellations

HSR is currently working with our contractor for specialized transit, DARTS, and our software provider, Trapeze, to install an updated service infraction application to track late cancellations and no shows according to the points system outlined in PW21055(a) to apply policy as directed by Council, above. The goal is to improve scheduling efficiency and, through this, increase the availability of trips on the existing service and the potential success of the integrated transit pilot (AUD20009 Recommendation 8).

Trip no shows and late cancellations occur based on the client's actions when they are unable to keep their pre-booked trips, which can happen for a multitude of reasons. However, no shows and late cancellations lock up trips which cannot be offered to other clients and make the overall service less efficient. Individual circumstances beyond a client's control will be considered when applying the points system and including an appeals process.

Key Performance Indicators (KPI's)

At the April 22, 2022, Public Works Committee meeting, the Committee moved that ATS undergo a (Re)envision-style exercise for specialized service. ATS will use an external consultant to align customer satisfaction work with the HSR (Re)envision Guiding Principles to shape future service options based on the voice of the customer and inform the planned integrated transit pilot.

ATS has reported performance indicators quarterly to the Advisory Committee for Persons with Disabilities and the Public Works Committee (PW22079 and PW22079(a)). At time of writing, reporting to date includes 2019-21, and Q1-Q3 of 2022.

The Transit Division is working to move all KPI reporting for both conventional service and specialized service to an improved format. Meanwhile, reports continue to be pulled manually each month, including to track application turnaround times and completeness (AUD20009 Recommendation 13).

It should be noted that the Office of the City Auditor has not completed any work to validate the current status of the Management response to AUD20009.

APPENDICES AND SCHEDULES ATTACHED

Appendix “A” to Report PW21055(b) – Detailed Summary of AUD20009 Recommendation Response Progress as of 2022

AUD20009 Recommendation	AUD20009 Management Response and Original Anticipated Completion Date	Status of Management Response YTD 2022
1. We recommend that management use the third-party evaluator's results, municipal benchmarking and their own experiences to evaluate and potentially redesign the eligibility assessment process.	Agreed. ATS will develop an operational plan (subject to budgetary/ resource approvals) to further investigate the differing third-party assessment outcomes and conduct municipal benchmarking. The purpose of the operational plan is to conduct an in-depth assessment of the Lifemark results, review and evaluate the current design, and identify redesign options for an eligibility assessment process. Anticipated completion date (operational plan): Q2 2022.	**Complete.** Consulting report completed, including municipal benchmarking; roadmap to implement an operational plan presented (Appendix "A" to Report PW21055) (Q3 2021).
2. We recommend that management update the application form by adopting the following: guiding principles, functional ability, conventional transit accessibility features, test results, travel distance, personal care attendant, health care provider's eligibility option, and health care provider's review of the applicant's response.	Agreed. ATS will develop a project plan to review the application form and identify immediate, medium, and longer-term improvements. The goal is to improve the effectiveness of the application, address strategic information gaps and optimize the application process. Anticipated completion date (immediate improvements and project plan): Q2 2021.	**Complete (immediate improvements).** ATS has implemented some immediate improvements to its application form, including: more clarity around the nature of the door-to-door service provided; updated language in notices regarding the collection and sharing of personal information, and in the sections where consent is signed; and the removal of Recreational Therapist from the list of care providers who can sign Part Two of the application and the addition of regulated, licensed Social Worker (Master of Social Work) (Q2 2022). **In progress (project plan).** A second revision of the ATS application forms will happen in consultation with the Occupational Therapists employed by third-party functional assessor, Bayshore Healthcare, once they have worked with the current application long enough to identify any further gaps or opportunities for improvement (targeting Q3 of 2023). Longer term improvements would be tied to future staff recommendations to reassess eligibility regularly, increase

		conditions of eligibility, or move to an entirely in-person eligibility process.
3. We recommend that standard operating procedures and assessment guidelines be created for all assessment processes. These procedures may include instructions and evaluation strategies to assist staff in making consistent and supported eligibility decisions.	Agreed. The standard operating procedures and assessment guidelines will be in alignment with the development of a redesigned process in recommendation #1. Anticipated completion date: Q2 2022 (with standard operational procedures to follow).	**Complete (operational plan).** Consulting report completed, including municipal benchmarking; roadmap to implement an operational plan presented (Appendix "A" to Report PW21055) (Q3 2021). ATS Manager has outlined a table of contents for related policy, procedures and forms (Q3 2022). **In progress (development of standard operational procedures).** ATS is in the process of documenting eligibility determination procedures, including appropriate use of the contractor for third-party functional assessment, with reference to the April 2022 update to the application form. The first two SOPs have been written and provided to staff: ATS Policy PW-TR-ATS-Y-002-002 ATS Application (Q3 2022) and ATS Procedure PW-TR-ATS-P-006-001 ATS Contact with Client Health Care Provider (Q2 2022). Remainder of ATS internal procedure completion is targeted for Q1 2023. External customer-facing eligibility and assessment policies need to be provided to the Advisory Committee for Persons with Disabilities (ACPD) for comment as these are drafted and updated.
4. We recommend that management implement a quality control process where all eligibility decisions are reviewed for accuracy and approved by someone with adequate expertise and experience before results are communicated to applicants. Review objectives may also include ensuring timely	Agreed. The development of a quality control process will be implemented as an interim measure while the eligibility assessment process is reviewed and redesigned in recommendation #1. Anticipated implementation date: Q2 2021.	**In progress**. ATS hired a Supervisor of Accessible Transportation Services with a background in disability supports and assessment, at no impact to budget (Q4 2022). The ATS Manager and Supervisor oversee referrals to third-party functional assessor Bayshore Healthcare and validate invoices for this service (Q4 2022), and work with ATS Manager to implement a formal internal application processing quality control procedure (targeting Q1 of 2023). With the start of work done by Bayshore Healthcare in December of 2022, weekly meetings are being held with the third-party functional assessment contractor (Bayshore Healthcare), ATS Supervisor, and ATS Manager to review

management of client information.		functional assessment outcomes before communicating these to customer care representatives and so to applicants (Q4 2022).
5. We recommend that management incorporate more in-person contact into the eligibility assessment process within the next year.	Agreed. ATS will incorporate more in-person contact into the eligibility assessment process. Anticipated implementation date: Q2 2021.	**Complete.** ATS Procedure PW-TR-ATS-P-006-001 ATS Contact with Client Health Care Provider was written following privacy and confidentiality training provided to direct staff in their contact with client healthcare professionals and agencies, to enable them to more confidently follow up by phone with clients and their health care providers when additional information is needed, including clarification around consent signatures (Q2 2022). ATS has contracted Bayshore Healthcare to provide third-party functional assessments for ATS eligibility as required, where information from the application form is insufficient to allow a determination of eligibility (Q4 2022).
6. We recommend that management assess the need for strengthening the professional qualifications and experience required for making eligibility determinations.	Agreed. ATS will include an assessment of the professional qualifications and experience required to make effective eligibility determinations in the operational plan to redesign the eligibility process in recommendation #1. Anticipated completion date (operational plan): Q2 2022 (with qualification assessment to follow).	**Complete (operational plan).** Consulting report completed, including municipal benchmarking; roadmap to implement an operational plan presented (Appendix “A” to Report PW21055) (Q3 2021). **In progress (implementation).** ATS hired a Supervisor of Accessible Transportation Services with a background in disability supports and assessment at no impact to budget (Q4 2022). ATS has contracted Bayshore Healthcare to provide third-party functional assessments for ATS eligibility as required, where information from the application form is insufficient to allow a determination of eligibility (Q4 2022). Recommendations to hire additional FTE(s) with clinical/ professional qualifications would be tied to any future staff recommendations to reassess eligibility regularly, increase conditions of eligibility, or move to an entirely in-person eligibility process.

7. We recommend that management prepare a business case outlining the costs and benefits of reassessing all existing clients.	Agreed. ATS will develop a business case to assess the costs and benefits of reassessing all existing clients and alternative options. Anticipated completion date (business case): Q2 2021 (with implementation to follow)	**Complete (business case).** Consulting report completed, including municipal benchmarking; roadmap to implement an operational plan presented (Appendix “A” to Report PW21055) (Q3 2021). **On hold (implementation).** Direction from Council is not to reassess eligibility during forthcoming reapplication process (Public Works Committee April 22, 2022, Item 8.1. (b)).
8. We recommend that management explore the feasibility, potential savings, costs and benefits of the following service options: expanded Taxi Scrip Program, integrated service model, expanded travel training, shuttles and community buses.	Agreed. ATS will develop a business case to assess the costs and benefits of reassessing all existing clients and alternative options. Anticipated completion date (business case): Q2 2021 (with implementation to follow).	**Complete (business case).** Consulting report completed, including municipal benchmarking; roadmap to implement an operational plan presented (Appendix “A” to Report PW21055) (Q3 2021). **In progress (implementation).** Taxi Scrip program has since been audited due to report of fraudulent scrip use (AUD22009); ATS has increased oversight and is exploring other options for more efficient delivery of the service (targeting Q2 2023). HSR is currently working with the contractor for specialized transit, DARTS, and the software provider, Trapeze, to install an updated service infraction application to track late cancellations and no shows according to the points system outlined in PW21055(a). The goal is to improve scheduling efficiency and, through this, increase the potential success of an integrated transit pilot (targeting Q2 2023). Integrated service model is targeted to pilot pending successful outcome Investing in Canada Infrastructure Program (ICIP) funding to acquire smaller accessible transit vehicles for deployment in potential geographic zones where integrated service can be piloted (PW19083(a)/FCS18048(b)). Opportunities for use of shuttle buses (group trips) and community buses were explored by Dillon Consulting in their 2021 report (Appendix “A” to Report PW21055). If the aforementioned ICIP application is successful, ATS will pursue options to support an integrated transit pilot by identifying potential on-demand transit zones and transfer points and requirements suitable for integrated trips, determining the specific vehicle requirements needed to deliver them, and also

		identifying next steps to implementing an integrated service delivery plan (targeting Q3 of 2023). Expanded travel training as an in-house program tied to eligibility determinations and use of integrated transit for some ATS trips will be investigated as an option (targeting Q4 of 2023).
9. We recommend that management enhance which assessment and eligibility data is captured in Trapeze for current and future strategic purposes, including historical application information and the limiting factor that contributed most to the eligibility decision.	Agreed. ATS will develop a business case to review and assess the eligibility data captured in Trapeze to enhance the data collected and stored. Anticipated completion date (business case): Q3 2021 (with implementation to follow).	**Complete (business case).** Consulting report completed, including municipal benchmarking; roadmap to implement an operational plan presented (Appendix “A” to Report PW21055) (Q3 2021). **On hold (implementation).** A Trapeze upgrade for this purpose would be tied to any future staff recommendations to apply increased conditions of eligibility at a future date, following a successful integrated transit pilot.
10. We recommend that a report library be created in Trapeze containing standard and frequently used reports that have been tested and validated for accuracy for more efficient data analysis.	Agreed. ATS will develop a business case to investigate the report library options with the goal of creating standard, accurate, valid reports that enable efficient data analysis. Anticipated completion date (business case): Q3 2021 (with implementation to follow).	**Complete (business case).** Consulting report completed, including municipal benchmarking; roadmap to implement an operational plan presented (Appendix “A” to Report PW21055) (Q3 2021). **In progress (implementation).** Working with the HSR Business Intelligence (BI) Analyst, ATS staff have reviewed the inventory of canned SQL reports in the DARTS Trapeze database and purged broken reports from the list of those used by ATS. The remaining useful 300 reports were then catalogued according to their purpose, folder location, parameters, and data columns (Q2 2022). ATS will be working with the BI analyst to consolidate into a shorter list of multipurpose reports. The Transit Division is working to move all KPI reporting to a dashboard which displays indicator graphics in real time (targeting Q4 2023 for workplan to move ATS indicators to the dashboard).

11. We recommend that management re-evaluate funds spent on travel training services to ensure that value for money is being obtained.	Agreed. The Travel Training program has been suspended since May 2020 (due to COVID) and the terms are being redrafted. Anticipated completion date: Q2 2021	**Completed.** ATS contracted to the original vendor for travel training services to pilot virtual delivery of a smaller, streamlined program during COVID, within the existing budget, at a lower cost than the previous contract. Overall results of the smaller virtual training program were inconclusive (Q1-Q3 2021). ATS is not renewing this contract, but we are providing direction to the vendor in Q1 of 2023 for their continued use of the City-funded curriculum they developed under the terms of the original signed agreements, to continue to support individuals with intellectual/ developmental disabilities to review community safety and travel skills as part of their own suite of services, rather than as a program funded by the HSR (Q1 2023).
12. We recommend that ATS maintain a record of clients sent for functional assessment and use this to validate invoices received for payment.	Agreed. All functional assessments are suspended (due to COVID). The process to validate invoices will be established. Anticipated implementation date: Q4 2020.	**Completed**. ATS did not return to third-party functional assessment until Q4 2022. The ATS Supervisor will oversee referrals to third-party functional assessor Bayshore Healthcare and validate invoices for this service. A process has been established for the secure sharing of referrals, tracking and invoices in a City Share folder with access limited to the ATS Manager, ATS Supervisor, and appropriate Bayshore Healthcare personnel; invoices are not approved unless all listed assessments attached to the invoice have been confirmed as filed, and Bayshore contact tracking evidences appointment no shows (for which there is a smaller charge). Appointment no shows are verified with a follow up letter to these clients advising them their application cannot be processed (Q1 2023 - January).
13. We recommend that management create performance metrics to measure process efficiencies and community impact and report on these regularly. (NOTE: Transit to indicate where intend to report)	Agreed. The definition of performance metrics will be an added element in the development of the operational plan in recommendation #1. The optimization of the new metrics will be monitored through the existing performance measurement methodology via the divisional balanced scorecard. Anticipated completion date (operational plan): Q2 2022 (with implementation to follow).	**Completed (operational plan).** Consulting report completed, including municipal benchmarking; roadmap to implement an operational plan presented (Appendix “A” to Report PW21055) (Q3 2021). **In progress (implementation).** ATS is providing quarterly reports of the following to Advisory Committee for Persons with Disabilities (ACPD) and Public Works Committee (following a catch-up report encompassing 2019-Q1 2022) of the following metrics: overall system trips requested and delivered (DARTS and Taxi Scrip); system demand by mode (DARTS vs. Taxi Scrip); rate of system trips denied; rate DARTS trips denied;

		rated of DARTS trips cancelled on time, cancelled late, cancelled at door, and refused; DATS on-time performance; rate of complaints and commendations (ongoing). ATS will gather baseline data from the reapplication process and the re-introduction of third-party functional assessment on the following metrics, as recommended by Dillon Consulting: number of applicants in a period, number of registrants per capita, number of unconditional/conditional/temporary/ineligible determinations, and number of in-person assessments, in order to benchmark the effectiveness of the reapplication process, the introduction of integrated transit, and any subsequent adjustments to the eligibility determination process that ATS recommends and Council approves (e.g., increased conditions of eligibility, reassessments of eligibility) (targeting Q1 2023). The Transit Division is working to move all KPI reporting to a dashboard which displays indicator graphics as updated; ATS will work with the HSR Business Analyst on a workplan to use the dashboard to track the above targets (targeting Q4 2023).
14. We recommend that management address the administrative issues identified by:	Agreed. ATS will develop a workplan to assess the feasibility and address the administrative issues identified. Anticipated completion date (workplan): Q1 2021 (with implementation to follow).	
• Ensuring adequate document is kept about differences between the eligibility recommendation of the functional assessment provider and ATS' final eligibility decision;		**Complete.** ATS Manager or Supervisor emails Customer Care Representatives (CCRs) to notify that assessment report is now in applicant file (according to client number) and provides direction whether or not ATS concurs with the outcome and why, and next steps for CCRs to take (Q4 2022).

• Reviewing Trapeze status codes at least annually and investigate the state of pending applications;		**Complete.** These are reviewed monthly and status of applications tracked both in Trapeze (Since Q4 2019) and in monthly tracking log sent by third-party functional assessor (Q4 2022).
• Ensuring staff only accept completed current versions of the application form;		**Complete.** Out of date forms are not accepted; letters are sent to applicants who have used outdated forms to inform them and as a follow up to any phone calls made concerning same (Q3 2022). ATS Manager is following up with community websites which have posted outdated PDFs of the outdated forms as we become aware of their existence, to ensure their removal and to direct these community websites to send their stakeholders to the ATS web page for the most up to date information (ongoing).
• Creating a separate, shortened application for long term care and nursing home applicants that obtains more information from their health care provider;		**Complete.** A shorter version of the updated application form has been created for applicants living in long-term care which collects more information than was previously collected for these applicants (Q2 2022).
• Exploring how to use technology to track Taxi Scrip sales in a timelier manner and providing sales locations with access to up-to-date client sales records; and		**Complete.** Fare Revenue is accessing reports from Municipal Service Centres (MSCs) weekly, rather than monthly (Q2 2022). Double/ excessive purchases now happen only rarely. HSR Fare Revenue staff now have access to the Trapeze database and can verify if the purchases have been made by eligible people (Q3 2020).
• Evaluating and potentially redesigning the application appeal process.		**In progress.** ATS is targeting the January meeting of the ACPD Transportation Working Group to review an updated appeal process for their review and participation as a member of the tribunal (targeting end of Q1 2023).

CITY OF HAMILTON
PUBLIC WORKS DEPARTMENT
Transit Division

TO:	Chair and Members Public Works Committee
COMMITTEE DATE:	April 3, 2023
SUBJECT/REPORT NO:	(Re)envision the HSR – the (re)Designed HSR Network (PW23021) (City Wide)
WARD(S) AFFECTED:	City Wide
PREPARED BY:	Jason Vander Heide (905) 546-2424 Ext. 2390
SUBMITTED BY: **SIGNATURE:**	Maureen Cosyn Heath Director, Transit Public Works Department 

RECOMMENDATIONS

(a) That the General Manager, Public Works or designate, be directed to seek stakeholder feedback on the concept network through formal public consultation completed by September 30, 2023;

(b) That the General Manager, Public Works or designate, be directed to review the Council-approved Service Standards considering equity;

(c) That the General Manager, Public Works or designate, be directed to review the Council-approved Urban Transit Area (UTA) boundary; and

(d) That the General Manager, Public Works or designate, be directed to report back to Council in Q1 2024 with a new Transit growth plan to include;

(i) A phasing and implementation strategy of the concept network.

(ii) A financial strategy (capital and operating) for the phasing and implementation of the concept network.

(iii) A communications strategy for the phasing and implementation of the concept network.

(iv) A ridership and revenue forecast for the concept network at full implementation.

(v) Recommendations on any changes or updates to the Service Standards to align with Council's priority for equity, diversity and inclusion and multi-modal accessible transportation.

(vi) Recommendations on any changes to the UTA to support transit growth within the current and expanding Urban Boundary to align with Council's priority for integrated growth and development.

EXECUTIVE SUMMARY

This report is to provide Council with an overview of The Hamilton Street Railway's (HSR) (re)Designed Network concept, which is designed to make Hamilton "rail ready". Being "rail ready" was identified as a key output of the (Re)envision the HSR research project that was completed by the Public Works Transit Division in association with McMaster University.

The purpose of (Re)envision was to redesign the City of Hamilton's (City) transit network from the ground up to ensure that the network meets the needs of the Hamilton of today and tomorrow, and to have a "rail ready" network structured around the Hamilton LRT, which will run along the Main-King-Queenston corridor through the lower city, spanning from McMaster University to Eastgate Square. (Re)envision was also intended to create a transit network that would help position transit as a preferred mode choice, reducing congestion and car emissions and offering economic benefits to residents through connections to employment.

The objective of investing and improving transit services and reconfiguring the network to prepare for rapid transit services was identified in the Rapid Ready report (2013) as the first of three key contributors to prepare the City of Hamilton for rapid transit implementation, the other two being supportive community planning; planning how the City will grow around rapid transit through transit supportive land uses and densities, and multi-modal integration; integrating more travel options to maximize the impact of rapid transit and make it easier to get around the City.

The concept network detailed in this report is intended to reflect the City's transit network on the opening day of Hamilton LRT operation.

Alternatives for Consideration – Not Applicable

FINANCIAL – STAFFING – LEGAL IMPLICATIONS

Financial: N/A

Staffing: N/A

Legal: N/A

HISTORICAL BACKGROUND

In 2013, Council approved “Rapid Ready – Expanding Mobility Choices in Hamilton” (PW13014). The report outlined how the essential action to prepare for high performance rapid transit is to improve overall accessible conventional public transit services. Accordingly, the report recommended that the City do the following:

- Reconfigure the transit network by reorienting existing transit services to feed planned rapid transit corridors and new neighbourhoods to establish travel patterns in advance of rapid transit implementation.
- Advance plans for multi-modal transit hubs and mobility hubs to create seamless connections between local, rapid, and interregional transportation services.

In 2015, Council approved Hamilton’s 10-Year Local Transit Strategy (10YLTS). This strategy was designed to address system deficiencies after years of service cuts, and ultimately provide operating and capital funds to grow the transit system. The early years (1-3) of the 10YLTS would provide Transit funds to meet approved service standards, while year’s 4–10 was designed to simulate ridership growth. The 10YLTS has been paused twice since its inception, in 2017 and 2020. Fall of 2023 will mark the implementation of Year 7.

In April 2018, the City’s Transit Division, in partnership with McMaster University’s Department of Civil Engineering, initiated “A Systemic Assessment and Optimization of the Hamilton Street Railway (HSR) Network”. This project became known as “(Re)envision the HSR”.

Prior to beginning the network re-design process, the Transit Division conducted extensive public and stakeholder engagement on the future of conventional transit service delivery in Hamilton. Through a wide-ranging survey of almost 6,000 customers and residents, the Transit Division received detailed data on strengths and shortcomings of the current network, as well as what respondents would value in a future network. The results of this survey were shared in Information Report PW20005 in January 2020.

The Transit Division also conducted public and stakeholder engagement throughout 2019 and the first quarter of 2020. Using the HSR's (Re)envision consultation bus, the Transit Division attended over 50 community events and neighbourhood meetings and met with dozens of community stakeholders.

On December 16, 2019, when work on the "rail ready" concept network design was approximately 60% complete, the Provincial government announced the cancellation of the Hamilton LRT project. As the network was centred around the Hamilton LRT, a re-think in the fundamental structure of the network was required.

The (Re)envision project team then began a second round of design, this time as a bus-only concept network. Design for this network was completed in early March 2020. With the onset of the COVID-19 pandemic just a week later, further work on this concept network was paused while the Transit Division and the City at-large shifted focus to pandemic-related issues.

On May 13, 2021, the Hamilton LRT project was reinstated, and shortly afterwards the (Re)envision project team began work on a third concept network design, once again centred around the Hamilton LRT. Rather than resuming work on the original concept network design, the project team determined that, by having to think differently about the network in the second bus-only concept design, there were several improvements that could be made to the original concept network. As a result, the best elements of the first two networks were synthesized into a third network design.

On May 11, 2022, Hamilton City Council voted to approve converting Main Street for two-way traffic. Though the (Re)envision project team had already completed work on the third concept network design, a two-way Main Street provided the opportunity for a series of network changes that could improve local transit flow in the westbound direction through the southern portion of the central lower city and provide a solution for local transit service on an adjacent corridor to the LRT within close proximity. As a result, a fourth concept network design was completed in September 2022. This fourth concept network is the version that is included in this report, and that the Transit Division is seeking approval on which to seek stakeholder and public feedback.

POLICY IMPLICATIONS AND LEGISLATED REQUIREMENTS

N/A

RELEVANT CONSULTATION

The Transit Division partnered with McMaster University's Department of Civil Engineering and the McMaster Institute for Transportation and Logistics to survey customers and residents across the city to measure their perception of the quality of

existing transit service and to understand what current and potential customers desired from the service in the future. A comprehensive marketing campaign supported broad awareness of the survey across the City and encouraged participation. In total, nearly 6,000 surveys were completed, and responses were statistically representative across various demographic profiles and locations.

Following the completion of the survey, staff continued public engagement activities to add further context to the survey results and explore the impact of network reconfigurations on customers and stakeholders. This included the My HSR public engagement website, which later migrated to the City's Engage Hamilton website, and the creation and use of the (Re)envision consultation bus which enabled staff to engage with community members in non-traditional spaces and reduce barriers to participation. Staff attended more than 50 community events and neighbourhood meetings and met with dozens of community stakeholders.

The Transit Division conducted extensive public engagement on the future of conventional transit service delivery in Hamilton between 2019 and early 2020, when the project timeline was interrupted by the COVID-19 pandemic. These findings have contributed to two significant project outcomes including HSR's six Guiding Principles and the design of the concept network. The Guiding Principles are the foundation for ongoing (Re)envision work to transform the customer experience. The findings were also one of several inputs which guided the design of the concept network.

With the concept network ready for its community debut, the Transit Division will enter a new consultation phase which builds on previous (Re)envision the HSR efforts. The Transit Division will seek community and stakeholder input on the (re)Designed HSR Network concept design between April and September 30, 2023. This multi-month consultation period has three broad objectives:

- Consult as many community members as possible and use the feedback collected to guide changes to finalize the (re)Designed HSR network concept design.
- Raise awareness and build support for the transit network changes among community members and stakeholders.
- Grow ridership by raising awareness and increasing commitment to transit.

Engagement activities will focus on understanding how the proposed network will impact customers and influence their choice to use transit. It will target a diverse group of stakeholders including customers, residents, academic institutions, health and social service providers, business community members, employees, community groups and media.

Transit staff, supported by Corporate Communications, are currently developing a multifaceted engagement plan for broad citywide participation offering different opportunities for participation. The project will be anchored by a dedicated project webpage and the City's Engage Hamilton platform to gather feedback online. In addition, there will be multiple opportunities for non-digital engagement through community and stakeholder meetings, and outreach at fairs, festivals, and community events.

HSR will raise awareness about these engagement opportunities by leveraging the City's various communication channels and tools including social media, traditional and digital advertising, and media relations. HSR will also engage with key stakeholders in sectors such as education, employment and organizations which will help staff target hard-to-reach audiences and ensure diverse voices are represented. Additionally, Transit Division employees will have opportunities for input at a series of special events.

The Transit Division has also engaged with City staff from other divisions and departments. Through a series of stakeholder workshops in December 2022 and January 2023, representatives from other City departments were able to view the concept network and identify any potential coordination between their group and the Transit Division to assist advancing mutual City building objectives that could be achieved through the implementation of transit network change.

Attendees included representatives from Public Works (Engineering Services, Parks, Transportation Operations and Maintenance, and Waste Management) and Planning & Economic Development (Communications, Economic Development, Growth Management, Licensing and By-law, LRT, Planning, Tourism and Culture, and Transportation Planning).

Consultation with these City departments will continue as the project progresses.

ANALYSIS AND RATIONALE FOR RECOMMENDATION

The overall aim of the (Re)envision project is to increase transit ridership, thereby improving accessibility and mobility in the community.

A well-functioning and fully accessible transit network can help in alleviating traffic congestion, increasing citizen mobility choices across multiple modes of transportation, and is directly related to supporting the City's Official Plan and Transportation Master Plan objectives.

The (re)Designed HSR Network was designed to get Hamilton "rail ready" and was developed using a set of proposed objectives directed at increasing transit ridership.

They include:

- Maximizing service reliability
- Minimizing the required number of transfers
- Expanding the transit service coverage area
- Improving transit infrastructure
- Improving connectivity to regional transit services
- Expanding service operations hours
- Enhancing network robustness to provide convenient travel alternatives during anticipated and unexpected service disruptions

Network Design Process

The (re)Designed HSR Network concept was designed using a 'from the ground up' approach. Legacy route alignments were kept where appropriate for the current and future City of Hamilton but were either modified or discarded where they did not. The desired end goal is a network that will serve the needs of Hamilton and Hamiltonians both today and tomorrow and to build a transit network that will entice new customer uptake.

The conceptual (re)Designed HSR Network is included in Figure 8 of Appendix "A" attached to Report PW23021.

Preparation for Network Redesign

At the commencement of the network redesign exercise, Transit Division staff engaged in a variety of background exercises, including benchmarking, historical routing review, Transportation Tomorrow Survey (TTS) data review as released by the province and participating municipalities and transit agencies within southern Ontario, and land use data review.

Benchmarking included exercises to assess current HSR service, including route frequency and stop utilization during various time periods (peak periods, midday, weekend, etc). This is shown in Figure 4-3 of Appendix "B" attached to Report PW23021. Historical route review involved examining the changing structure of existing transit routes over time and determining why changes were made. This is detailed in Section 4.6 of Appendix "B" attached to Report PW23021. TTS data helped map current travel patterns, while land use data was used to determine how supportive certain areas would be of transit service. These are detailed in Sections 4.2 and 4.7 of Appendix "B" attached to Report PW23021.

Hub Connectivity

The current HSR network largely uses a 'hub and spoke' model, where most routes emanate from downtown. By contrast, the concept network was designed around a hub connectivity model. The concept network strategically places transit hubs across the City at major trip generators based on land-use, employment, and interregional connectivity.

Within the concept network, a specific nomenclature with respect to hubs has been developed for both terminals and gateways.

- 'Terminal' refers to a multi-platform transit hub, usually off-street, located near a major commercial centre, institution, or higher-order transit line.

- 'Gateway' is similar in design to a Terminal, but is located on the urban periphery, and includes Park & Ride facilities to allow for rural commuters to access the system.

Primary hubs: CF Lime Ridge Terminal, Eastgate Terminal, Heritage Greene Terminal, King & James LRT, McMaster University Terminal, Meadowlands Terminal, Mohawk College Terminal, and West Harbour GO Terminal.

Secondary hubs: Ancaster Gateway, Centre on Barton, Confederation GO Terminal, Downtown Dundas, Elfrida Gateway, Hamilton GO Centre, Mountain Transit Centre, Parkdale & Queenston LRT, Stoney Creek Gateway, and Waterdown Gateway.

Through our customer engagement process at the outset of this project, one of the most clear, consistent themes was a customer preference to minimize transfers. Transfers create a potential failure point in a trip if a connection is missed, adds a junction where the customer is exposed to the elements and are less desirable from a mobility perspective.

The concept network has been designed with this in mind. Travel between any two primary hubs can be accomplished with zero transfers, while travel between any primary or secondary hub to any primary or secondary hub can be accomplished with a maximum of one transfer. Details are included in the Connectivity Matrix, which can be found in Section 3.4 of Appendix "B" attached to Report PW23021. Detailed information on travel times to, from, and between hubs can be found in Section 3.3 of Appendix "B" attached to Report PW23021.

Route Hierarchy

In terms of varying route types, the current HSR network can be considered very 'flat'. Routes may service a local neighbourhood for part of the route, then run along a major arterial roadway for another part, then perform a regional connection. The result is that customers experience longer trip times, and local streets experience more bus traffic than would normally be warranted.

The concept network has addressed this by clearly dividing routes into the following types:

- Rapid: High frequency (10 minutes or better during peak periods), high-capacity routes that run between hubs along major corridors. Stop spacing more than 500m allows for higher overall travel speeds. These routes form the rapid transit network, which may be outfitted with dedicated transit lanes, and/or transit signal priority

- Core: Medium frequency (15 minutes or better during peak periods), medium-high-capacity routes that run principally along arterial roadways. Stop spacing between 250m and 400m allows for medium-high travel speeds

- Feeder: Medium frequency (15 minutes or better during peak periods), medium capacity routes that are designed primarily to bring customers to connect with the LRT. By travelling on corridors perpendicular to the LRT, they provide quick access to the LRT for people who live or work outside of walking distance to the LRT line

- Local: Medium-low frequency (20 minutes or better during peak periods), low-capacity routes that principally run along collector roadways. Stop spacing between 200m and 300m allows for easy access. In a hub-based system, the local routes primarily service a single area of the city and connect that area to the nearest hub. From there, customers have a multitude of transfer options to reach virtually anywhere in the city

- On-Demand: Request-based transit service in areas where demand currently does not support fixed-route service. Currently operating under the name myRide in Waterdown, this service model would be expanded to other areas of the City, either as a replacement for TransCab service, or as a replacement for fixed-route services that offer limited hours and low frequencies

This stratification of routes into the types noted above allows each route to perform a specific function, resulting in an improved customer experience. By understanding the route types, a customer can anticipate the speed and directness of their trip from point

A to point B. For example, a rapid route and a local route may travel between the same two end points, but the lower travel time and directness between the two points will make the rapid route the more attractive option for that trip.

It also improves transit operations, as vehicle size (standard bus, articulated bus, community bus) can be applied to individual routes on a more consistent basis. By changing the vehicle assignment to a specific route, it allows the HSR to either boost capacity on a route without increasing the number of buses used by changing to an articulated bus, or to use a smaller community bus to minimize impact in residential areas. For customers, it will allow them to identify route type just based on the size of the vehicle.

Route type stratification also provides an opportunity to rethink and redevelop a new set of service standards, where metrics like productivity, load, and frequency can better align to the function and intended purpose of different route types. This in turn will allow for a more nuanced and practical assessment of transit service, which is more likely to generate actionable recommendations for improvements than the current 'one size fits all' approach.

By increasing overall system efficiency through route stratification and proper vehicle size selection, service can more effectively and equitably be delivered across the entire urban transit area. This, coupled with standardized spans (which is detailed in the next section), provides far more equitable access to transit, regardless of what area of the City someone lives or works.

Standardizing Span

One of the items that was consistently raised in the stakeholder consultation survey was the variability in operating hours (span) of the current HSR transit network. Some areas of the City only have peak period service, some areas end at 10:00 PM, while other areas receive service until 2:00 AM.

The current service standards list the weekday span as 5:00 AM to 2:00 AM, the Saturday span as 5:00 AM to 2:00 AM, and the Sunday span as 6:00 AM to 12:00 AM. However, the service standards establish these as maximum spans, not minimum spans. This maximum also limits the ability of routes to run before 5:00 AM or after 2:00 AM, even though there may be demand for it. An example would be Route 20 A-Line, for which we have received repeated requests for early morning trips from employers around Hamilton Airport, which essentially operates 24 hours a day.

As part of the concept network, in order to promote equity of mobility across the entire City, all transit routes would operate with a standard span, but the span would be

represented as a minimum, not a maximum, as is the current practice. The spans would be:

- Weekday: 5:00 AM to 2:00 AM
- Saturday: 5:00 AM to 2:00 AM
- Sunday: 6:00 AM to 1:00 AM

Exceptions to the standard minimum span could be made where warranted or desirable. For example, the Route 20 A-Line and a late-night service to connect to the A-Line to support objectives outlined in the Economic Action Plan to have 24/7 service to the airport, and in consideration of stakeholder feedback related to operational hours of airport area employers.

Network Integration

Modification & Re-Branding of the BLAST Network

Hamilton's proposed rapid transit network, commonly referred to as the BLAST network, was approved by Council as part of the City's Transportation Master Plan in 2007, and was subsequently incorporated into Metrolinx' Regional Transportation Plan (RTP), the Big Move, in 2008. The A-Line and B-Line were included within the 15-Year planning horizon (2023), while the T-Line was included within the 25-Year planning horizon (2033). When the plan was updated in 2018 and renamed the 2041 Regional Transportation Plan, the L-Line and S-Line were included in the plan, to be completed as Priority Bus projects by 2041.

While the original plans formed a solid foundation for the expansion of rapid transit in Hamilton, the BLAST plan had a few gaps. BLAST lacked a connection between Ancaster and McMaster University, lacked maximized connections between all high transit use areas (hubs) to one another, lacked direct connections between all rapid routes, and did not provide access to rapid transit in all communities. (Re)envision offered an opportunity to enhance the BLAST network within the proposed Rail Ready network.

A map of the current BLAST network is included as Figure 1 in Appendix "A" attached to Report PW23021, while a map of the proposed Rapid network is included as Figure 2 in Appendix "A". Routes are detailed below.

- 10 B-Line East: Running from Eastgate Square Terminal & LRT Station in the west to Winona Crossing in the east via Queenston Road/Highway 8 and Barton Street East, this route connects Stoney Creek and Winona with the Hamilton LRT

- 20 A-Line: Running from Pier 8 Waterfront in the north to Hamilton John C. Munro International Airport in the south via James Street and Upper James Street, this route provides the primary north-south spine of the rapid network

- 30 S-Line: Running from Ancaster Gateway in the west to Parkdale Terminal & LRT Station in the east via Garner Road, Rymal Road, and the Red Hill Valley Parkway, this route connects Ancaster and the south end of Hamilton Mountain with the Hamilton LRT

- 40 E-Line: Running from Confederation GO Station in the north Heritage Greene Terminal in the south via Centennial Parkway, Upper Centennial Parkway, and Rymal Road East, this alignment was formerly part of the S-Line. It provides a link between the Stoney Creek Mountain, the Hamilton LRT at Eastgate Square, and GO Transit's Lakeshore West and Niagara services

- 50 T-Line: Running from Downtown Dundas Terminal in the west to Heritage Greene in the east via several corridors including Cootes Drive, Main Street West, and Mohawk Road, this route provides connectivity between areas like Dundas, McMaster University, the Ancaster Meadowlands, CF Lime Ridge, and Heritage Greene

- 60 L-Line: Running from Waterdown Gateway in the west to Centre Mall Terminal in the east via several corridors including Highway 6, York Blvd, James Street, Mohawk Road East, and Kenilworth Avenue, this route provides connectivity between Waterdown, Downtown Hamilton, Mohawk College, CF Lime Ridge, and East Hamilton. Route 60 operates the full route length to Waterdown, while Route 60A has its western terminus at West Harbour GO Station

With the addition of a sixth rapid route, the E-Line, the current BLAST moniker will need to be updated. A new term for the city's rapid transit network is one of the items that will be included in public consultations.

Through Transit Division's data analysis, the number of people within 800m of our current express bus network is approximately 144,900, the number of people within 800m of the BLAST network as originally approved is approximately 251,600, and the number of people within 800m of the rapid network as included in Rail Ready is approximately 309,000. This means that Rail Ready would bring rapid transit to within 800m of an additional 57,400 Hamiltonians as compared to the current approved BLAST network. Making transit more accessible is a key driver in attracting new riders to the system.

Maps showing number of people within 800m of rapid transit services under each scenario can be found in Figures 3,4, and 5 of Appendix "A" attached to Report PW23021.

Transit Priority Measures

For the proposed rapid network to operate as reliably and efficiently as possible, transit priority measures will need to be implemented at strategic locations across the corridors on which they operate. These measures include Transit Signal Priority (TSP), queue jump lanes, and dedicated transit lanes. Each of these measures will be evaluated for application on corridors across the rapid network based on congestion levels, available right-of-way, and installation cost.

Through the Metrolinx A-Line project and the Investing in Canada Infrastructure Program (ICIP), TSP and queue jump lanes are already being designed for the Upper James corridor. TSP is also being considered as part of signal modernization projects on other corridors.

As part of building a "rail ready" network, corridors have been identified as priority transit corridors which could benefit from the inclusion of transit priority measures. Future analysis of these corridors will provide details on how the concept network could maximize efficiency.

Connectivity to LRT

The Hamilton LRT project will be transformational for the City. To ensure that this new transit investment is as successful as it can be, the "rail ready" network has been configured to maximize connectivity between local transit service and the LRT. A comparison between the connectivity of the current transit network and the concept network is shown in Figure 6 of Appendix "A" attached to Report PW23021.

At both end termini, large bus terminals directly adjacent to the LRT platforms will offer a convenient bus-to-rail transfer. Six (6) transit routes will connect into the western terminus at McMaster University and eleven (11) transit routes will connect into the eastern terminus at Eastgate Square. Along the LRT line, each of the 15 intermediate stations will feature a connection to at least one HSR transit route.

The routes that best exemplify the connectivity to LRT concept are the 8 Central and 9 Rosedale. Both routes operate in a 'zig-zag' pattern through the lower city, running from Burlington Street to the escarpment and back again, connecting to multiple LRT stations along their routes. The purpose of these routes is to offer a quick and frequent connection for people in the lower city who live outside of the walking range of an LRT station but would still like to use the LRT as part of their transit trip.

Another example of this connectivity is the proposed hub at the Parkdale LRT station. Buses from the Stoney Creek and Central Mountains, including the re-routed S-Line, would make the express trip down the escarpment from Heritage Greene Terminal via the Red Hill Valley Parkway, and will feature a convenient transfer to the LRT at Parkdale station.

Likewise, trips to and from the West Mountain and Ancaster will use either the T-Line or the 71 Ancaster Wilson to descend the escarpment along Wilson Street to connect into the bus terminal at McMaster University.

Connectivity to Regional Transit

The concept network also significantly increases connectivity between local and regional transit, particularly at West Harbour GO and Confederation GO. Service levels to Aldershot GO and Hamilton GO Centre are also maintained. This is an important aspect of the new network to support economic prosperity, connecting people to employment and tourism alike.

GO Transit service frequencies are expected to significantly increase in the coming years along the Lakeshore West and Niagara GO Train corridors. These increased frequencies will make using transit for certain trip patterns more attractive, including GTA-to-Hamilton reverse commutes, Hamilton-to-Niagara commutes, and Niagara-to-Hamilton commutes, as well as off-peak and weekend trips to and from the GTA and Niagara Region. These trip patterns have the potential to fundamentally transform travel patterns in Hamilton, and the future local transit network needs to take them into account.

A foundational component to maximizing interregional connectivity, the concept network design requires shifting of the downtown transit focal point from Frank A. Cooke Transit Terminal (on MacNab between King Street and Main Street) northward to West Harbour GO Station. This shift offers several advantages:

- Greater GO Connectivity: By having most of the routes that currently terminate at Frank A. Cooke Transit Terminal terminate at West Harbour GO Station instead, it offers significantly more Hamiltonians a one-seat ride to connect to GO Train service. Currently, non-Route 20 A-Line customers coming from the Mountain need to transfer to either Route 4 Bayfront or Route 20 A-Line to reach West Harbour GO. Under the Rail Ready network configuration, 9 of the 12 north-south Mountain routes will make a direct connection to the West Harbour GO station, as well as routes from Ancaster and the Stoney Creek Mountain

- Greater Operational Flexibility: The current location of the HSR's downtown terminal creates operational vulnerabilities. Should the intersections of King & James or Main & James be closed, Frank A. Cooke Transit Terminal effectively becomes inaccessible. Due to the fact that this operates as the end-of-line location for nearly all of the routes that use it, such closures have a significant impact on HSR operations. By contrast, relocating this end-of-line to West Harbour GO turns King & James and Main & James into pass-through intersections, which can be more easily detoured from in the event of issues. Connection to the LRT can instead be made either at King & Queen or King & Wellington/Victoria, providing enhanced operational flexibility

- Redevelopment of Frank A. Cooke Transit Terminal Lands: The shift to West Harbour would replace Frank A. Cooke Transit Terminal as the primary downtown transit hub, allowing those City-owned lands to be redeveloped. Given the central location of these lands, redevelopment could present a significant city-building opportunity for the City.

Infrastructure Requirements

Hubs & End-of-Lines

The majority of the planned hubs within the concept network are located within or immediately adjacent to locations identified as Nodes or Employment Areas in the City of Hamilton's Official Plan (Schedule E – Urban Structure). The clustering of multiple transit routes at hubs in the immediate vicinity of these locations supports the City's vision for these nodes.

Section 5.1.9 of the City of Hamilton Official Plan states that the City supports "the development of Employment Areas which are transit-supportive with reduced surface parking", while Section 5.1.10 of the Official Plan states that these areas "be easily accessible with a high degree of connectivity between all modes of transportation such as transit, active transportation, and automobiles."

New Terminals, Gateways, and Loops include:

- Ancaster Gateway: Located immediately adjacent to an Employment Area as identified in the City's Official Plan Schedule E

- Centre on Barton Terminal: Located within a Community Node as identified in the City's Official Plan Schedule E

- CF Lime Ridge Terminal: Located within a Sub Regional Service Node, and Multi-Modal Hub as identified in the City's Official Plan Schedule E

- Downtown Dundas Terminal: Located within a Community Node as identified in the City's Official Plan Schedule E

- Elfrida Gateway: Located at the intersection of two Secondary Corridors and within a designated Urban Expansion Area

- Gage Park Lay-By: Located immediately adjacent to a City-Wide Park as identified in the City's Official Plan Appendix A

- McMaster University Terminal: Located within a Major Activity Centre, and Multi-Modal Hub as identified in the City's Official Plan Schedule E

- Parkdale Terminal: Located immediately adjacent to a Community Park as identified in the City's Official Plan Appendix A, and a future Major Transit Station Area – LRT Station as identified in Appendix B

- Scott Park Lay-By: Located immediately adjacent to a future Majority Transit Station Area – LRT Station as identified in the City's Official Plan Appendix B

- Upper Sherman Loop: Located immediately north of a designated Urban Expansion Area as identified in the City's Official Plan Schedule H

- Waterdown Gateway: Located immediately adjacent to an Employment Area as identified in the City's Official Plan Schedule E

- West Harbour GO Terminal: Located within a Major Transit Station Area as identified in the City's Official Plan Appendix B

- Winona Crossing: Located on a Secondary Corridor and immediately adjacent to an identified Employment Area as identified in the City's Official Plan Schedule E

Existing Terminals, Gateways, and Loops to be upgraded include:

- Confederation GO Terminal: Located within a Major Transit Station Area as identified in the City's Official Plan Appendix B

- Eastgate Terminal: Located within a Sub Regional Service Node, and Multi-Modal Hub as identified in the City's Official Plan Appendix B

- Meadowlands Terminal: Located within a Community Node

- Hamilton Airport: Located within the Hamilton Airport zone and the Airport Employment Growth District (AEGD)

- Stoney Creek Gateway: Located near a Secondary Corridor as identified in the City's Official Plan Appendix B

On-Street Stops

In addition to larger terminal infrastructure, numerous landing pads will be required for on-street stops. New on-street stop infrastructure may be required for several reasons:

- Service has been added to a corridor that did not previously have it. For example, Queen Street north of King will see the introduction of Route 29 Garth, where there is currently no HSR service

- A stop on an existing route is not in compliance with the Accessibility for Ontarians with Disabilities Act (AODA). Upgrades of this type are typically carried out through City roadway reconstruction projects, or through the HSR's annual Landing Pad Program

- Routing changes require stop relocations at intersections. For example, if a route previously passed straight through an intersection on a multi-lane road, a near-side stop would be sufficient. However, if the new routing now has the bus make a left turn, the stop will need to be relocated to accommodate that turning movement

Enabling Two-Way Conversions

To fully accommodate the proposed bus movements and proposed routings, in addition to the two-way conversions already approved by Council (Main Street, Wilson Street, Sherman Avenue), future two-way conversion of the following road segments will be required to achieve full implementation of the Rail Ready transit network:

- Queen Street North between King Street West and Barton Street West
- Victoria Avenue South between Young Street and Stinson Street

James Street Corridor

James Street is a Provincially designated rapid transit corridor as part of the Metrolinx Regional Transportation Plan, as well as a Primary Corridor in Schedule E of the City of

Hamilton's Official Plan. The Rail Ready transit network significantly increases the frequency of transit vehicles on James Street, particularly in the northbound direction.

The proposed frequency would require transit priority measures such as dedicated transit lanes and/or transit signal priority and would not be feasible with the current lane configuration of James Street. Through consultation with other City departments, the HSR is investigating the potential for such measures as part of a larger-scale reimagining of James Street. These measures are outside the scope of the (Re)envision project and will need to be addressed independently.

A detailed map of the Rail Ready routes along James Street can be found in Figure 7 of Appendix "A" attached to Report PW23021.

Community Highlights

This section details the network configuration and relevant network design features for each area of the City.

Ancaster

With the Meadowlands Terminal on the eastern edge and the Ancaster Gateway on the western edge, transit service in Ancaster has been significantly improved in the Rail Ready transit network. The addition of a myRide on-demand transit zone increases coverage and provides transit service over the entire HSR service span, not just peak periods as with the current Route 16 Ancaster. A new Route 71 Ancaster Wilson along Wilson Street will provide a direct connection between Ancaster, McMaster University, and West Harbour GO Terminal.

- Hubs:
    - Ancaster Gateway
    - Meadowlands Terminal

- Rapid Routes:
    - 30 S-Line: Ancaster Gateway to Parkdale Terminal via the Ancaster Business Park, Garner Road, Rymal Road, Heritage Greene Terminal, and the Red Hill Valley Parkway
    - 50 T-Line: Downtown Dundas Terminal to Heritage Greene Terminal via Cootes Drive, McMaster University Terminal & LRT Station, Main Street West, Wilson Street, Golf Links Road, Meadowlands Terminal, Mohawk Road, CF Lime Ridge Terminal, and Heritage Greene Terminal

- Core Routes:
  - 21 Upper Paradise: Meadowlands Terminal to West Harbour GO Terminal via Meadowlands Boulevard, Raymond Road, Rymal Road West, Upper Paradise Road, Mohawk College Terminal, and Downtown Hamilton
  - 71 Ancaster Wilson: Ancaster Gateway to West Harbour GO via the Ancaster Business Park, Wilson Street, Main Street West, McMaster University Terminal & LRT Station, and Barton Street West

- Local Routes:
  - 36 Rymal: Meadowlands Terminal to Elfrida Gateway, via Meadowlands Boulevard, Stonehenge Drive, Redeemer College University, Rymal Road, Heritage Greene Terminal, and Highland Road West

- myRide On-Demand
  - Services all of the corridors currently serviced by Route 16 Ancaster
  - Adds new corridors like Southcote Road, John Frederick Drive, and Hamilton Drive

Dundas

The centrepiece of the Rail Ready transit network for Dundas is the addition of a new Downtown Dundas Terminal. Envisioned to be in the vicinity of Memorial Square, the new terminal will serve as a transit focal point for the community.

- Hubs:
  - Downtown Dundas Terminal
  - McMaster University Terminal (just outside of Dundas)

- Rapid Routes:
  - 50 T-Line: Downtown Dundas Terminal to Heritage Greene Terminal via Cootes Drive, McMaster University Terminal & LRT Station, Main Street West, Wilson Street, Golf Links Road, Meadowlands Terminal, Mohawk Road, CF Lime Ridge Terminal, and Heritage Greene Terminal

- Core Routes:
  - None

- Local Routes:
  - 51 University: Governors & Pirie to Hamilton GO Centre via Governors Road, Downtown Dundas Terminal, Ogilvie Drive, South Street, Osler Drive, Whitney Avenue, Emerson Street, McMaster University LRT Station, Westdale Village, and Main Street West

- myRide On-Demand
    - Services all of the corridors currently serviced by Route 52A Dundas Local
    - Adds new corridors like Creighton Road and Osler Drive
    - Replaces fixed-route service to Head Street with myRide

Glanbrook

Transit service in Glanbrook focuses primarily on the A-Line corridor. Due to the Urban Transit Area not being aligned with the City's Urban Boundary, urban areas of the City like Binbrook fall within the Urban Boundary, but outside of the Urban Transit Area. As a result, service to those areas cannot be provided. Recommendations c) and d) vi) of this report would permit the exploration of aligning these two boundaries, thereby permitting transit service in areas like Binbrook.

- Hubs:
    - Mountain Transit Centre

- Rapid Routes:
    - 20 A-Line: Hamilton Airport to Pier 8 Waterfront via Airport Road, Upper James Street, Aeropark Drive, Mountain Transit Centre, Mohawk College Terminal, James Street, Downtown Hamilton, and West Harbour GO

- Core Routes:
    - 28 West 5th: Mountain Transit Centre to West Harbour GO via Upper James, Twenty Road, Garth Street, Rymal Road, West 5th Street, Mohawk College, and James Street
    - 29 Garth: Mountain Transit Centre to West Harbour GO via Glancaster Road, Twenty Road, Garth Street, and Queen Street
    - 41 Red Hill: Glover Road to Parkdale Terminal & LRT Station via Twenty Road, Dartnall Road, Nebo Road, Stone Church Road, Heritage Greene Terminal, and the Red Hill Valley Parkway

- Local Routes:
    - None

- myRide On-Demand
    - Replaces TransCab in Mount Hope
    - Will be expanded to encompass the AEGD as it develops

Hamilton Lower City

Transit service in the lower City is centred around the Hamilton LRT. While there is no local transit service along King Street, the local demand on that corridor is served by

two-way service on Main Street and Wilson Street, which parallel the LRT corridor. Routes 8 Central and 9 Rosedale operate in a 'zig-zag' pattern across the lower city, connecting with the LRT at most stations.

Routes 3 Wilson and 4 Main operate north and south of the LRT corridor, respectively, before crossing at Ottawa Street and servicing the opposite side of the corridor. This cross pattern allows customers travelling parallel to the LRT corridor a transfer opportunity onto the LRT at Ottawa station.

The two major north-south axes in the lower city are James Street and Kenilworth Avenue. James Street has been covered in a previous section in this report. Kenilworth Avenue was included as a BLAST corridor in the original 2007 plan and has been retained as such in Rail Ready.

- Hubs:
    - Centre Mall Terminal
    - Hamilton GO Centre
    - Parkdale Terminal
    - West Harbour GO Terminal

- Rapid Routes:
    - Hamilton LRT: McMaster University Station to Eastgate Square Station, via Main Street West, King Street, Main Street East, and Queenston Road
    - 20 A-Line: Hamilton Airport to Pier 8 Waterfront via Airport Road, Upper James Street, Aeropark Drive, Mountain Transit Centre, Mohawk College Terminal, James Street, Downtown Hamilton, and West Harbour GO
    - 60 L-Line: Waterdown Gateway to Centre Mall via Highway 6, Highway 403, York Boulevard, James Street, Downtown Hamilton, Mohawk College, Upper James Street, Mohawk Road East, CF Lime Ridge Terminal, Upper Ottawa Street, and Kenilworth Avenue
    - 60A L-Line: West Harbour GO to Centre Mall via James Street, Downtown Hamilton, Mohawk College, Upper James Street, Mohawk Road East, CF Lime Ridge Terminal, Upper Ottawa Street, and Kenilworth Avenue

- Core Routes:
    - 2 Barton: Hillcrest Loop to Eastgate Square via Dundurn Street, York Blvd, Locke Street, Barton Street West, West Harbour GO, Barton Street East, Centennial Parkway
    - 8 Central: Hamilton GO Centre to Scott Park LRT Station via Bay Street, Charlton Avenue, Stinson Street, Wentworth Street, Wentworth LRT Station, Burlington Street, Birch Avenue, Sherman Avenue, Sherman LRT Station, Cumberland Avenue, and Gage Avenue

  - 9 Rosedale: Scott Park LRT Station to Parkdale Terminal & LRT Station via Cannon Street, Gage Avenue, Burlington Street, Industrial Street, Kenilworth Avenue, Centre Mall Terminal, Kenilworth LRT Station, Kimberly Drive, Greenhill Avenue, Cochrane Road, King Street East, and Parkdale Avenue
  - 27 Upper James: Mountain Transit Centre to Pier 8 Waterfront via Glanair Drive, Aeropark Drive, Upper James Street, Claremont Access, Victoria Avenue, Wellington Street, and Burlington Street
  - 29 Garth: Mountain Transit Centre to West Harbour GO via Glancaster Road, Twenty Road, Garth Street, and Queen Street
  - 71 Ancaster Wilson: Ancaster Fairgrounds Gateway to West Harbour GO via the Ancaster Business Park, Wilson Street, Main Street West, McMaster University Terminal & LRT Station, and Barton Street West
  - Mountain Routes that use James St to West Harbour GO Terminal:
    - 21 Upper Paradise, 23 Upper Gage, 24 Upper Sherman, 25 Upper Wentworth, 26 Upper Wellington, 28 West 5th

- Local Routes:
  - 1 Bayfront: Hamilton GO Centre to Heritage Greene Terminal via James Street, West Harbour GO, Burlington Street, Parkdale Avenue, King Street, Mount Albion Road, Greenhill Avenue, Red Hill Valley Parkway, and Paramount Drive
  - 3 Wilson: Hamilton GO Centre to Mount Albion Loop via Wilson Street, Sherman Avenue, Cannon Street, Ottawa Street, Ottawa LRT Station, King Street East, Nash Road, Queenston Road, Eastgate Terminal & LRT Station, Centennial Parkway, Greenhill Avenue, and Mount Albion Road
  - 4 Main: Hamilton GO Centre to Parkdale Terminal & LRT Station via Main Street East, Ottawa Street, Ottawa LRT Station, Cannon Street, Britannia Avenue, Strathearne Avenue, Roxborough Avenue, Reid Avenue, Queenston Road
  - 5 Queenston: Gage Park Lay-by to Stoney Creek Gateway via Ottawa Street, Lawrence Road, Gage Avenue, Main Street East, Queenston Road, and Highway 8
  - 6 Longwood: West Hamilton Loop to Princess Point Loop via Main Street West, Whitney Avenue, Emerson Street, McMaster University LRT Station, University Avenue, Sterling Street, King Street West, Longwood Road, and Macklin Road
  - 7 Locke: Princess Point Loop to Strathcona Loop via Macklin Street, Longwood Road, Aberdeen Avenue, Locke Street, Main Street West, James Street, Cannon Street West, York Boulevard, Locke Street, and Strathcona Avenue
  - 11 Nash: Mount Albion Loop to Parkdale & Mead via Mount Albion Road, Greenhill Avenue, Quigley Road, Nash Road, Nash LRT Station, Bancroft

Street, Centennial Parkway, Confederation GO, Barton Street, Woodward Avenue, Glow Avenue, Brighton Avenue, and Mead Avenue
    - 51 University: Governors & Pirie to Hamilton GO Centre via Governors Road, Downtown Dundas Terminal, Ogilvie Drive, South Street, Osler Drive, Whitney Avenue, Emerson Street, McMaster University LRT Station, Westdale Village, and Main Street West

- myRide On-Demand
    - None

Hamilton Mountain

The grid across the Mountain in the current HSR network remains largely intact in the Rail Ready network. Centred around hubs at Meadowlands Terminal, Mohawk College Terminal, CF Lime Ridge Terminal, and Heritage Greene Terminal, several rapid routes provide north-south and east-west connectivity across the Mountain.

- Hubs:
    - CF Lime Ridge Terminal
    - Heritage Greene Terminal
    - Meadowlands Terminal
    - Mohawk College Terminal

- Rapid Routes:
    - 20 A-Line: Hamilton Airport to Pier 8 Waterfront via Airport Road, Upper James Street, Aeropark Drive, Mountain Transit Centre, Mohawk College Terminal, James Street, Downtown Hamilton, and West Harbour GO
    - 30 S-Line: Ancaster Fairgrounds Gateway to Parkdale Terminal via the Ancaster Business Park, Garner Road, Rymal Road, Heritage Greene Terminal, and the Red Hill Valley Parkway
    - 50 T-Line: Downtown Dundas Terminal to Heritage Greene Terminal via Cootes Drive, McMaster University Terminal & LRT Station, Main Street West, Wilson Street, Golf Links Road, Meadowlands Terminal, Mohawk Road, CF Lime Ridge Terminal, and Heritage Greene Terminal
    - 60 L-Line: Waterdown Gateway to Centre Mall via Highway 6, Highway 403, York Boulevard, James Street, Downtown Hamilton, Mohawk College, Upper James Street, Mohawk Road East, CF Lime Ridge Terminal, Upper Ottawa Street, and Kenilworth Avenue
    - 60A L-Line: West Harbour GO to Centre Mall via James Street, Downtown Hamilton, Mohawk College, Upper James Street, Mohawk Road East, CF Lime Ridge Terminal, Upper Ottawa Street, and Kenilworth Avenue

- Core Routes:
    - 21 Upper Paradise: Meadowlands Terminal to West Harbour GO Terminal via Meadowlands Boulevard, Raymond Road, Rymal Road, Upper Paradise Road, Scenic Drive, Fennell Avenue, Mohawk College Terminal, West 5th Street, and James Street
    - 22 Upper Ottawa: Upper Ottawa & Rymal to Industrial & Depew via Upper Ottawa Street, Mountain Brow Boulevard, Kenilworth Avenue, King Street East, Ottawa Street, Ottawa LRT Station, Industrial Drive, Gage Avenue, and Beach Road
    - 23 Upper Gage: Upper Sherman Loop to West Harbour GO via Upper Sherman Avenue, Rymal Road, Upper Gage Avenue, Concession Street, Jolley Cut, James Street, and Downtown Hamilton
    - 24 Upper Sherman: Upper Sherman Loop to West Harbour GO via Upper Sherman Avenue, Limeridge Road, CF Lime Ridge Terminal, Concession Street, Jolley Cut, James Street, and Downtown Hamilton
    - 25 Upper Wentworth: Upper Sherman Loop to West Harbour GO via Upper Sherman Avenue, Rymal Road, Upper Wentworth Street, CF Lime Ridge Terminal, Concession Street, Jolley Cut, James Street, and Downtown Hamilton
    - 26 Upper Wellington: Mountain Transit Centre to West Harbour GO via Upper James Street, Rymal Road, Upper Wellington Street, Jolley Cut, James Street, and Downtown Hamilton
    - 27 Upper James: Mountain Transit Centre to Pier 8 Waterfront via Glanair Drive, Aeropark Drive, Upper James Street, Claremont Access, Victoria Avenue, Wellington Street, and Burlington Street
    - 28 West 5th: Mountain Transit Centre to West Harbour GO via Upper James, Twenty Road, Garth Street, Rymal Road, West 5th Street, Mohawk College, and James Street
    - 29 Garth: Mountain Transit Centre to West Harbour GO via Glancaster Road, Twenty Road, Garth Street, and Queen Street
    - 32 Fennell: McMaster University Terminal & LRT Station to Parkdale Terminal & LRT Station via University Avenue, Sterling Street, King Street West, Longwood Road, Aberdeen Avenue, Charlton Street, Herkimer Street, James Street, West 5th Street, Mohawk College Terminal, Fennell Avenue, Upper Ottawa Street, Kenilworth Access, King Street East, and Parkdale Avenue
    - 35 Stone Church: Meadowlands Terminal to Valley Park Lay-by via Cloverleaf Drive, Stonehenge Drive, Stone Church Road, Upper Wentworth Street, CF Lime Ridge Terminal, Heritage Greene Terminal, and Paramount Drive
    - 41 Red Hill: Glover Rd to Parkdale Terminal & LRT Station via Twenty Road, Dartnall Road, Nebo Road, Stone Church Road, Heritage Greene Terminal, and the Red Hill Valley Parkway

- Local Routes:
    - 31 Concession: Mohawk College Terminal to Limeridge & Lennox via Fennell Avenue, Upper James Street, Inverness Avenue, Upper Wellington Street, Concession Street, Upper Gage Avenue, Fennell Avenue, Upper Kenilworth Avenue, Limeridge Road, Lennox Street, and Lockheed Drive
    - 33 Sanatorium: Meadowlands Terminal to Mohawk College Terminal via Golf Links Road, Mohawk Road, Magnolia Drive, San Remo Drive, Goulding Avenue, Scenic Drive, Redfern Drive, Chedmac Drive, Sanatorium Road, Garth Street, Limeridge Road, and West 5th Street
    - 34 Mohawk: Meadowlands Terminal to Eastgate Terminal via Golf Links, Mohawk Road, West 5th Street, Mohawk College Terminal, Mohawk Road, CF Lime Ridge Terminal, Upper Kenilworth Avenue, Limeridge Road, Pritchard Road, Stone Church Road, Heritage Greene Terminal, Paramount Drive, Gordon Drummond Avenue, Isaac Brock Drive, First Road West, Highland Road, Picardy Drive, Trafalgar Drive, Green Mountain Road, Upper Centennial Parkway, and Centennial Parkway
    - 36 Rymal: Meadowlands Terminal to Elfrida Gateway via Meadowlands Boulevard, Stonehenge Drive, Kitty Murray Lane, Redeemer College University, Garner Road, Rymal Road, Upper Red Hill Valley Parkway, Stone Church Road, Heritage Greene Terminal, Winterberry Drive, Highland Road, Highbury Drive, Whitedeer Road, and Rymal Road

- myRide On-Demand
    - None

Stoney Creek

Service in Stoney Creek has been significantly expanded in the Rail Ready transit network. The 10 B-Line East extends rapid service to Winona, while the 13 Lake provides enhanced service to the Stoney Creek Industrial area. A new myRide service extends HSR service north of the QEW, while the Elfrida Gateway provides a potential new connection point for future Binbrook transit service.

- Hubs:
    - Confederation GO Terminal
    - Eastgate Square Terminal
    - Elfrida Gateway
    - Heritage Greene Terminal
    - Stoney Creek Gateway

- Rapid Routes:
    - 10 B-Line East: Eastgate Square Terminal to Winona Crossing via Queenston Road, Highway 8, Stoney Creek Gateway, Jones Road, Barton Street, and Fifty Road
    - 40 E-Line: Heritage Greene Terminal to Confederation GO Terminal via Upper Red Hill Valley Parkway, Rymal Road, Elfrida Gateway, Upper Centennial Parkway, Centennial Parkway, and Eastgate Square Terminal

- Core Routes:
    - 12 Barton East: Eastgate Square Terminal to Stoney Creek Gateway via Centennial Parkway, Confederation Walmart, Barton Street East, and Jones Road
    - 35 Stone Church: Meadowlands Terminal to Valley Park Lay-by via Cloverleaf Drive, Stonehenge Drive, Stone Church Road, Upper Wentworth Street, CF Lime Ridge Terminal, Heritage Greene Terminal, and Paramount Drive
    - 61 Beach: Eastgate Square Terminal to Burlington GO via Centennial Parkway, Van Wagners Beach Road, Beach Boulevard, Canada Centre for Inland Waters, Lakeshore Road, Downtown Burlington Terminal, Brant Street, and Fairview Street

- Local Routes:
    - 1 Bayfront: Hamilton GO Centre to Heritage Greene Terminal via James Street, West Harbour GO, Burlington Street, Parkdale Avenue, King Street, Mount Albion Road, Greenhill Avenue, Red Hill Valley Parkway, and Paramount Drive
    - 13 Lake: Eastgate Square Terminal to Arvin & McNeilly via Queenston Road, Lake Avenue, Warrington Street, Confederation Walmart, South Service Road, Grays Road, Arvin Avenue, Jones Road, South Service Road, Glover Road, McNeilly Road, and Barton Street
    - 14 Stoney Creek Gray: Eastgate Square to South Service & Green via Queenston Road, Nash Road, King Street, Grays Road, and South Service Road
    - 15 Stoney Creek Green: Eastgate Square to South Service & Green via Queenston Road, Nash Road, King Street, Green Road, and South Service Road
    - 34 Mohawk: Meadowlands Terminal to Eastgate Terminal via Golf Links, Mohawk Road, West 5th Street, Mohawk College Terminal, Mohawk Road, CF Lime Ridge Terminal, Upper Kenilworth Avenue, Limeridge Road, Pritchard Road, Stone Church Road, Heritage Greene Terminal, Paramount Drive, Gordon Drummond Avenue, Isaac Brock Drive, First Road West, Highland Road, Picardy Drive, Trafalgar Drive, Green Mountain Road, Upper Centennial Parkway, and Centennial Parkway

  - 36 Rymal: Meadowlands Terminal to Elfrida Gateway via Meadowlands Boulevard, Stonehenge Drive, Kitty Murray Lane, Redeemer College University, Garner Road, Rymal Road, Upper Red Hill Valley Parkway, Stone Church Road, Heritage Greene Terminal, Winterberry Drive, Highland Road, Highbury Drive, Whitedeer Road, and Rymal Road

- myRide On-Demand
  - New myRide service in Stoney Creek Industrial Area and Stoney Creek north of the QEW

Waterdown

In September 2021, the Transit Division launched a pilot project to introduce myRide On-Demand transit to Waterdown. In November 2022 the pilot was modified from an exclusively on-demand model to a hybrid model, where a fixed route operated through the west part of Waterdown down to Aldershot GO Station, while on-demand remained for Waterdown proper.

Since the concept network was developed prior to the implementation of the hybrid model, it shows an on-demand only configuration for most of Waterdown, with the future Dundas BRT serving the Dundas St corridor.

As the on-demand pilot continues to progress, with more data being collected every day, the future service model for Waterdown may be adjusted accordingly.

- Hubs:
  - Aldershot GO Station
  - Waterdown Gateway

- Rapid Routes:
  - 60 L-Line: Waterdown Gateway to Centre Mall via Highway 6, Highway 403, York Boulevard, James Street, Downtown Hamilton, Mohawk College, Upper James Street, Mohawk Road East, CF Lime Ridge Terminal, Upper Ottawa Street, and Kenilworth Avenue
  - Dundas BRT: A Metrolinx project along the Dundas Street corridor to connect Waterdown to Kipling subway station in Toronto via Burlington, Oakville, and Mississauga

- Core Routes:
  - None

- Local Routes:
    - None

- myRide On-Demand
    - Maintain existing myRide service area
    - Potential of maintaining current Route 18 Waterdown Mountaineer service to Aldershot GO as a fixed-route overlay to the myRide service

Out of Scope

Changes to the Urban Transit Boundary were outside of the original scope of the (Re)envision project and were therefore not included; however, the lack of synchronization between the City's Urban Boundary and the Urban Transit Boundary leaves several areas of the City within the Urban Area but outside of the Urban Transit Area. The most notable examples are Binbrook and the AEGD.

As included in recommendations c) and d) vi) of this report, bringing the Urban Transit Area into synchronicity with the Urban Boundary would allow the Transit Division to introduce transit into these growth areas at the earliest stages of development. Not only will this service increase the attractiveness of these areas as places to live or open a business, but it will help solidify transit as a transportation option while those new trip patterns are still being formed.

Integrated Accessible Transit, for future development, is out of scope of this project, which focuses on the conventional transit network. The Transit Division has submitted an application to the Investing in Canada Infrastructure Program fund to use some of Hamilton's remaining available project funds to acquire small accessible vehicles which can be used for the purpose of on-demand, shared ride connectivity between specialized transit and conventional transit at transit hubs.

Conclusion

The (re)Designed HSR Network concept represents a significant step forward for transit in Hamilton. It is a network that will fully support the Hamilton LRT, and in turn maximize the value of the investment in it. The transition to a hub-based model redistributing routes from a singular point of potential vulnerability, coupled with standardized frequencies and service operating hours, will dramatically improve transit reliability, and increase access and transit mobility for the entire City. These steps combined create opportunities to improve mobility for existing customers and attract new riders to transit by creating a network that influences mode choice.

Following public consultation, the detailed transit growth plan and corresponding implementation strategy will be presented to Council in Q1 2024. This transition will

mark the sunset of the existing 10YLTS, and will identify investment and funding requirements, both capital and operating, to support service improvements, vehicle acquisition and staffing. The plan will also incorporate details, to the extent that may be known at the time, of how the Transit Division will manage significant detours necessary through the early works and construction of the LRT.

ALTERNATIVES FOR CONSIDERATION

N/A

ALIGNMENT TO THE 2016 – 2025 STRATEGIC PLAN

Community Engagement and Participation
Hamilton has an open, transparent and accessible approach to City government that engages with and empowers all citizens to be involved in their community

Economic Prosperity and Growth
Hamilton has a prosperous and diverse local economy where people have opportunities to grow and develop.

Culture and Diversity
Hamilton is a thriving, vibrant place for arts, culture, and heritage where diversity and inclusivity are embraced and celebrated.

Our People and Performance
Hamiltonians have a high level of trust and confidence in their City government.

APPENDICES AND SCHEDULES ATTACHED

Appendix “A” to Report PW23021 - Referenced Tables, Graphics, and Maps

Appendix “B” to Report PW23021 - McMaster University Technical Report “Proposed Network Reconfiguration for Hamilton Street Railway (HSR)”

Appendix A: (Re)envision the HSR – the (re)Designed HSR Network

Figure 1: Approved BLAST Network

Figure 2: Proposed Rapid Network

Figure 3: Population within 800m of Existing Rapid Network

Figure 4: Population within 800m of Approved BLAST Network

Figure 5: Population within 800m of Proposed Rapid Network

Figure 6: LRT Connectivity – Current vs Proposed Network

Figure 7: Proposed Rapid Ready Routes on James St

Figure 8: Rail Ready Network Map

Figure 1: Approved BLAST Network

Figure 2: Proposed Rapid Network

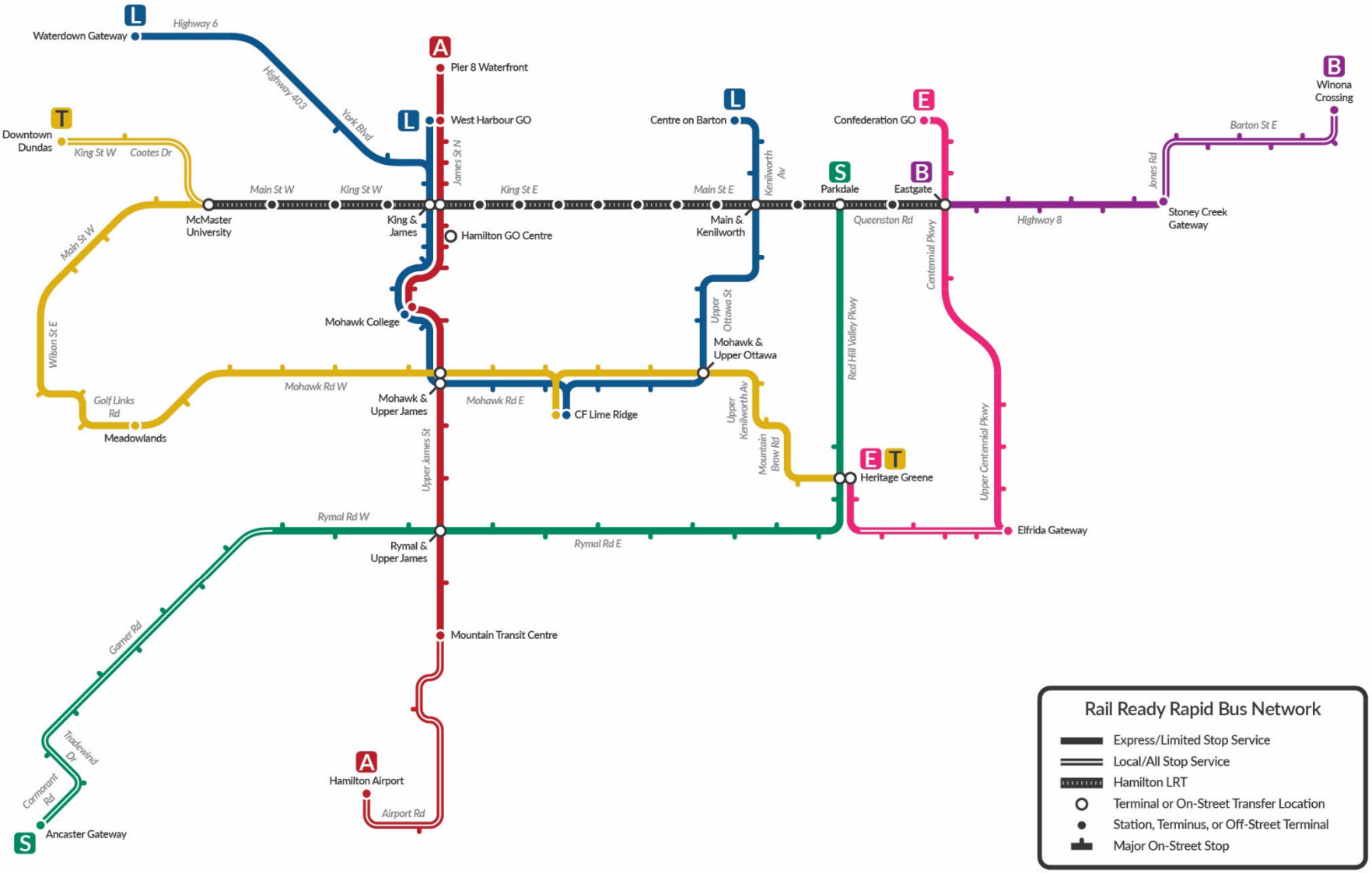

Figure 3: Population within 800m of Existing Rapid Network

144,900 People

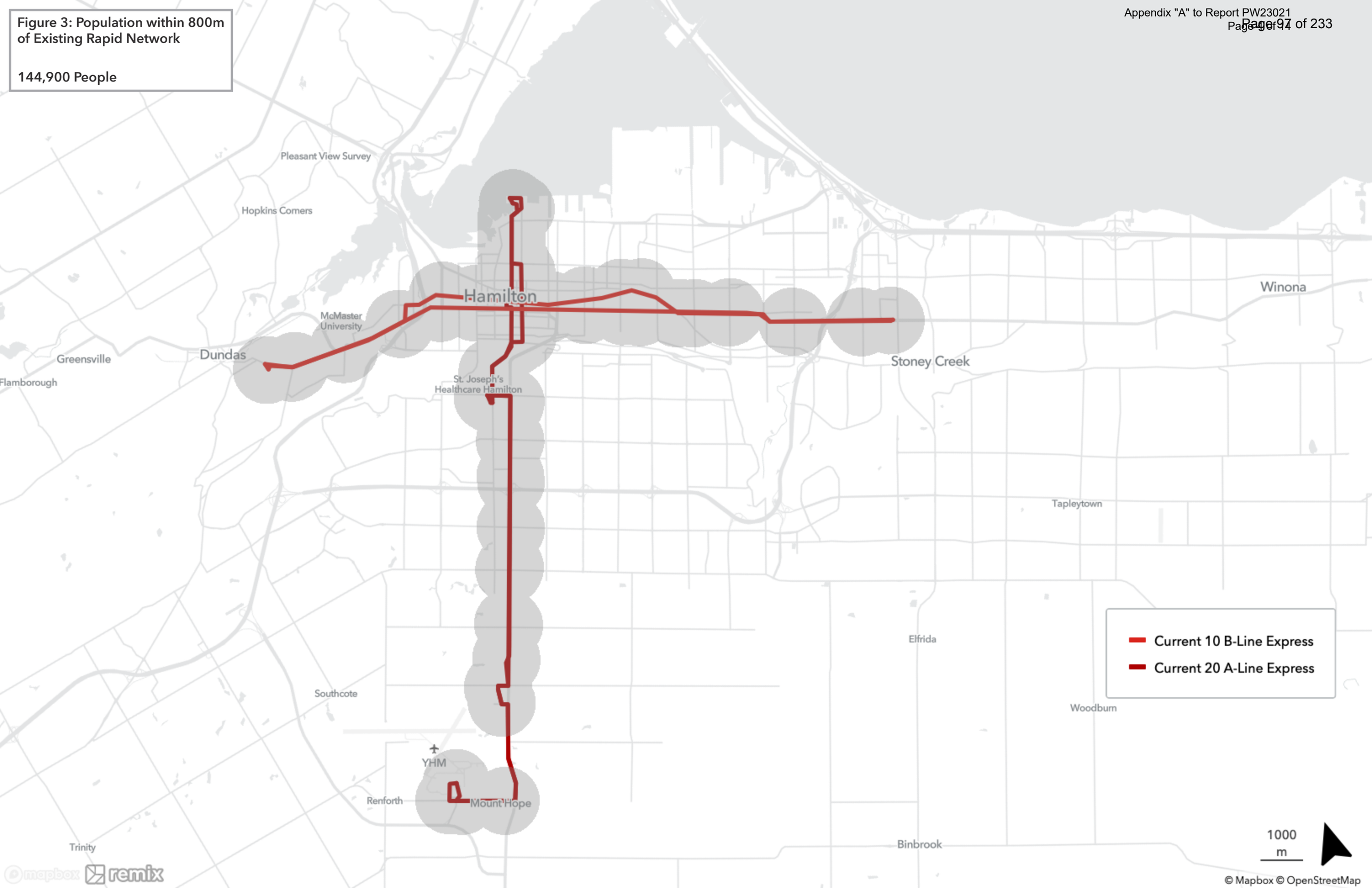

Figure 4: Population within 800m of Approved BLAST Network

251,600 People

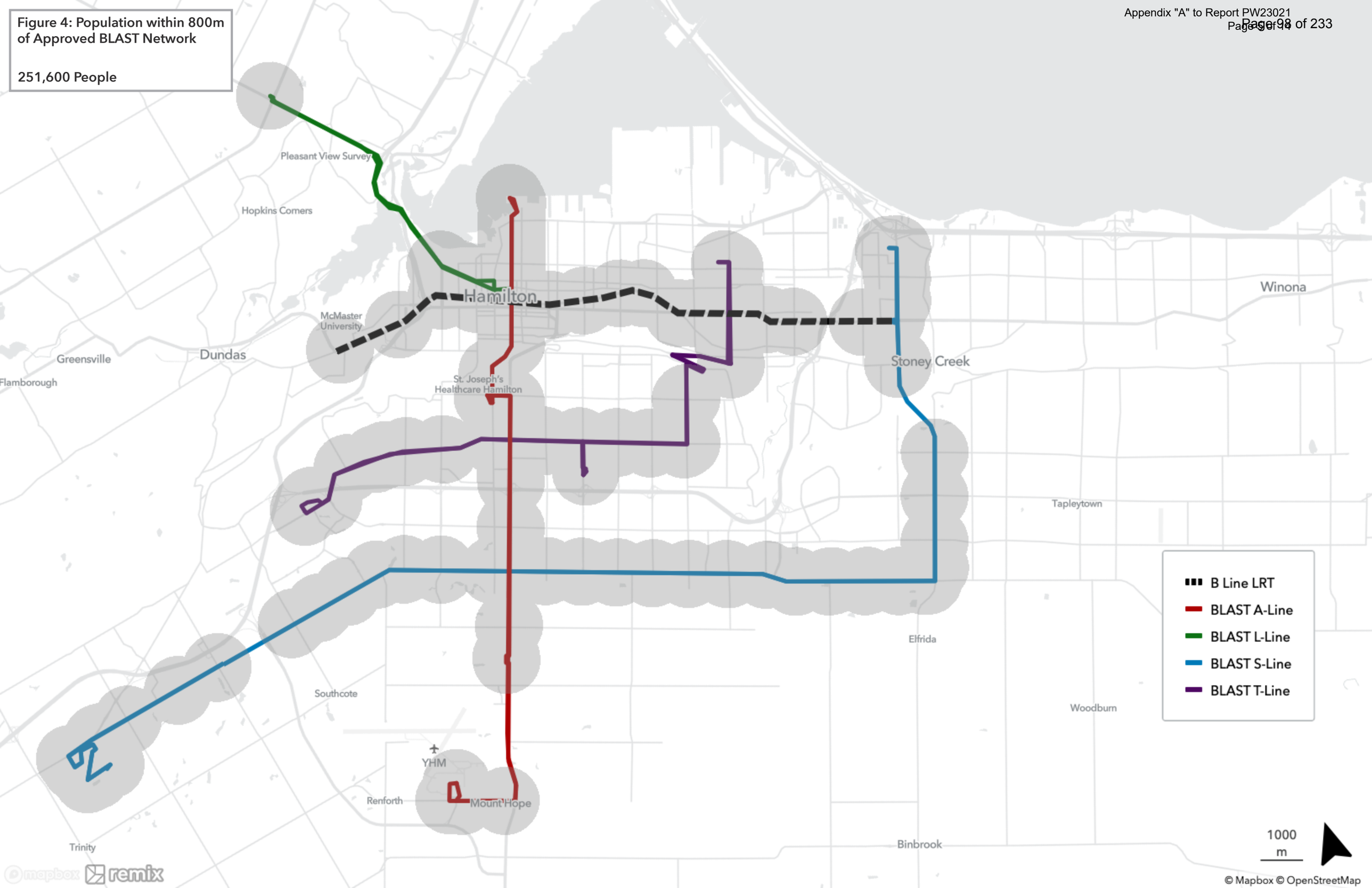

Figure 5: Population within 800m of Proposed Rapid Network

309,000 People

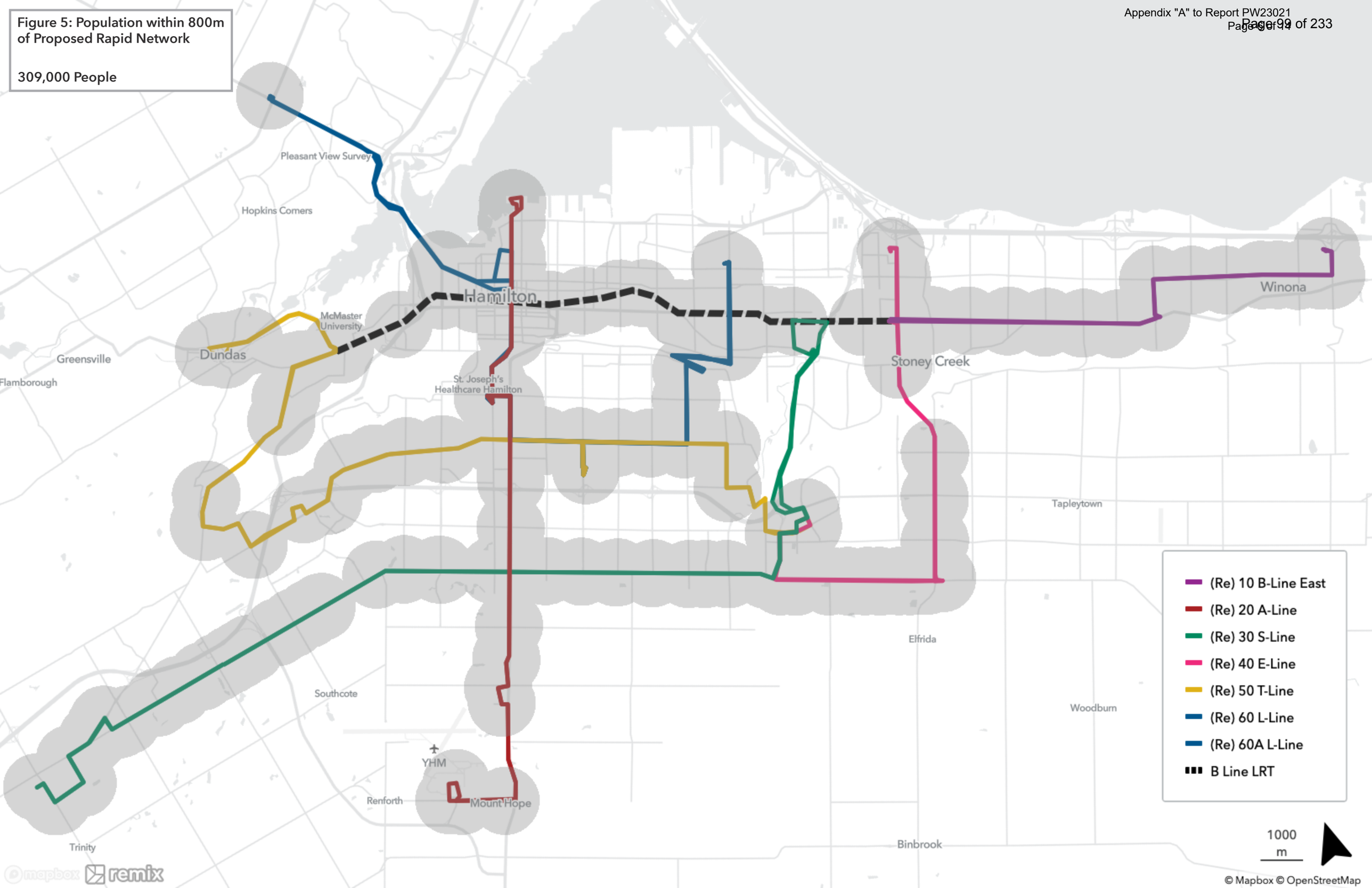

Figure 6: LRT Connectivity – Current vs Proposed Network

LRT Stop	Existing Transit Network		Proposed Rail Ready Transit Network	
	Direct Connection (<50m)	Indirect Connection (50-150m)	Direct Connection (<50m)	Indirect Connection (50-300m)
McMaster University	**1A King** **5/5E/52 Delaware** **5A/5C Delaware** **10 B-Line** **51 University**		**6 Longwood** **32 Fennell** **50 T-Line** **51 University** **71 Ancaster Wilson** **Dundas myRide**	
Longwood	1A King (EB) 5/5E/52 Delaware **5A/5C Delaware (EB)** **6 Aberdeen** 10 B-Line 51 University (EB)		**7 Locke** **32 Fennell** 71 Ancaster Wilson	
Dundurn	1A King (WB) 5/5A/5C/5E/52 Delaware (WB) 10 B-Line (WB) 51 University (WB)	1A King (EB) 5/5A/5C/5E/52 Delaware (EB) 10 B-Line (EB) 51 University (EB)	**2 Barton** 51 University (WB) **71 Ancaster Wilson**	51 University (EB)
Queen	1A King (WB) 5/5A/5C/5E/52 Delaware (WB) 10 B-Line (WB) 51 University (WB)	1A King (EB) 5/5A/5C/5E/52 Delaware (EB) 7 Locke (EB) 10 B-Line (EB) 51 University (EB)	**29 Garth**	51 University
James	1A King (WB) 5/5A/5C/5E/52 Delaware (WB)		**1 Bayfront** 3 Wilson (WB) **7 Locke**	**8 Central**

	10 B-Line (WB) **20 A-Line** **21 Upper Kenilworth** **22 Upper Ottawa** **23 Upper Gage** **24 Upper Sherman** **25 Upper Wentworth** **26 Upper Wellington** **27 Upper James** **33 Sanatorium** **35 College** 51 University (WB)		**20 A-Line** **21 Upper Paradise** **23 Upper Gage** **24 Upper Sherman** **25 Upper Wentworth** **26 Upper Wellington** **28 West 5th** **60/60A L-Line**	
Mary	1/1A King (WB) 10 B-Line (WB)	1/1A King (WB) 5/5A/5C/5E/52 Delaware (EB) 10 B-Line (WB)		4 Main
Wellington	1/1A King (WB) 10 B-Line (WB)	1/1A King (WB) 5/5A/5C/5E/52 Delaware (EB) 10 B-Line (WB) **12 Wentworth (NB)**	**27 Upper James (SB)**	4 Main **27 Upper James (NB)**
Wentworth	1/1A King (WB) 10 B-Line (WB) **12 Wentworth (SB)**	1/1A King (WB) 5/5A/5C/5E/52 Delaware 10 B-Line (WB)	**8 Central**	
Sherman	1/1A King (WB) 10 B-Line (WB)	1/1A King (WB) 10 B-Line (WB)	**8 Central**	3 Wilson
Scott Park	1/1A King (WB) 10 B-Line (WB)	1/1A King (WB) 3 Cannon 10 B-Line (WB)	**8 Central** **9 Rosedale**	
Gage Park	1/1A King 10 B-Line		4 Main 5 Queenston (EB)	

Ottawa	1/1A King 10 B-Line **41/41A Mohawk**		**3 Wilson** **4 Main** 5 Queenston **22 Upper Ottawa**	
Kenilworth	1/1A King 10 B-Line **41/41A Mohawk**		5 Queenston **9 Rosedale** **60/60A L-Line**	
Queenston	1/1A King 10 B-Line		5 Queenston	
Parkdale	1/1A King 10 B-Line **11 Parkdale**		**1 Bayfront** **4 Main** 5 Queenston **9 Rosedale** **30 S-Line** **32 Fennell** **41 Red Hill**	
Nash	1/1A King 10 B-Line **4 Bayfront**		**3 Wilson** 5 Queenston **11 Nash**	
Eastgate Square	1/1A King 10 B-Line **44 Rymal** **55/55A Stoney Creek Central** **56 Centennial** **58 Stoney Creek Local**		**2 Barton** **3 Wilson** **5 Queenston** **10 B-Line East** **12 Barton East** **13 Lake** **14 Stoney Creek Gray** **15 Stoney Creek Green** **34 Mohawk** **40 E-Line** **61 Beach**	

Bold and Underline indicates routes that cross or extend beyond the LRT corridor

Not Bold indicates routes that run parallel to or on the LRT corridor

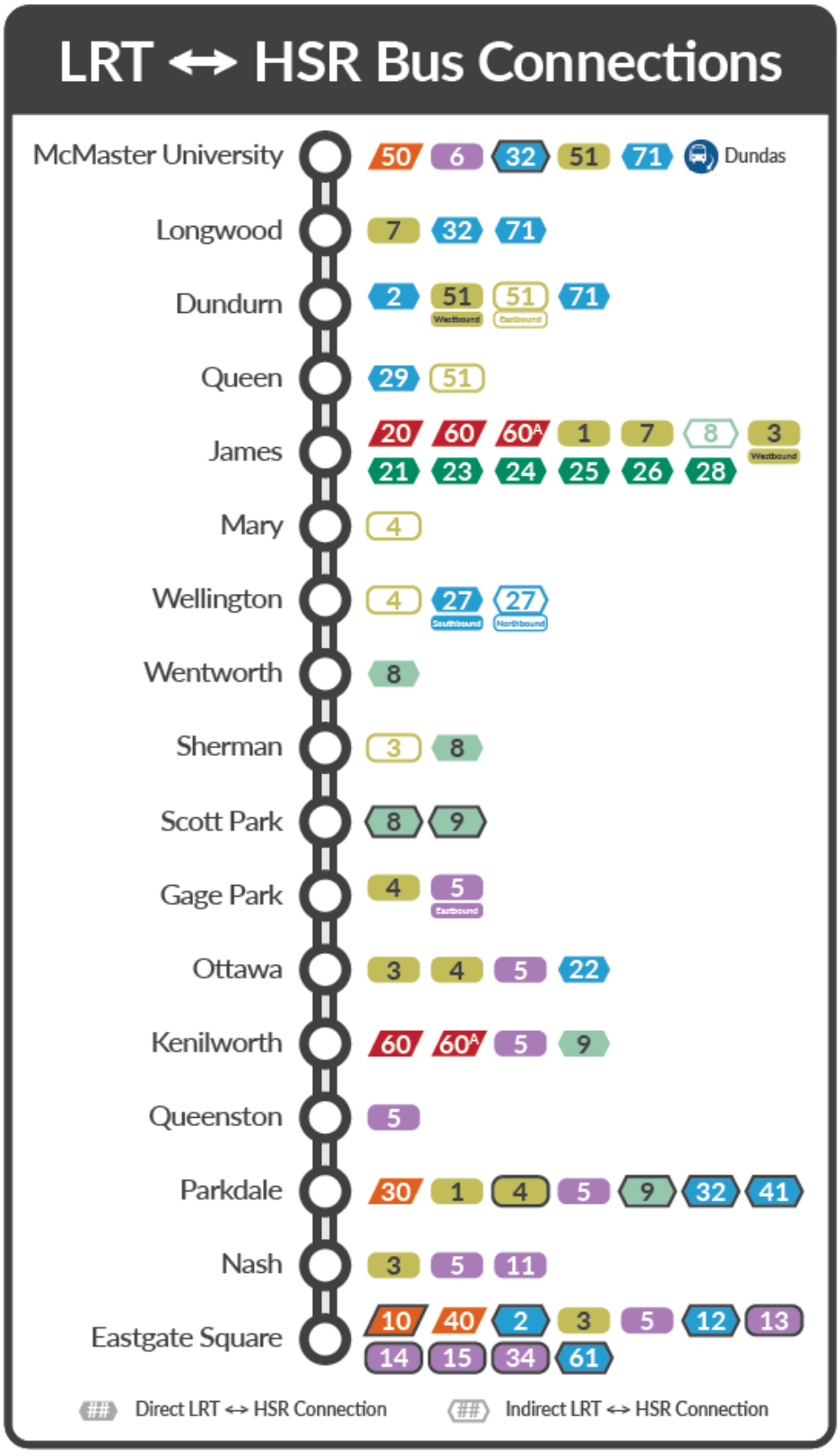
LRT ↔ HSR Bus Connections
McMaster University
50 6 32 51 71 Dundas
Longwood
7 32 71
Dundurn
2 51 Westbound 51 Eastbound 71
Queen
29 51
James
20 60 60A 1 7 8 3 Westbound
21 23 24 25 26 28
Mary
4
Wellington
4 27 Southbound 27 Northbound
Wentworth
8
Sherman
3 8
Scott Park
8 9
Gage Park
4 5 Eastbound
Ottawa
3 4 5 22
Kenilworth
60 60A 5 9
Queenston
5
Parkdale
30 1 4 5 9 32 41
Nash
3 5 11
Eastgate Square
10 40 2 3 5 12 13
14 15 34 61
Direct LRT ↔ HSR Connection
Indirect LRT ↔ HSR Connection

Figure 7: Proposed Rapid Ready Routes on James St

Figure 8: Rail Ready Network Map


Draft (Re)Envision Transit Network - Rail Ready
LRT Opening Day Planning Horizon - For Public Consultation
Downtown Dundas
Inset Pending Final Terminal Design
McMaster University
Inset Pending Final Terminal Design
Mohawk College
Insert Pending Final Terminal Stop Assignments
West Harbour GO
Insert Pending Final Terminal Design
Downtown Hamilton
Heritage Greene
Inset Pending Final Terminal Stop Assignments
Eastgate Square
Inset Pending Final Terminal Design
Meadowlands
Inset Pending Final Terminal Design
CF Lime Ridge
Inset Pending Final Terminal Design
Lake Ontario
Burlington Bay
LRT ↔ HSR Bus Connections
McMaster University
Longwood
Dundurn
Queen
James
Mary
Wellington
Wentworth
Sherman
Scott Park
Gage Park
Ottawa
Kenilworth
Queenston
Parkdale
Nash
Eastgate Square
Dundas
Westbound
Eastbound
Direct LRT ↔ HSR Connection
Indirect LRT ↔ HSR Connection
Route Type
Goes Downtown
Does Not Go Downtown
Rapid (Limited Stop)
Rapid (All Stop)
Core
Feeder
Local
Hamilton LRT
Flexible Trip Options
Limited Trip Options
MyRide On-Demand
Flexible Trip Options: Customers beginning their trips on these corridors may travel between any two stops within their MyRide On-Demand Transit zone.
Limited Trip Options: Customers beginning their trips on these corridors may only travel between select stops within their MyRide On-Demand Transit zone, as fixed route options may exist.
Frequency (Peak Periods)
<10 Minutes
10 Minutes
15 Minutes
20 Minutes
Peak Periods: Weekdays 7:00-10:00 AM, 3:00-8:00 PM
Frequencies at other times may differ
Other Transit
Terminal
Rapid Stop
MyRide ↔ Fixed Route Connection Point
GO Transit
Other Rail
Burlington Transit
Routing to be Determined
One-Way Service
Dundas BRT
Operator to be Determined
Symbology
Residential
Commercial
Industrial
Agricultural
Parks & Recreation
Open Space
Municipal
Post-Secondary Institution
Municipal Service Centre
Police Station
Fire Station
Hospital
Community or Recreation Centre
Public Library
High School (Public or Catholic)
1 Bayfront
Hamilton GO Centre to Heritage Greene
via Burlington St, Parkdale, Red Hill Valley Pkwy
2 Barton
Hillcrest Loop to Eastgate Station
via Dundurn, Barton St W, West Harbour GO, Barton St E
3 Wilson
Hamilton GO Centre to Mount Albion Loop
via Wilson, King, Eastgate, Greenhill
4 Main
Hamilton GO Centre to Parkdale Station
via Main, Cannon, & Roxborough
5 Queenston
Gage Park to Stoney Creek Gateway
via Main, Queenston, Highway 8
6 Longwood
West Hamilton Loop to Princess Point Loop
via McMaster University, King
7 Locke
Princess Point Loop to Strathcona Loop
via Longwood, Locke, Downtown, York Blvd
8 Central
Hamilton GO Centre to Scott Park Station
via Charlton, Wentworth, Sherman, Cumberland, & Gage
9 Rosedale
Scott Park Station to Parkdale Station
via Gage, Burlington, Kenilworth, Cochrane, & Parkdale
10 B Line East
Eastgate Station to Winona Ccrossing
via Highway 8, Jones, & Barton
11 Nash
Mount Albion Loop to Parkdale at Mead
via Quigley, Nash, Confederation GO, Barton, Woodward
12 Barton East
Eastgate Station to Stoney Creek Gateway
via Centennial, Confederation Walmart, Barton, Jones
13 Lake
Eastgate Station to McNeilly
via Lake, Confederation Walmart, South Service, Arvin
14 Stoney Creek Gray
Eastgate Station to South Service at Green
via Nash, King, Gray, South Service
15 Stoney Creek Green
Eastgate Station to South Service at Green
via Nash, King, Green, Arvin, Millen, South Service
20 A Line
Pier 8 to Hamilton Airport
via West Harbour GO, Downtown, Mohawk College
21 Upper Paradise
West Harbour GO to Meadowlands
via Downtown, West 5th Access, Mohawk College
22 Upper Ottawa
Industrial at Depew to Upper Ottawa at Rymal
via Ottawa, Kenilworth Access, Upper Ottawa, Nebo
23 Upper Gage
West Harbour GO to Upper Sherman Loop
via Downtown, Jolley Cut, Concession, Upper Gage, Rymal
24 Upper Sherman
West Harbour GO to Upper Sherman Loop
via Downtown, Jolley Cut, Upper Sherman, CF Lime Ridge
25 Upper Wentworth
West Harbour GO to Upper Sherman Loop
via Downtown, Jolley Cut, Upper Wentworth, CF Lime Ridge
26 Upper Wellington
West Harbour GO to Mountain Transit Centre
via Downtown, Jolley Cut, Upper Wellington, Upper James
27 Upper James
Pier 8 to Mountain Transit Centre
via Wellington (SB) & Victoria (NB), Claremont Access, Aeropark
28 West 5th
West Harbour GO to Mountain Transit Centre
via Downtown, Mohawk College, West 5th, Garth, Twenty Rd
29 Garth
West Harbour GO to Glancaster Loop
via Queen, Garth, Twenty Rd, Glancaster
30 S Line
Ancaster Gateway to Parkdale Station
via Ancaster Business Park, Garner, Rymal, Heritage Greene
31 Concession
Mohawk College to Limeridge at Lennox
via Inverness, Concession, Fennell, Upper Kenilworth
32 Fennell
McMaster University to Parkdale Station
via Aberdeen, West 5th, Mohawk College, Fennell, King
33 Sanatorium
Meadowlands to Mohawk College
via Mohawk, Magnolia, Scenic, Sanatorium, West 5th
34 Mohawk
Meadowlands to Eastgate Station
via Mohawk College, CF Lime Ridge, Heritage Greene
35 Stone Church
Meadowlands to Valley Park Lay-By
via Cloverleaf, Stone Church, CF Lime Ridge, Paramount
36 Rymal
Meadowlands to Elfrida Gateway
via Redeemer University, Heritage Greene, Highland
40 E Line
Confederation GO to Heritage Greene
via Eastgate, Upper Centennial, Elfrida Gateway, Rymal
41 Red Hill
Parkdale Station to Upper Ottawa at Rymal
via Red Hill Valley Pkwy, Heritage Greene, Red Hill Business Park
50 T Line
Downtown Dundas to Heritage Greene
via McMaster University, Wilson, Meadowlands, CF Lime Ridge
51 University
Pirie at Governors to Hamilton GO Centre
via Governors, Whitney, McMaster University, King, Main
60 L Line
Waterdown Gateway to Centre on Barton
via Highway 6, Downtown, Mohawk College, CF Lime Ridge
60A L Line
West Harbour GO to Centre on Barton
via Downtown, Mohawk College, CF Lime Ridge
61 Beach
Burlington GO to Eastgate Station
via Downtown Burlington, Beach Blvd, Confederation GO
71 Ancaster Wilson
Ancaster Gateway to West Harbour GO
via Wilson, Main, McMaster University, Dundurn, Barton

ENGINEERING | McMaster University

Proposed Network Reconfiguration for Hamilton Street Railway (HSR)

December 2022

Proposed Network Reconfiguration for Hamilton Street Railway (HSR)

Report 10

Gamal Eldeeb
Moataz Mohamed

December 2022

This report is submitted to the City of Hamilton, Department of Public Works, Hamilton Street Railway (HSR) as partial fulfilment of the "A Systemic Assessment and Optimization of Hamilton Street Railway (HSR) Network" research project.

It should be noted that the views expressed in this document are those of the authors and do not necessarily reflect the views of the City of Hamilton.

It should be noted that technical, academic, and statistical phrases are detailed in blue paragraphs to ease the readability of the report. Furthermore, the full results of the statistical analyses are described in the appendix report.

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Executive Summary

In April 2018, the City of Hamilton, public transit division, initiated "*A Systemic Assessment and Optimization of Hamilton Street Railway (HSR) Network*" research project in a partnership with McMaster University.

The research team at McMaster has investigated, quantified, and further evaluated the HSR service across various domains including, perceived quality, desired quality, preferences, attitude, and the willingness to pay of Hamiltonians towards the HSR service. As well as stop utilization, on-time performance, reliability, and the frequencies of the existing HSR operation. Further, the travel behaviour of Hamiltonians is assessed. The research outcomes of these stages were disseminated in several peer-reviewed research papers and nine technical reports submitted to HSR.

These models were deliberated and discussed with the HSR planning team through 22 workshops to inform the proposed reconfiguration of the HSR service. And based on the integration of all these models, the proposed HSR network reconfiguration is guided by achieving eight objectives to facilitate seamless transit travel for all Hamiltonians.

These objectives are implemented to enable direct trips between eight HSR transit hubs ***(Hub-to-Hub No-Transfer Service),*** and to minimize the number of transfers while travelling to/from destinations ***(Hub-to-Origin/Designation One-Transfer Service)***. In addition, the proposed reconfiguration is grounded on the provision of fast, frequent, and reliable services through ***(Higher-Order Fast-Frequent Transit Service)***. The higher-order service is established through the integration of two Bus Rapid Transit (BRT) routes and five Express routes. ***(Regional-connectivity)*** to Go Services (Bus and Rail) is established through three dedicated regional routes, four express routes (Route King, Route Ring, Route A Line, Route Centennial), and 12 collector routes (Route Main East, Route Barton, Route Dundas/Meadowlands, Route Fennell/Mohawk-McMaster, Route Main West, Route U Garth, Route Lime Ridge/Downtown, Route Meadowlands/Downtown, Route Wellington, Route West 5th, Route Upper Gage, Route Upper Sherman). For local communities in Hamilton, the reconfiguration is guided by enhancing ***(Last-Mile Accessibility All Week)***. This was achieved through the provision of local routes with a minimum of 30 minutes between buses.

However, it should be noted that increasing ridership is also associated with ***(Enhanced & Reliable Level of Service),*** which entails the dire need for continuous service monitoring and assessment (planning & operation). In addition to the spatial configuration of HSR routes, hubs, and stops, the constant performance monitoring is essential to tackle any service disruption and to ensure a ***(Resilient & Robust Network)***.

The proposed network exhibits a total of 41 routes classified as follows: 2 BRT, 6 Express, 3 Regional, 16 Collectors, and 15 Local routes. The provision of these routes yielded a 7% increase in the population served within 400 meters buffer. Furthermore, there is an approximately 66% increase in the number of trips on Sundays/Holidays and a 71% increase on Saturdays. On Weekdays, the number of trips increased by 52%. However, such an increased level of service is associated with an approximately $55.8 million increase in the annual operation cost. An annual gross operating increase of $36.5 million was contemplated at the end of implementation of Year 5-10 of the 10-Year Local Transit Strategy. Which indicates that the true additional cost is just $19.3 million greater in annual gross operating than what was contemplated at the completion of the 10-year Local Transit Strategy. Nevertheless, the proposed network offers superior travel time and access to destinations compared to the existing HSR service.

Overall, the implementation of the proposed network reconfiguration is strongly recommended.

Disclaimer

The cost values reported herein are extracted from Remix software. The software provides a relatively accurate approximation of the cost. However, to determine precise costs that are inclusive of all the variables specific to HSR staff and fleet resources, additional and resource demanding run-cutting and scheduling analysis is required. Furthermore, the cost values reported herein are not inclusive of the infrastructure cost of the proposed BRT lines.

Therefore, additional analysis is required to model, fine-tune, optimize and cost the implementation of the proposed network reconfiguration at the micro-level using the HSR's comprehensive transit planning resources and network modelling software (Trapeze).

Lastly, should Hamilton LRT project moves forward, additional analysis must be completed to ensure the integration of the proposed network reconfiguration with the Hamilton LRT project.

CHAPTER 1
INTRODUCTION

1. Introduction

Transportation demand is dynamic in nature. New travel patterns are continually shifting/emerging due to population growth, land-use development, attitudes towards travel modes and transportation demand management (i.e., policies and mobility services that encourage people to adopt sustainable travel behaviour). Consequently, public transit providers are constantly reviewing and adjusting their operation to improve the efficiency of the transit service for existing customers and to maximize opportunities to grow ridership.

In this respect, the City of Hamilton, public transit division, initiated "A Systemic Assessment and Optimization of Hamilton Street Railway (HSR) Network" research project in a partnership with McMaster University. The project is developed to achieve two overarching objectives:

> *To arrive at an understanding of the perceived and desired quality of HSR service from the perspective of a wide range of Hamilton residents, including those who use transit regularly or not at all.*
>
> *To suggest a multi-criteria reconfiguration of HSR service based on the evidence of our data collection and modelling efforts.*

This report aims to address the second objective by utilizing the findings from the perceived desired quality measures and service operation benchmarking to propose a multi-criteria reconfiguration of HSR service. The multi-criteria reconfiguration is set to inform: i) HSR Strategic Planning (network, route, and stop alignment), and ii) Tactical Planning (frequency and timetabling).

The multi-criteria reconfiguration is grounded on an understanding of the topological challenges (e.g., street network and escarpment) associated with providing transit service within the City of Hamilton and Hamiltonians' travel needs and expectations. The network reconfiguration is presented primarily across two dimensions; Spatial that focuses on the layout of the proposed transit network and Temporal that focuses on the level of service, timetables, and service frequency.

In brief, the content of each chapter is summarized as follows:

Chapter Two: HSR Reconfiguration Objectives

- This chapter discusses the reconfiguration objectives, philosophy and the proposed guidelines based on the integration of previous reports and semi-structured workshops with HSR personnel. In addition, the chapter outlines the route classification utilized in the proposed network.

Chapter Three: Network-level Assessment

- This chapter presents a holistic assessment of the proposed network across various aspects. The chapter also discusses how the proposed network achieves the objectives, philosophy, and guidelines derived from the previous modelling efforts.

Chapter Four: Data-driven Reconfiguration Process

- This chapter briefly describes the models developed in Report 1 "*Service Quality and Consumers Preferences for Hamilton Street Railway (HSR)*" and Report 2 "*Benchmarking Service Quality for City of Hamilton Transit Division (HSR)"* and outlines the critical information extracted from these models. Overall, this chapter bridges the findings from user engagement models and service benchmarking assessments to inform the proposed service reconfiguration.

Chapter Five: Route-Level Reconfiguration

- This chapter presents a side-by-side comparison between the existing and proposed routes. A description of each existing/proposed route is communicated to highlight their main features.

Chapter Six: Conclusions

- Merited by the analysis developed throughout the report, Chapter Six provides the concluding remarks. The chapter is developed in a bullet point format to ease the interpretation of the concluding remarks.

CHAPTER 2
HSR RECONFIGURATION OBJECTIVES

2. HSR Reconfiguration Objectives

2.1. Introduction

The overall aim of this project is to increase transit ridership, and hence alleviate traffic congestion, in the City of Hamilton. However, increasing ridership requires a set of targeted service improvements/reconfiguration to steadily establish long-term ridership growth. That said, other policies/decisions outside the transit realm (e.g., Travel Demand Management (TDM) measures, land use development, complete streets, etc.) will indeed have tangible impacts on transit ridership.

This chapter outlines a set of proposed objectives directed at increasing transit ridership. These objectives are informed by the findings from the analytical effort (published in four journal papers, five conference papers, and nine reports). The objectives include:

1) Maximizing service reliability,
2) Minimizing the required number of transfers,
3) Expanding the transit service coverage area (Urban Transit Boundary),
4) Improving transit infrastructure,
5) Improving connectivity to regional transit services
6) Expanding service operation hour during weekends,
7) Enhancing network robustness to provide convenient travel alternatives during anticipated and unexpected service disruptions,

Each of these objectives could be implemented using various tools, and at different levels (e.g., micro, and macro). In Table 2-1, high-level considerations to achieve these objectives have been implemented. That said, this set of considerations is not exhaustive, and additional actions outside the transit domain (e.g., travel demand management, parking) might also contribute to realizing the objective of increasing transit ridership.

Table 2-1: High-level Considerations for HSR service reconfiguration

Historical background:	• Significantly altering existing transit routes might not be desirable, as residents' familiarity with the transit system is a key element of building transit ridership. Hamilton residents are not accustomed to adjusting to major changes to transit service delivery. The HSR's transit network has evolved over decades through network tweaks and incremental changes, including a piecemeal of service extensions resulting from the 2001 Amalgamation. • The ability of the current transit network to provide for the needs of the City of Hamilton is constrained because of service limitations imposed by an area-rating funding methodology.
Route and trip directness:	• The bus network should provide as many direct connections as possible between the transit users' origins and destinations. • Directness might be expressed as the additional mileage incurred by the bus trip compared to the same trip by car or other means of transit.

	• Reducing the number of transfers contributes to increasing trip directness.
Network integration:	• The usefulness of a transit network relies on how all parts of the network work together. • A single bus transit route might be beneficial for some trips; however, the integration between all routes adds more significant benefits to a broader spectrum of trips and hence to the entire transit network. • Many aspects of the City's transportation network, such as road and pedestrian infrastructure, cycling paths, local transit routes, and express transit routes need to be considered. • It is common to evaluate the performance of transit lines independently; however, the performance of each line is also heavily dependent on the lines that connect to it. Therefore, timed, and synchronized transfers between routes have a considerable influence on improving riders' transfer experience.
Access to service:	• Transit networks should be designed to move people and accommodate various travel need through a variety of trip types. This, in turn, increases ridership and supports developing long-term ridership growth. • This means providing an adequate extended transit service on Weekdays and weekends for different trip types and destinations. • And provide adequate service coverage to all Hamiltonians.
Efficiency and productivity:	• For a transit service to be productive, the transit network should be aligned as much as possible with demand by providing suitable service types (i.e., express, collector, or local routes) and frequencies. • Efficient and productive transit service targets the middle ground between under-supply and over-supply.
Partnership and collaboration:	• HSR is committed to work with municipal partners and other stakeholders (e.g., developers, institutions) to ensure the coordination of land use and transit inclusive transportation planning. • This coordination can help to develop transit-oriented communities and developments, which in turn supports and sustain an efficient and productive transit network. • Transit-oriented developments help people to become less dependent on cars by encouraging development of communities where walking, cycling, and using transit is more efficient and cost effective
Route-specific considerations:	• In the HSR network reconfiguration, the following guidelines were considered in developing transit routes to promote their efficiency and productivity: i. Matches or improves service levels to demand, ii. Strong anchors at both ends of the transit line, iii. Direct and simple to understand and navigate, and iv. Avoids route redundancies, duplications or overlap as much as possible.

2.2. HSR Reconfiguration Philosophy

The reconfiguration philosophy is grounded on the Total-trip concept, which breaks down the commuting trip into macro, meso (i.e., transition between the micro and macro levels), and micro portions. For example, a trip within the same neighbourhood could be seen as a micro trip. While a trip, for instance, between Dundas and Stoney Creek, could be identified as a meso trip. Moreover, regional connectivity could be classified as a macro trip. That said, some commuting trips might exhibit all three portions; micro, meso, and macro, as highlighted in Figure 2-1.

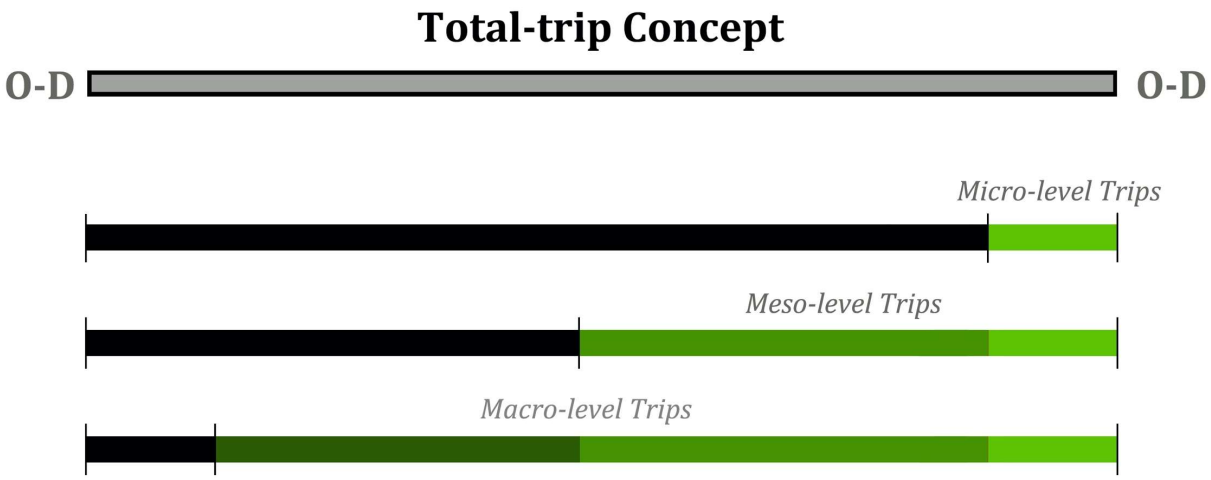


Figure 2-1: Total-trip Concept

In Figure 2-2 and Figure 2-3, the spatial trip context is utilized for conceptualized trip-making within Hamilton. This menu of possibilities can be used to define and manage connectivity within Hamilton and between Hamilton and other trip origins/destinations. Based on this conceptualization, transit routes could be classified into five route types, as follows.

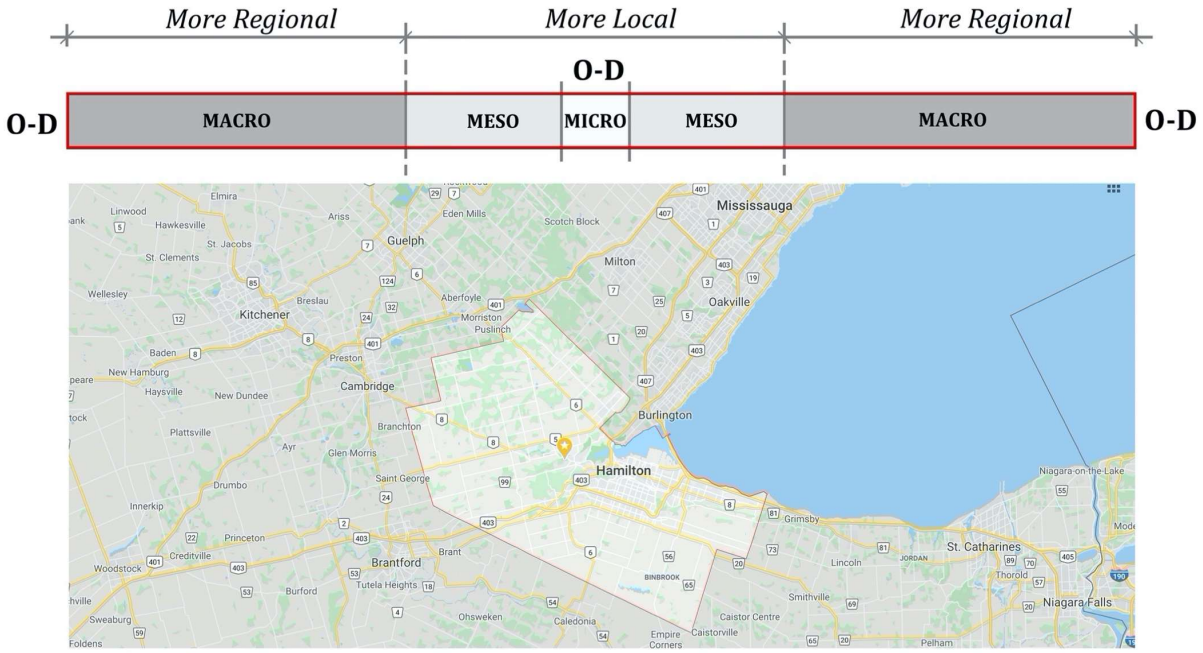


Figure 2-2: Regional & Local Connectivity for Hamilton

Coverage-based Local Routes

These routes provide coverage and accessibility to/from as well as within local neighbourhoods in Hamilton. These are aimed to address the first-last-mile connectivity.

Collector Routes

Collector routes provide options to commute within the city, and target meso-level trips. These routes connect transit hubs, local routes, and major origins/destinations in Hamilton.

Express Routes

Similar to Collector routes, Express routes provide options to commute within the city and target meso-level trips. These routes connect transit hubs, local routes, and major origins/destinations in Hamilton. Further, these routes provide reduced travel time and fewer stops compared to Collectors. The provision of these routes enables HSR to offer fast trips compared to auto travel.

Rapid Higher-Order Routes

With respect to rapid routes, it should be noted that given the uncertainty associated with the provision of Hamilton Light Rail Transit (LRT) in the City of Hamilton during the development of the network reconfiguration report, it is assumed that at the minimum Bus Rapid Transit (BRT) routes will utilize the proposed LRT corridor. This implies that for a large segment of the proposed BRT routes, the service will not operate in mixed-traffic conditions, it will operate in a transit dedicated right of way. This is will indeed enhance service reliability and speed.

Additional information on the provision of rapid transit service in the City of Hamilton is being deliberated by the Hamilton Transportation Task Force. The initial recommendation of the task force (which was announced after the preparation of this report) includes:

"The Task Force's preference is for an intra-city higher-order transit project that addresses the City of Hamilton's transportation needs such as current and future demand and congestion."

Regional Routes

Regional Routes provide connectivity to regional transit services and target meso-level trips. These routes enhance Hamilton connectivity within the Greater Toronto Hamilton Area (GTHA).

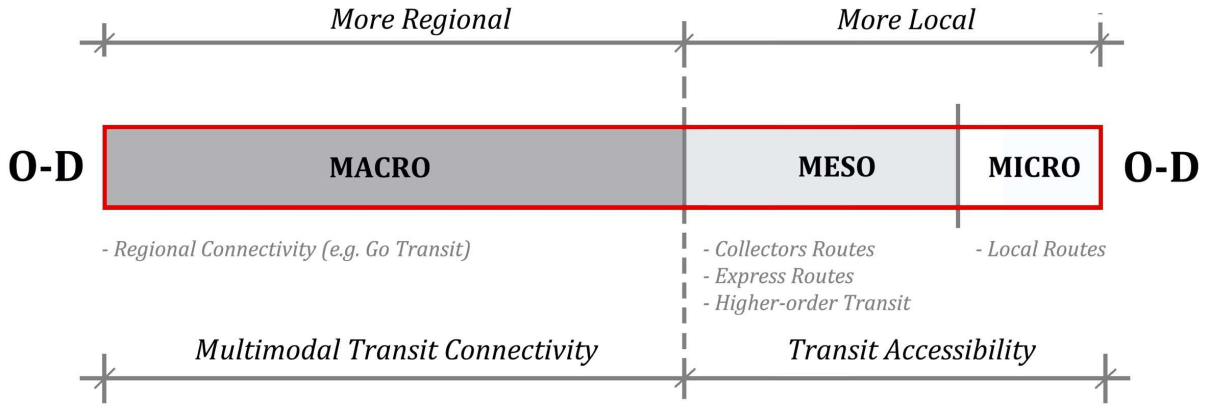


Figure 2-3: Macro, Meso, and Micro routes

These five route types are thought to address and manage the spatial connectivity within Hamilton and between Hamilton and other trip origins/destinations with respect to all trip portions.

2.3. HSR Reconfiguration Guidelines

With an understanding of the objectives and challenges associated with providing transit service to the City of Hamilton, the network reconfiguration was steered by the following spatial and operational guidelines. These guidelines stem from the integration of all the models that were developed by the research team over the last two years and was discussed and revised through numerous workshops with HSR personnel.

Spatial Guidelines

i) Hub-to-Hub No-Transfer Service

- The number of transfers is the most deterring factor of user perceptions towards the quality of HSR service for both current and potential users. Further, from a travel time perspective, direct trips could potentially compete with car travel time. Therefore, the network reconfiguration is developed to achieve direct trips between HSR hubs.

ii) Local-to-Hub No Transfer Service

- All local trips are connected to the nearest hub without any transfer. This will significantly enhance the service connectivity, given that Hub-to-Hub services have direct trips.

iii) Hub-to-Origin/Designation One-Transfer Service

- Similarly, trips to/from any location in the city to a transit hub is constrained to one transfer only. This will contribute to faster and convenient travelling through the city using the HSR service.

iv) Higher-Order Fast-Frequent Transit Service

- Another fundamental issue that emerged through the analysis is the dire need for a fast-frequent service. In this respect, the proposed reconfiguration considers the implementation of higher-order service (e.g., bus rapid transit and express routes).

v) Regional-Connectivity

- The City of Hamilton lies at the heart of the Greater Toronto Hamilton Area (GTHA), and regional connectivity is essential to all Hamiltonians. Therefore, connectivity to regional transit services is emphasized as a crucial building block of the proposed network.

vi) Resilient and Robust Network

- The resilience and robustness of the transit network are a function of the spatial arrangement of routes and stops. Although there is no single solution that contributes to increasing network resilience and robustness, the proposed network reconfiguration is guided by increasing both measures.

Operational Guidelines

vii) First and Last-Mile Accessibility All Week

- First and Last-mile is the Achilles-heel of any transit network. Hamiltonians have also emphasized the enormous benefits of having first and last-mile access on weekends as well as Weekdays. Therefore, the proposed network reconfiguration is based on providing all-week access to local communities. In addition, the proposed network configuration aims to maximize the integration with active travel modes (walking and cycling).

viii) Enhanced & Reliable Level of Service

- From the HSR operation benchmarking analysis, it is apparent that the existing performance measures require some revisions, especially for the time span allocated for on-time performance (two minutes early and five minutes late). Although it is hard to realize this issue through the network reconfiguration, the provision of higher-order transit would contribute to the reliability of the service and would indeed increase the level of service.

ix) Demand-based Stop/Infrastructure Planning

- A predominant message emerged from the analysis is user demand for weather protection at bus stops, coupled with high degree of satisfaction for walking distance to/from stops. Although such indications could not be visualized in the network reconfiguration, a stop rationalization plan for HSR service is strongly recommend. The stop rationalization plan must achieve two overarching objectives. First, stop spacing adjustment based on demand, which in its current form hinders the speed of HSR service. The average spacing between stops in the current HSR service is 297m, which is lower than the standards for City bus service (i.e., 400m in urban, 600m in sub-urban, and 800m in rural areas). Second, there is a demand for more weather protection at bus stops, which should be addressed with respect to the demand at each stop and the potential for required transfer.

In this respect, and through the integration of the proposed route-types and the reconfiguration guidelines, the reconfiguration guidelines are distilled at the route/stop level. First, eight transit hubs are identified in Hamilton (Figure 2-4). The eight hubs represent major attraction/dissemination points across the City of Hamilton and were determined based on: 1) historical ridership data, 2) TTS travel behaviour patterns, and 3) the Ten-Year Local Transit Strategy. These hubs serve as the core structure of the proposed network, and the spatial guidelines are implemented for each hub.

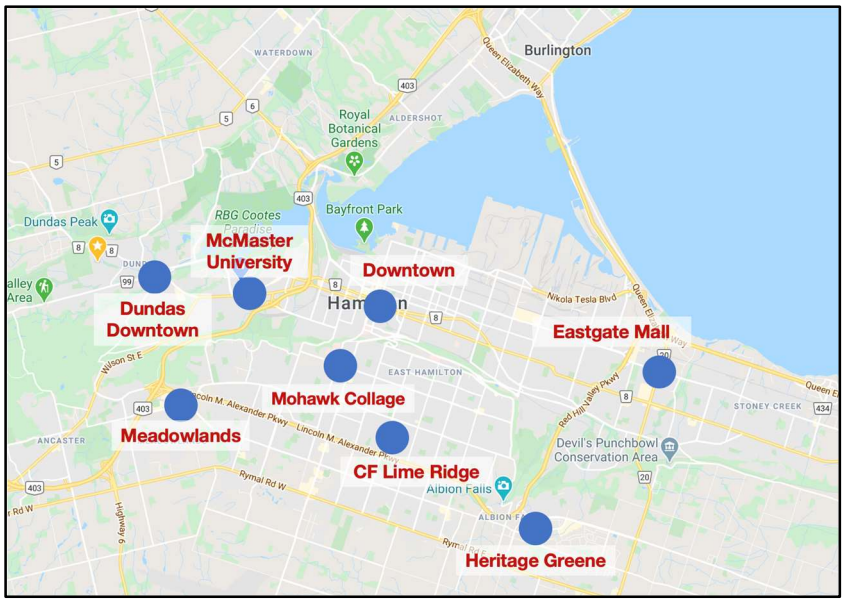


Figure 2-4: Proposed HSR Hubs

Relative to the existing network, the proposed network structure around the eight hubs contributes significantly to increasing network robustness during disruption, which is essential to mitigate any cascading effect resulting from service delay or traffic congestion.

Second, and from an operational perspective, the service will be planned to provide all week operation with varying frequencies depending on route type and the service demand. Except for regional routes, all routes will be developed to feature a minimum frequency of two buses per hour on Sunday. Further, each route type (e.g., collectors, rapid, etc..) will feature unified frequency based on demand and based on route type.

Further, both Local and Collector routes will provide access and coverage for micro- and meso-level trips, respectively. Furthermore, the hub will feature rapid transit and/or express service to enable access to fast, frequent, and reliable services. The hub will also feature access to regional service (e.g., Go Bus and Rail) without any transfers through Regional, Express, or Rapid Transit routes.

CHAPTER 3

NETWORK-LEVEL ASSESSMENT

3. Network-level Assessment

This chapter provides a network-level assessment to inform the decision-making process with respect to the proposed network reconfiguration. The assessment is made across numerous parameters, including cost, accessibility, travel time, and coverage. The assessment is based on some operation parameters. As recommended by the HSR, a $105 per hour is utilized as an approximation of the hourly service cost, 15% recovery time for schedule and operator needs, 252 Weekdays of operation, 52 Saturdays, and 61 Sundays / Holidays. These parameters are utilized for both the existing and the proposed networks. It should be noted that the HSR annual operation was not fixed, rather the annual cost was estimated from the proposed network.

3.1. Network Operational Cost

In the proposed network, and in reference to the Fall-2019 HSR operating network the total number of annual operating hours will increase by almost 69%, which corresponds to a 74% increase in the annual operating cost and a nearly 41% increase in the number of annual trips. This increase in the number of trips will provide Hamiltonians with more frequent and reliable transit service. It needs to be noted that this increase is inclusive of the operating cost of the proposed BRT, which provides higher-order transit service to Hamiltonians beyond the existing services and has been identified as a key component to the City's growth strategy.

Furthermore, there is a 64% increase in the number of trips on Sundays/Holidays and a 58% increase on Saturdays, while a 36% increase on Weekdays. This matches Hamiltonians' preferences to have more service on weekends and holidays. Table 3-1 presents a comparison between the current and proposed networks based on the main operating costs.

*Table 3-1: Current and proposed networks comparison (based on Remix software) **

	Current Network**	Proposed Network***	Difference Proposed-Current	Percentage increase (difference/current)
Annual Operation				
Annual Cost ($ million)	90.1	156.7	**66.6**	74%
Operating hours per Year (hrs.)	857,636	1,452,007	**594,371**	69%
No. of trips per Year	1,250,167	1,764,900	**514,733**	41%
Fleet Kilometers Travelled per Year	16,118,026	27,549,475	**11,431,449**	71%
No. of routes	34	41	**7**	21%
No. of in-service buses (at peak)	212	279	**67**	32%
Weekday Operation				
Cost per Weekday ($ thousand)	286.6	483.1	**196.5**	69%
Operating hours per Weekday (hrs.)	2,730	4,476	**1,746**	64%
No. of trips per Weekday	3,953	5,358	**1,405**	36%
Fleet Kilometers Travelled per Weekday	50,719	67,257	**16,538**	33%
Saturday Operation				
Cost per Saturday ($ thousand)	188.2	366.8	**178.6**	95%
Operating hours per Saturday (hrs.)	1,792	3,398	**1,606**	90%
No. of trips per Saturday	2,730	4,310	**1,580**	58%
Fleet Kilometers Travelled per Saturday	34,981	67,257	**32,276**	92%
Sunday Operation				
Cost per Sunday ($ thousand)	131.7	260.5	**128.8**	98%
Operating hours per Sunday (hrs.)	1,255	2,414	**1,159**	92%
No. of trips per Sunday	1,903	3,124	**1,221**	64%
Fleet Kilometers Travelled per Sunday	24,884	47,429	**22,545**	91%

** Please note that these values do not reflect the cost and additional kilometer travelled for deadheading.*
*** Current network data is based on the Fall 2019 board period.*
**** It should be noted that the proposed network implements four zones of on-demand transit service: Waterdown, Stoney Creek, Ancaster, and Dundas. The cost associated with these areas are not included in Table 3-1.*

3.2. Demographic Assessment

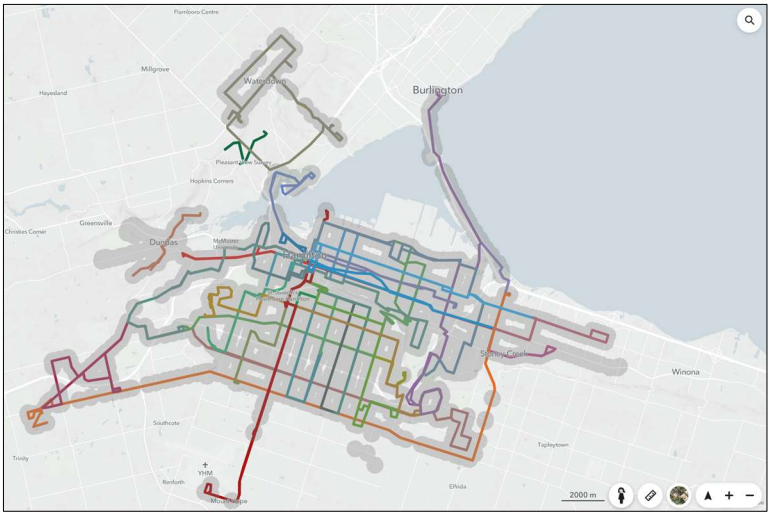
The proposed network exhibits a 14% increase in the population served within a 400-meter buffer and a 10% increase in access for occupied dwellings within the same buffer threshold. In addition, the number of employees within 400 meters increased by 14%. Nonetheless, the percentage of the low-income population within 400 meters buffer almost doubled with an 86% increase. It is worth mentioning that those numbers reflect only static (spatial) network coverage regardless of service operating parameters. In this respect, accessibility to the service (with respect to the frequency of the routes) has enhanced substantially. Table 3-2 shows the coverage of both current and proposed networks for different demographic aspects.

Table 3-2: Current and proposed networks comparison (Demographic-based)

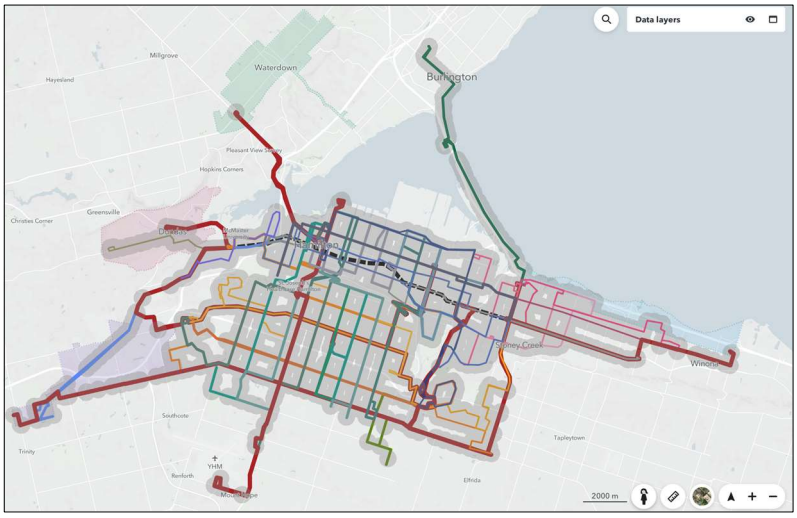
	Current Network	Proposed Network	Difference (Δ)	Percentage increase difference/current
Population served within 400 meters	418,900	477,000	**58,100**	14%
Population served within 600 meters	458,251	514,900	**56,649**	12%
Population served within 800 meters	475,428	541,700	**66,272**	14%
Occupied dwellings within 400 meters	157,500	174,000	**16,500**	10%
Employees within 400 meters	187,700	213,300	**25,600**	14%
Low income within 400 meters	14%	26%	**12%**	86%
Minorities within 400 meters	20%	37%	**17%**	85%
Seniors (65+) within 400 meters	18%	50%	**32%**	178%
Adults (20-64) within 400 meters	61%	73%	**12%**	20%

3.3. Accessibility, Travel Time, and Coverage Assessment

The proposed network offers an 11.89% increase in geographical coverage compared to the current HSR network. The proposed network improves transit geographical accessibility mainly to the Stoney Creek North industrial area, Clappison's Corners retail/commercial uses in Waterdown, and Go rail services. Figure 3-1 shows the proposed versus current network coverage considering 400-meter walking distance to bus stops.



(a) Current HSR Network.



(b) Proposed HSR Network Reconfiguration

Figure 3-1: HSR Coverage Map (Current Network top, Proposed Network bottom)

Furthermore, the proposed network offers unified headways (time between consecutive buses) for each route type. This eases trip planning process for passengers, and enables a seamless integration with the Hamilton LRT operating schedule.

In comparison to coverage and spatial accessibility assessment, a spatiotemporal accessibility measure is more superior in comparing the two networks. As such, an isochrone tool (Jane in Remix Transit Platform) was used to check ***how far transit customers can travel in 15, 30, 45 and 60 minutes*** considering specific origin locations in the current HSR network and compared with the proposed reconfiguration. The travel time is assumed at 10:00 am. Those locations include the proposed HSR eight hubs, Downtown, McMaster University, Eastgate Terminal, Meadowlands Terminal, Mohawk College, CF Lime Ridge Mall, Heritage Greene Terminal, and Dundas downtown.

It should be noted that these comparisons are based on a single point in time (08:00 am). However, the overall network comparison illustrated in Tables 3-1 and 3-2 shows the advantages of the proposed network over the existing HSR network.

Furthermore, the spatial coverage model does not take into consideration the four on-demand areas: Dundas, Ancaster, Stoney Creek, and Waterdown, detailed in Figure 3-2.

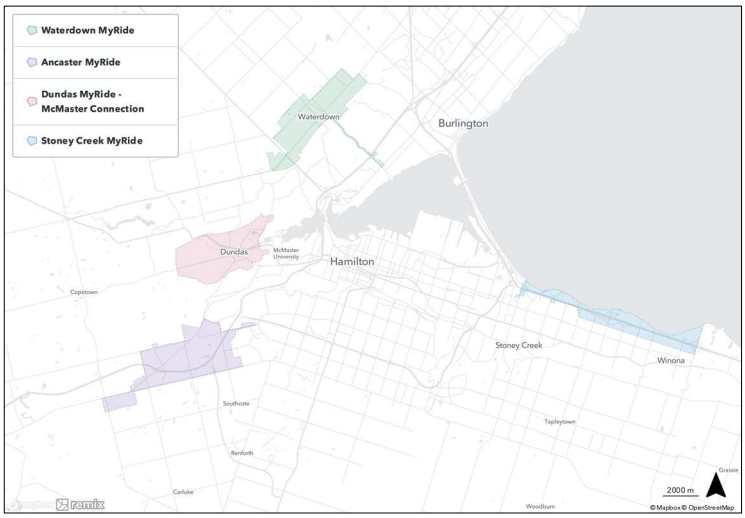


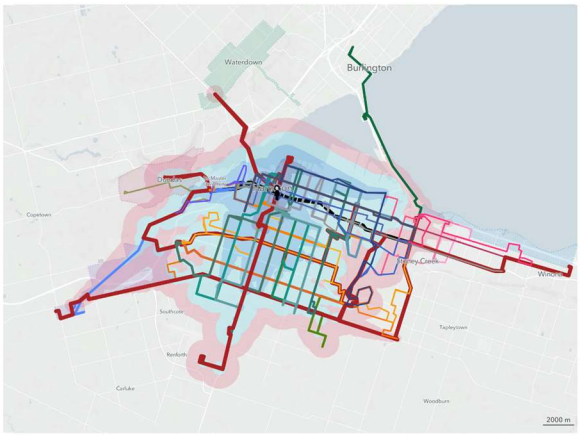
Figure 3-2: Proposed on-demand operation areas.

The generated travel time maps show that the proposed network offers more opportunities (over time and space) to transit users compared to the current network. Hamiltonians can reach more places, opportunities, and activities in the same travel time. It is worth noting that those improvements are more tangible on Saturdays and Sundays. Table 3-3 shows how far transit users can travel in 15, 30, 45, and 60 minutes on a weekday for the current and proposed networks as well as the associated population coverage. In comparison, Table 3-4 and Table 3-5 communicate the same information for Saturday and Sunday, respectively.

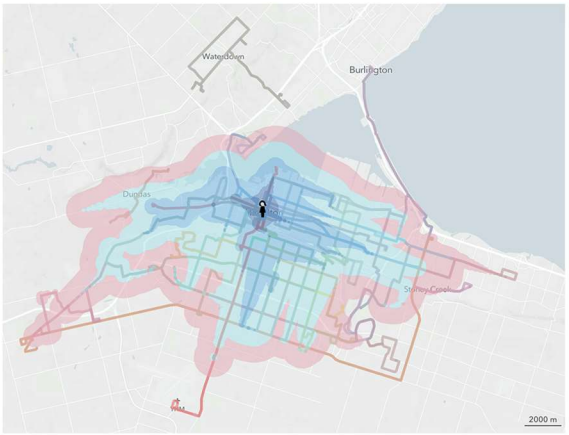
Table 3-3: Comparisons between existing and proposed HSR network (08:00 am Weekday)

Downtown

Proposed Network Reconfiguration



Existing HSR Network



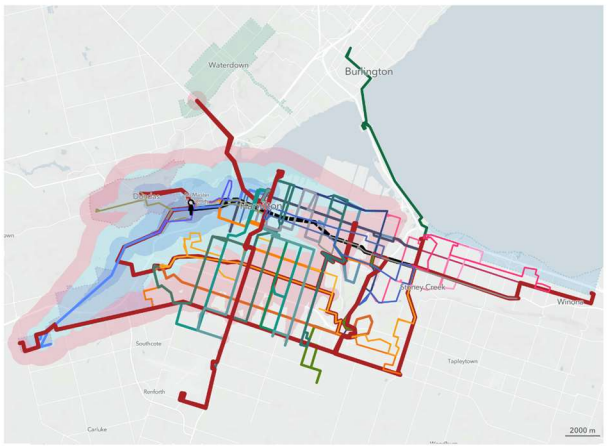
15-min Travel Time | 30-min Travel Time | 45-min Travel Time | 60-min Travel Time

Travel time	Proposed Network		Existing Network		Difference	
	Population	Employed	Population	Employed	Population	Employed
15-min	44,373	19,875	29,590	13,059	14,783	6,816

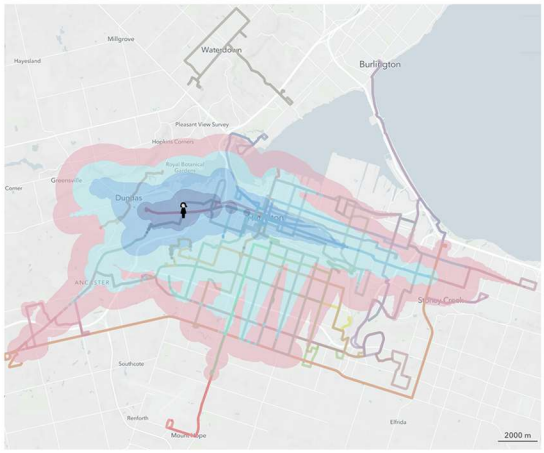
30-min	161,269	70,147	162,274	71,410	-1,005	-1,263
45-min	320,981	140,809	334,151	146,033	-13,170	-5,224
60-min	406,354	179,012	419,574	184,953	-13,220	-5,941

McMaster University

Proposed Network Reconfiguration



Existing HSR Network

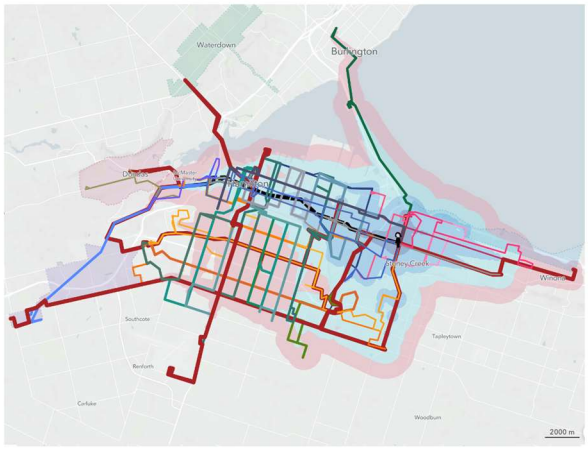


15-min Travel Time | 30-min Travel Time | 45-min Travel Time | 60-min Travel Time

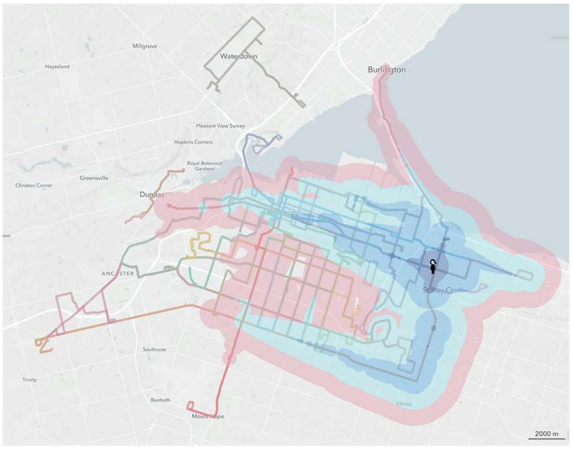
Travel time	Proposed Network		Existing Network		Difference	
	Population	Employed	Population	Employed	Population	Employed
15-min	8,187	3,411	10,896	4,667	-2,709	-1,256
30-min	49,982	21,347	82,828	35,646	-32,846	-14,299
45-min	149,772	64,975	222,351	97,249	-72,579	-32,274
60-min	320,080	141,477	377,895	165,943	-57,815	-24,466

Eastgate Terminal

Proposed Network Reconfiguration



Existing HSR Network

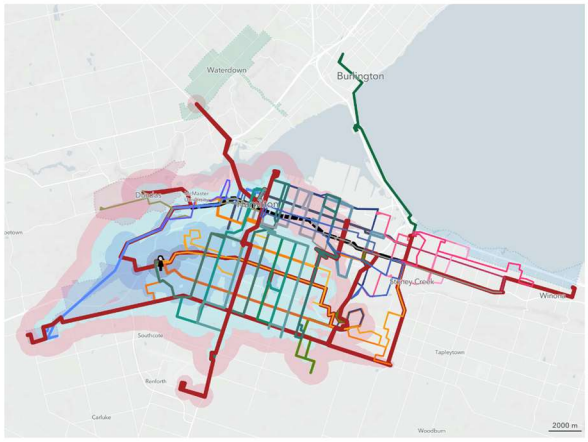


15-min Travel Time | 30-min Travel Time | 45-min Travel Time | 60-min Travel Time

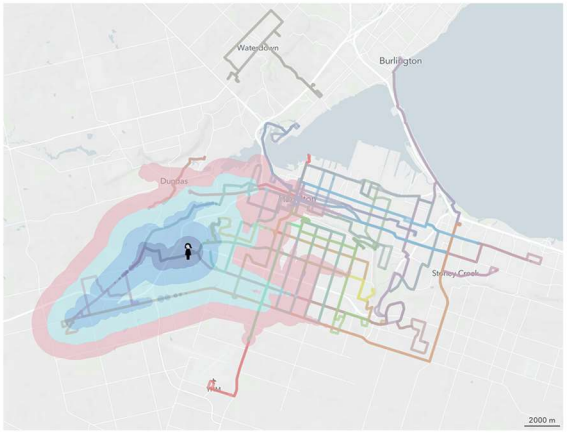
Travel time	Proposed Network		Existing Network		Difference	
	Population	Employed	Population	Employed	Population	Employed
15-min	16,344	6,302	16,232	6,256	112	46
30-min	113,876	49,332	113,349	49,897	527	-565
45-min	245,249	110,242	266,806	118,695	-21,557	-8,453
60-min	384,886	172,083	404,378	179,641	-19,492	-7,558

Meadowlands Terminal

Proposed Network Reconfiguration



Existing HSR Network

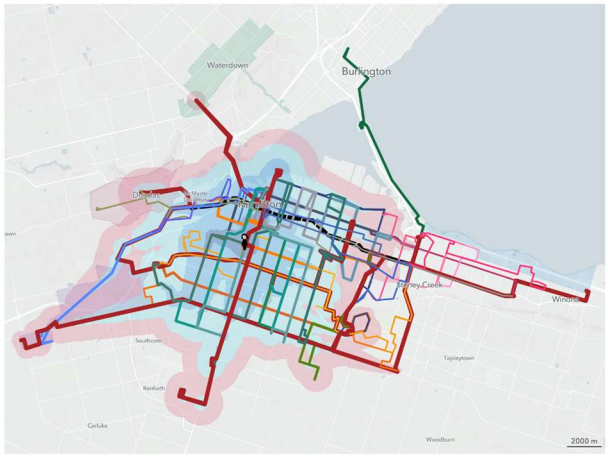


15-min Travel Time | 30-min Travel Time | 45-min Travel Time | 60-min Travel Time

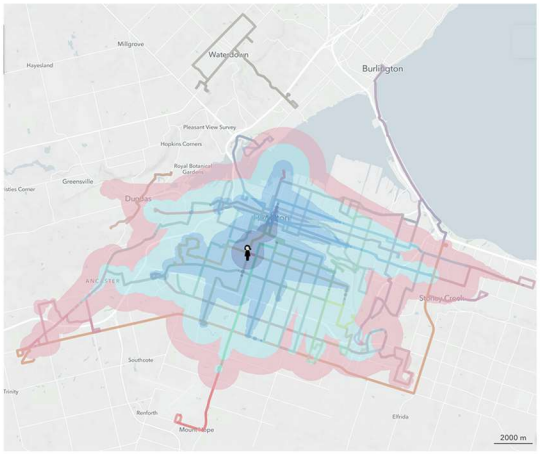
Travel time	Proposed Network		Existing Network		Difference	
	Population	Employed	Population	Employed	Population	Employed
15-min	10,422	4,239	12,616	5,052	-2,194	-813
30-min	90,896	40,050	77,403	33,830	21,493	6,220
45-min	267,590	118,363	219,262	97,773	48,328	20,590
60-min	348,653	154,758	351,379	156,050	-2,726	-1,292

Mohawk College

Proposed Network Reconfiguration



Existing HSR Network



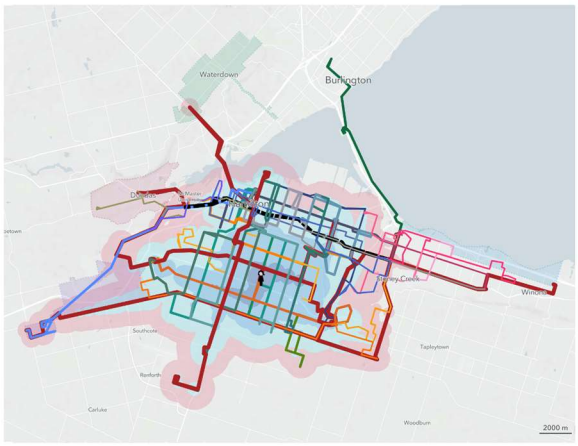
15-min Travel Time | 30-min Travel Time | 45-min Travel Time | 60-min Travel Time

Travel time	Proposed Network		Existing Network		Difference	
	Population	Employed	Population	Employed	Population	Employed
15-min	27,211	12,359	23,132	10,414	4,079	1,945

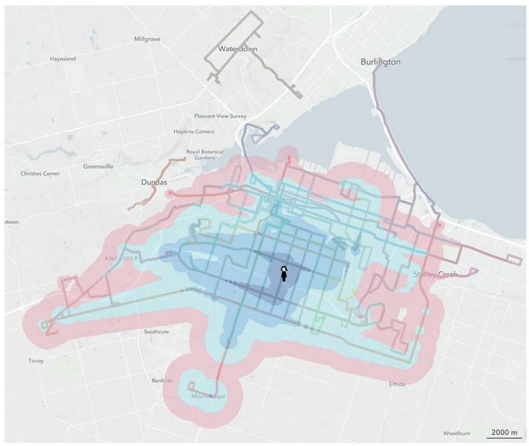
30-min	173,441	75,879	71,733	75,493	101,708	386
45-min	305,141	134,101	332,406	146,592	-27,265	-12,491
60-min	378,314	167,575	415,115	183,446	-36,801	-15,871

CF Lime Ridge Mall

Proposed Network Reconfiguration



Existing HSR Network

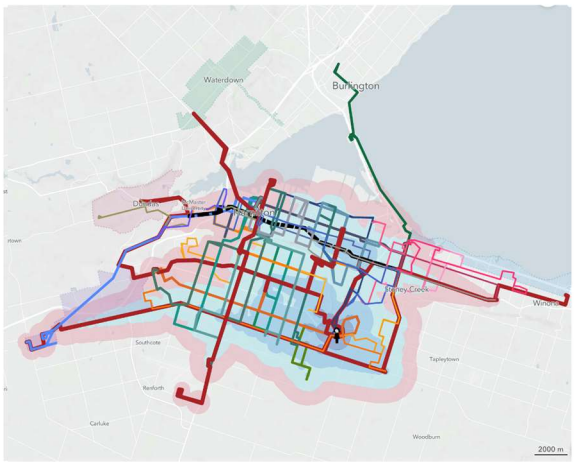


15-min Travel Time | 30-min Travel Time | 45-min Travel Time | 60-min Travel Time

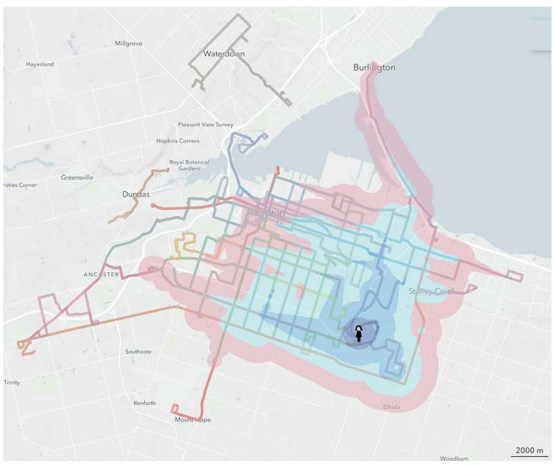
Travel time	Proposed Network		Existing Network		Difference	
	Population	Employed	Population	Employed	Population	Employed
15-min	21,204	9,066	21,119	9,448	85	-382
30-min	139,359	63,650	161,097	71,643	-21,738	-7,993
45-min	285,131	126,977	319,880	142,050	-34,749	-15,073
60-min	360,980	161,341	418,510	185,292	-57,530	-23,951

Heritage Greene Terminal

Proposed Network Reconfiguration



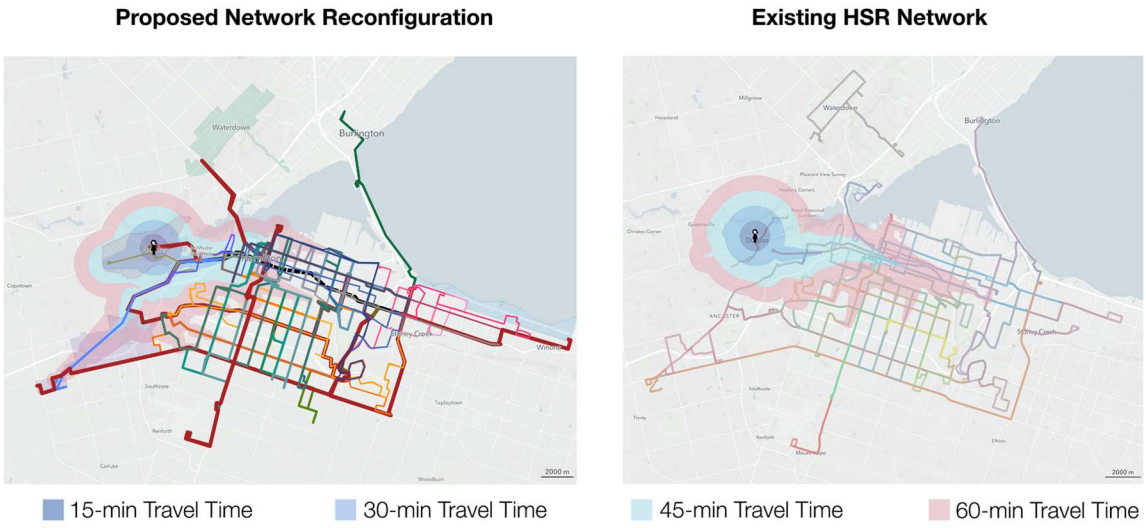
Existing HSR Network



15-min Travel Time | 30-min Travel Time | 45-min Travel Time | 60-min Travel Time

Travel time	Proposed Network		Existing Network		Difference	
	Population	Employed	Population	Employed	Population	Employed
15-min	5,865	2,846	5,460	2,748	405	98
30-min	109,930	50,942	65,475	30,433	44,455	20,509
45-min	304,024	134,825	239,020	107,440	65,004	27,385
60-min	508,781	181,855	376,625	167,133	132,156	14,722

Dundas Downtown

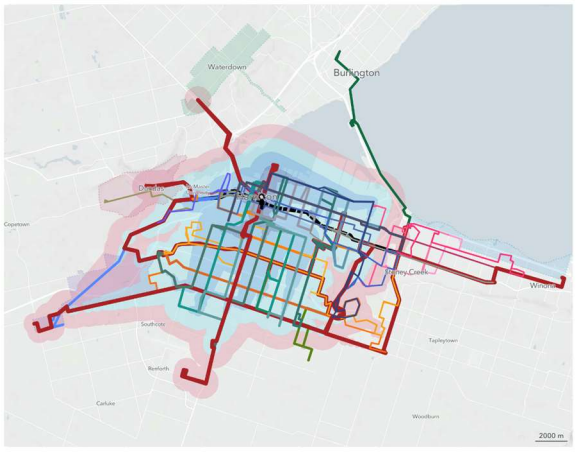


Travel time	Proposed Network		Existing Network		Difference	
	Population	Employed	Population	Employed	Population	Employed
15-min	6,614	2,506	9,462	3,915	-2,848	-1,409
30-min	25,296	10,794	36,118	15,511	-10,822	-4,717
45-min	67,265	29,358	112,218	49,086	-44,953	-19,728
60-min	164,729	72,811	279,977	123,585	-115,248	-50,774

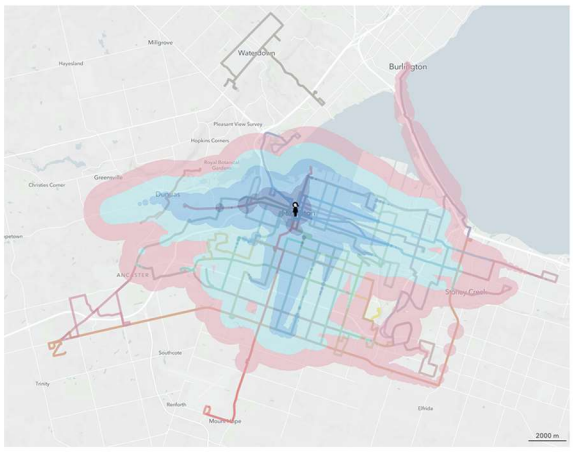
Table 3-4: Comparisons between existing and proposed HSR network (08:00 Saturday)

Downtown

Proposed Network Reconfiguration



Existing HSR Network



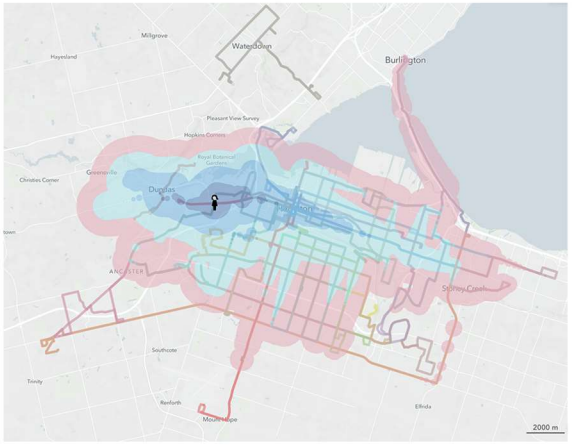
15-min Travel Time | 30-min Travel Time | 45-min Travel Time | 60-min Travel Time

Travel time	Proposed Network		Existing Network		Difference	
	Population	Employed	Population	Employed	Population	Employed
15-min	41,080	18,162	21,496	9,436	19,584	8,726
30-min	194,305	85,063	116,890	50,816	77,415	34,247
45-min	328,239	145,054	292,822	128,481	35,417	16,573
60-min	392,544	173,364	392,305	172,062	239	1,302

McMaster University

Proposed Network Reconfiguration

Existing HSR Network

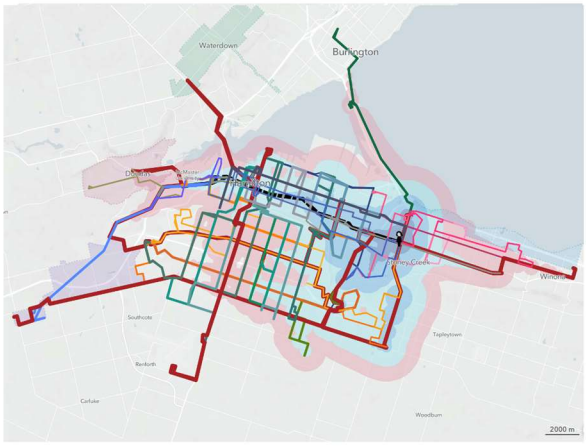


15-min Travel Time | 30-min Travel Time | 45-min Travel Time | 60-min Travel Time

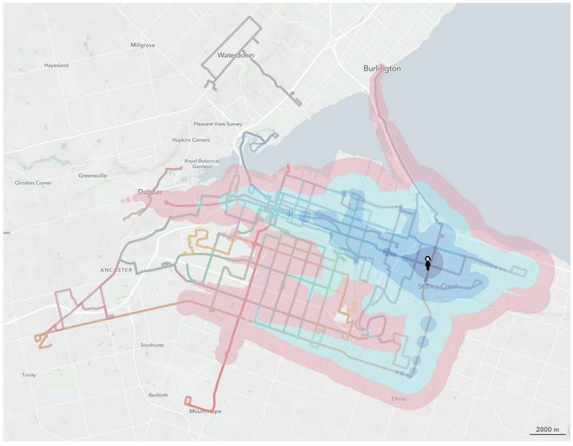
Travel time	Proposed Network		Existing Network		Difference	
	Population	Employed	Population	Employed	Population	Employed
15-min	3,155	1,251	13,285	5,429	-10,130	-4,178
30-min	26,504	11,229	69,842	30,480	-43,338	-19,251
45-min	108,691	47,261	190,843	83,531	-82,152	-36,270
60-min	242,733	106,071	337,082	148,275	-94,349	-42,204

Eastgate Terminal

Proposed Network Reconfiguration



Existing HSR Network

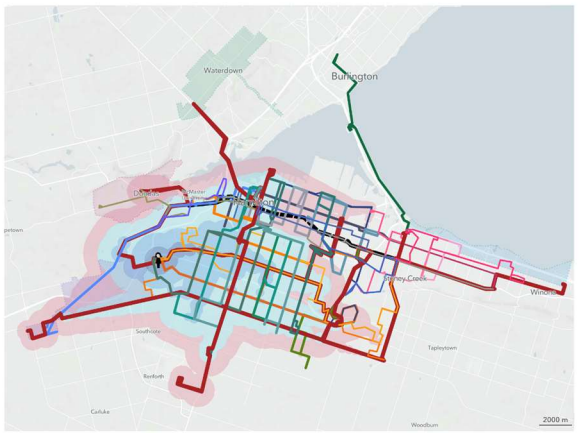


15-min Travel Time | 30-min Travel Time | 45-min Travel Time | 60-min Travel Time

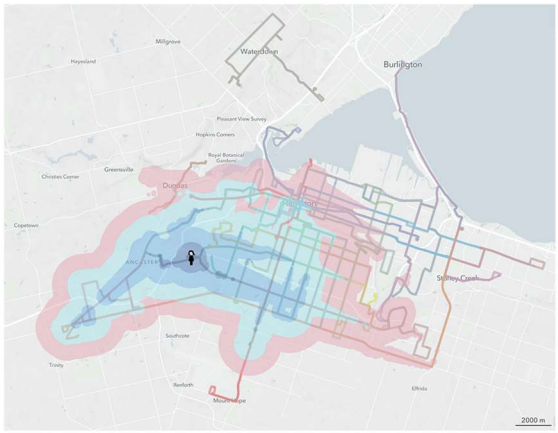
Travel time	Proposed Network		Existing Network		Difference	
	Population	Employed	Population	Employed	Population	Employed
15-min	20,228	7,940	9,803	3,600	10,425	4,340
30-min	98,242	42,341	76,468	32,698	21,774	9,643
45-min	245,127	107,949	198,814	87,208	46,313	20,741
60-min	368,383	164,527	356,389	158,558	11,994	5,969

Meadowlands Terminal

Proposed Network Reconfiguration



Existing HSR Network



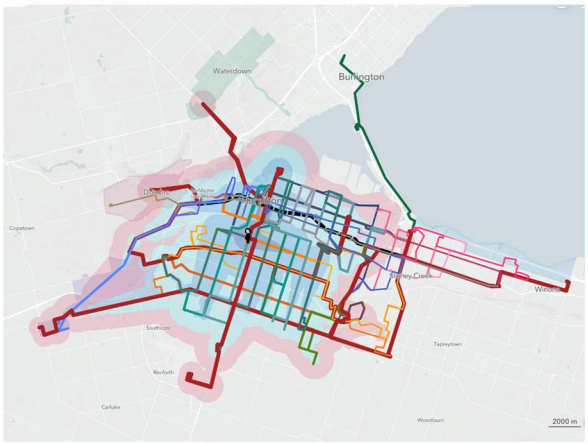
15-min Travel Time | 30-min Travel Time | 45-min Travel Time | 60-min Travel Time

Travel time	Proposed Network		Existing Network		Difference	
	Population	Employed	Population	Employed	Population	Employed
15-min	9,589	3,859	14,479	5,874	-4,890	-2,015
30-min	93,265	41,115	84,188	37,019	9,077	4,096

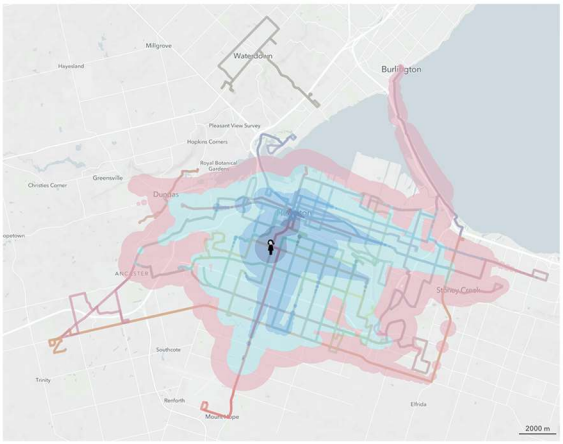
45-min	241,046	107,132	189,102	84,542	51,944	22,590
60-min	331,371	146,487	348,452	154,294	-17,081	-7,807

Mohawk College

Proposed Network Reconfiguration



Existing HSR Network



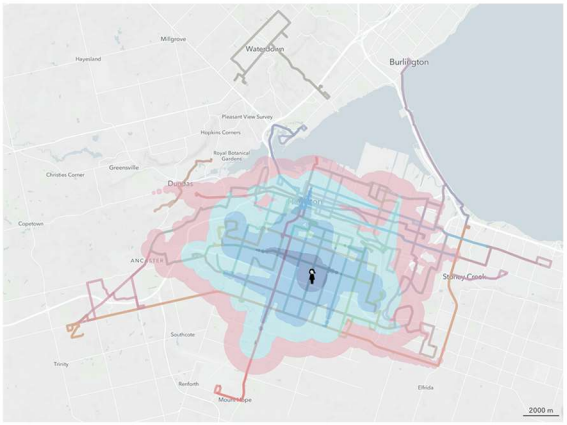
15-min Travel Time | 30-min Travel Time | 45-min Travel Time | 60-min Travel Time

Travel time	Proposed Network		Existing Network		Difference	
	Population	Employed	Population	Employed	Population	Employed
15-min	24,593	10,879	17,793	8,093	6,800	2,786
30-min	182,471	80,381	145,856	63,855	36,615	16,526
45-min	317,080	140,547	311,318	136,861	5,762	3,686
60-min	380,307	167,996	394,455	173,096	-14,148	-5,100

CF Lime Ridge Mall

Proposed Network Reconfiguration

Existing HSR Network



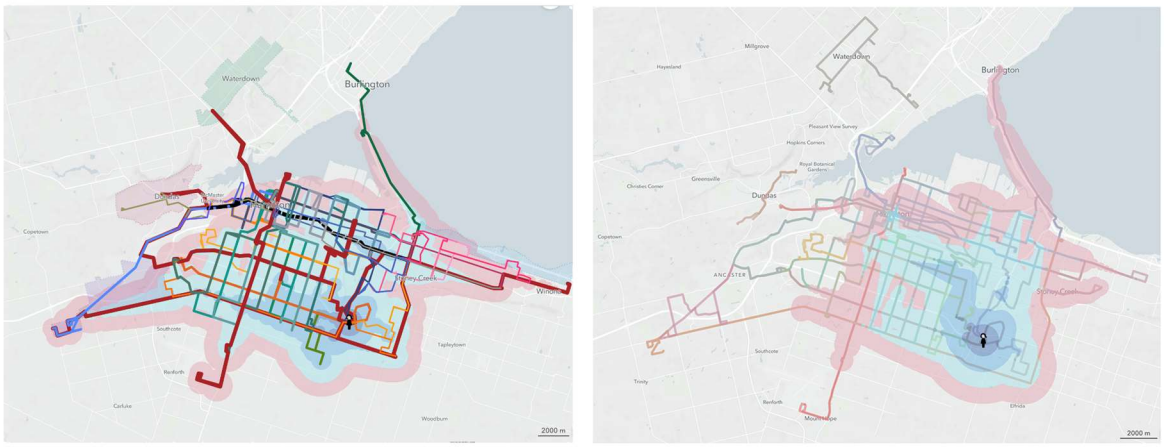
15-min Travel Time | 30-min Travel Time | 45-min Travel Time | 60-min Travel Time

Travel time	Proposed Network		Existing Network		Difference	
	Population	Employed	Population	Employed	Population	Employed

15-min	21,784	9,649	16,900	7,389	4,884	2,260
30-min	143,809	65,340	111,165	50,747	32,644	14,593
45-min	320,387	143,173	270,570	120,051	49,817	23,122
60-min	386,574	171,603	398,445	176,755	-11,871	-5,152

Heritage Greene Terminal

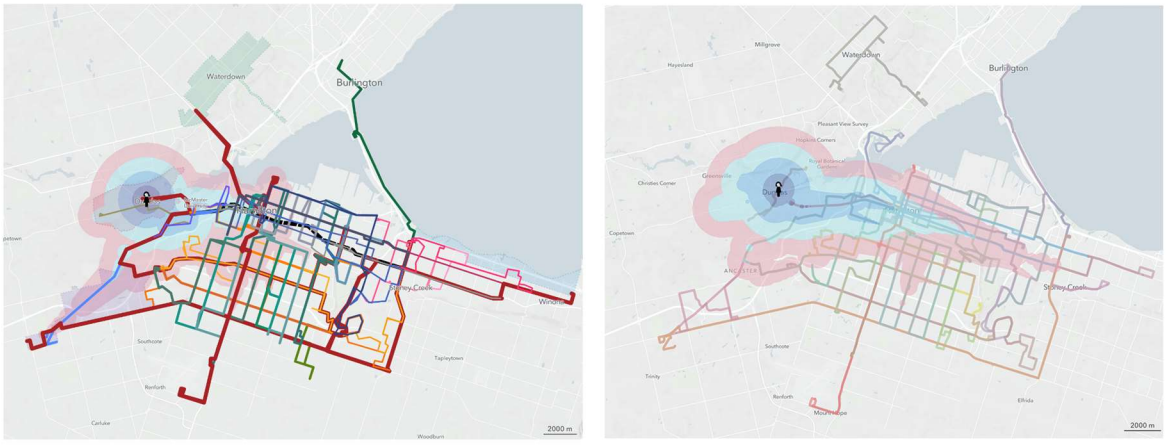
Proposed Network Reconfiguration | **Existing HSR Network**



Travel time	Proposed Network		Existing Network		Difference	
	Population	Employed	Population	Employed	Population	Employed
15-min	3,688	1,898	4,467	2,330	-779	-432
30-min	73,801	34,131	1,683	10,280	72,118	23,851
45-min	314,814	139,739	135,608	64,075	179,206	75,664
60-min	417,041	185,783	304,433	139,931	112,608	45,852

Dundas Downtown

Proposed Network Reconfiguration | **Existing HSR Network**



Travel time	Proposed Network	Existing Network	Difference

	Population	Employed	Population	Employed	Population	Employed
15-min	6,613	2,505	6,927	2,690	-314	-185
30-min	22,336	9,477	34,946	15,016	-12,610	-5,539
45-min	63,818	28,027	104,951	45,808	-41,133	-17,781
60-min	173,612	76,008	217,212	95,033	-43,600	-19,025

Table 3-5: Comparisons between existing and proposed HSR network (08:00 Sunday)

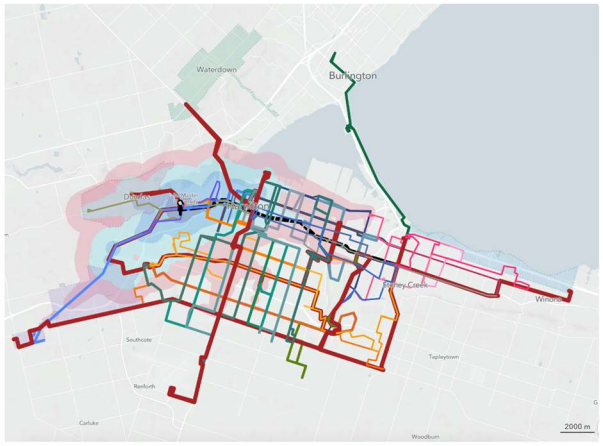
Downtown

Proposed Network Reconfiguration | **Existing HSR Network**

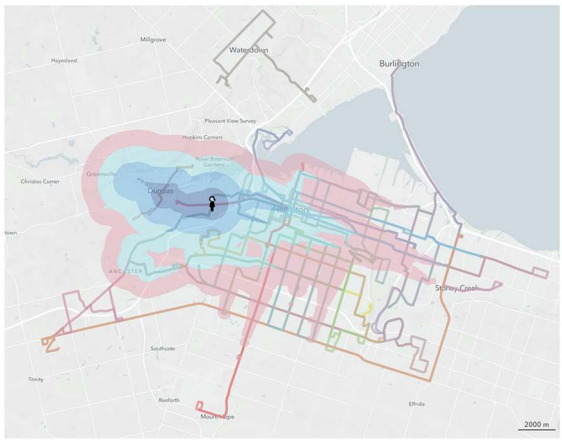
Travel time	Proposed Network		Existing Network		Difference	
	Population	Employed	Population	Employed	Population	Employed
15-min	35,183	15,077	19,422	8,392	15,761	6,685
30-min	119,037	51,672	79,576	34,617	39,461	17,055
45-min	311,266	137,234	237,615	105,526	73,651	31,708
60-min	385,545	170,197	366,780	161,079	18,765	9,118

McMaster University

Proposed Network Reconfiguration



Existing HSR Network



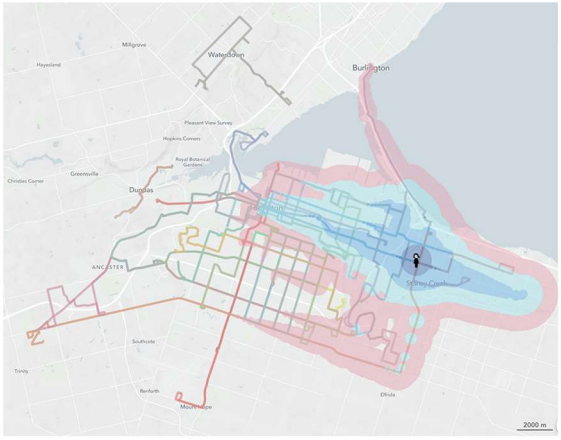
15-min Travel Time | 30-min Travel Time | 45-min Travel Time | 60-min Travel Time

Travel time	Proposed Network		Existing Network		Difference	
	Population	Employed	Population	Employed	Population	Employed
15-min	4,695	2,007	12,483	5,326	-7,788	-3,319
30-min	40,525	17,201	92,860	40,885	-52,335	-23,684
45-min	117,925	50,110	249,369	110,677	-131,444	-60,567
60-min	227,113	99,503	373,630	164,617	-146,517	-65,114

Eastgate Terminal

Proposed Network Reconfiguration

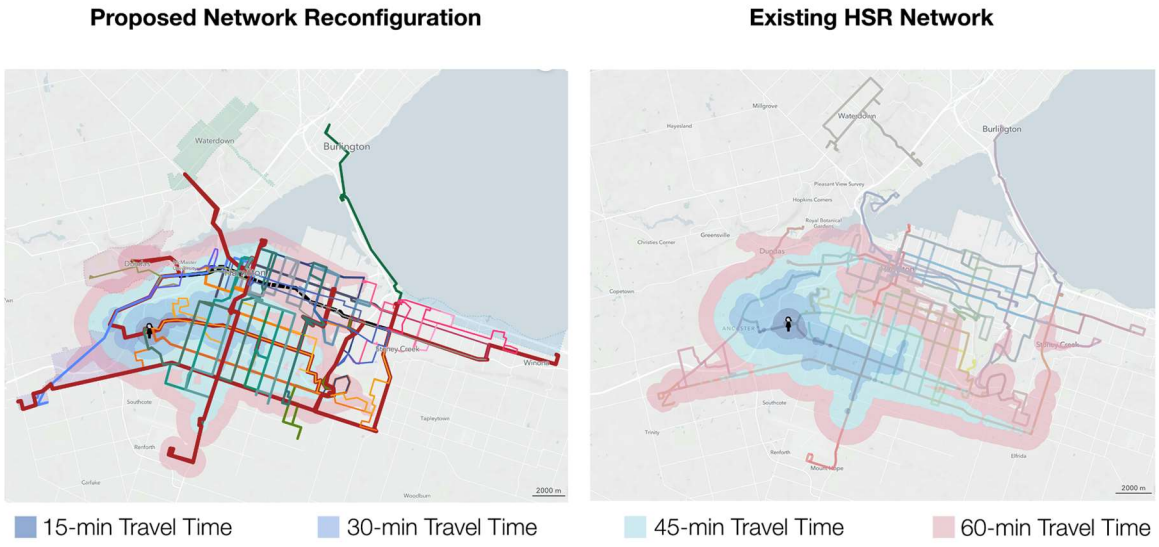
Existing HSR Network



15-min Travel Time | 30-min Travel Time | 45-min Travel Time | 60-min Travel Time

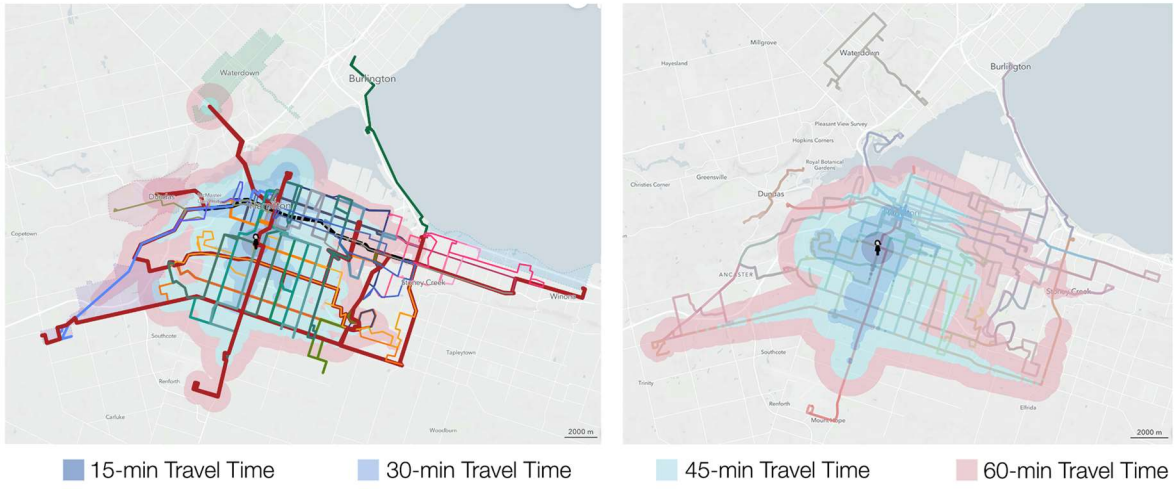
Travel time	Proposed Network		Existing Network		Difference	
	Population	Employed	Population	Employed	Population	Employed
15-min	19,895	7,794	17,712	7,087	2,183	707
30-min	93,155	39,968	104,201	44,386	-11,046	-4,418
45-min	222,105	96,995	206,155	90,397	15,950	6,598
60-min	362,233	160,647	361,200	160,349	1233	298

Meadowlands Terminal



Travel time	Proposed Network		Existing Network		Difference	
	Population	Employed	Population	Employed	Population	Employed
15-min	9,568	3,851	5,273	2,233	4,295	1,618
30-min	79,312	34,909	56,408	25,202	22,904	9,707
45-min	224,142	99,233	167,212	74,178	56,930	25,055
60-min	333,246	147,702	324,068	143,363	9,178	4,339

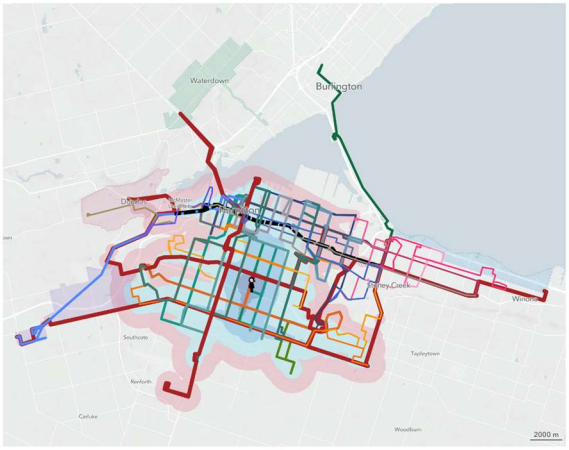
Mohawk College



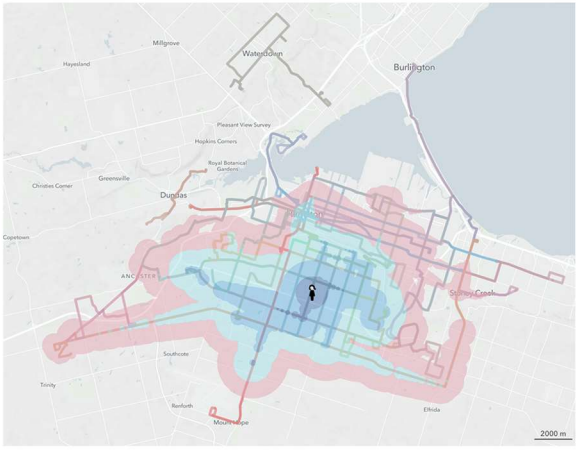
Travel time	Proposed Network		Existing Network		Difference	
	Population	Employed	Population	Employed	Population	Employed
15-min	17,923	7,859	18,375	8,454	-452	-595
30-min	108,148	47,387	119,992	51,960	-11,844	-4,573
45-min	279,867	122,776	297,413	130,901	-17,546	-8,125
60-min	36,540	161,440	402,660	177,537	-366,120	-16,097

CF Lime Ridge Mall

Proposed Network Reconfiguration



Existing HSR Network



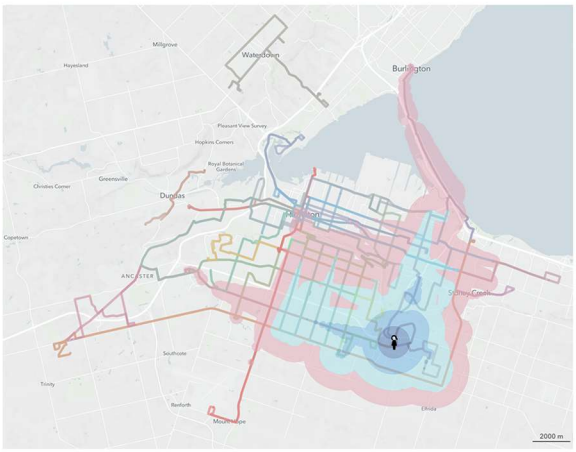
15-min Travel Time | 30-min Travel Time | 45-min Travel Time | 60-min Travel Time

Travel time	Proposed Network		Existing Network		Difference	
	Population	Employed	Population	Employed	Population	Employed
15-min	10,754	4,594	9,312	4,000	1,442	594
30-min	78,071	35,672	76,803	35,011	1,268	661
45-min	251,152	111,777	235,001	103,070	16,151	8,707
60-min	346,715	154,632	369,328	163,911	-22,613	-9,279

Heritage Greene Terminal

Proposed Network Reconfiguration

Existing HSR Network

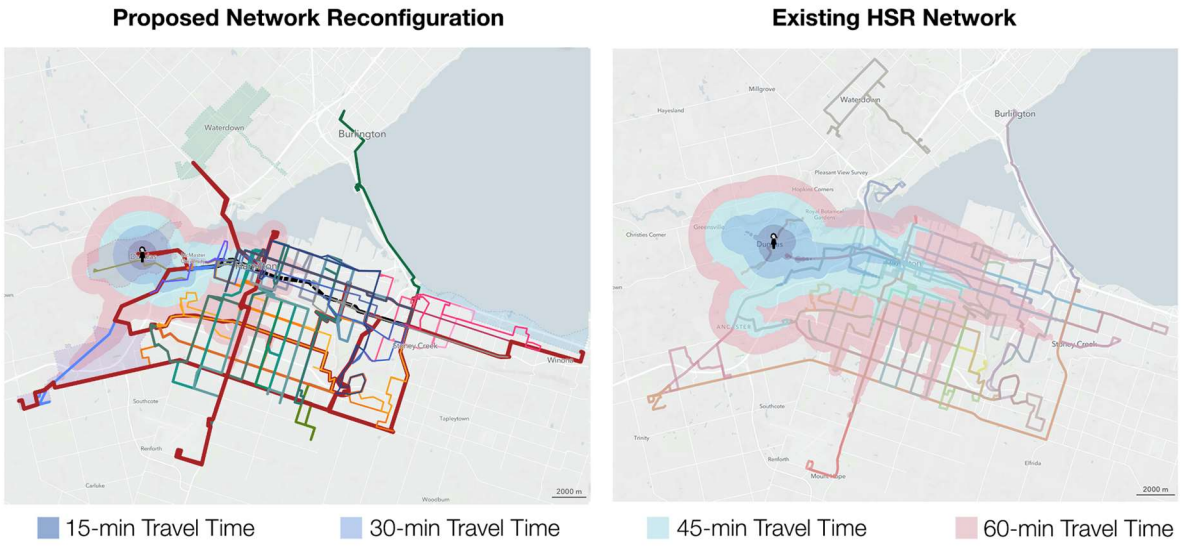


15-min Travel Time | 30-min Travel Time | 45-min Travel Time | 60-min Travel Time

Travel time	Proposed Network		Existing Network		Difference	
	Population	Employed	Population	Employed	Population	Employed
15-min	3,445	1,782	6,728	3,249	-3,283	-1,467
30-min	59,979	28,119	60,275	28,140	-296	-21

45-min	260,948	114,824	194,145	89,317	66,803	25,507
60-min	397,598	176,965	371,808	165,297	25,790	11,668

Dundas Downtown



Travel time	Proposed Network		Existing Network		Difference	
	Population	Employed	Population	Employed	Population	Employed
15-min	6,613	2,505	6,816	2,630	-203	-125
30-min	22,281	9,456	32,105	3,665	-9,824	5,791
45-min	46,720	28,385	108,398	47,628	-61,678	-19,243
60-min	156,576	67,698	259,937	144,168	-103,361	-76,470

3.4. Connectivity Analysis

The connectivity analysis is the core building block for the proposed network. The analysis of users' preferences highlighted that reducing the number of transfers is the key contributing factor to enhance ridership rates. As such, the proposed network provides superior connectivity performance compared to the current network based on all connectivity measures. The proposed network, attributed to the hierarchical structure, provides direct (no transfer) connection between its eight hubs.

Table 3-6: Hub-to-Hub connectivity

	CF Lime Ridge Terminal	Eastgate Terminal	Heritage Greene Terminal	King & James	McMaster University Terminal	Meadowlands Terminal	Mohawk College Terminal	West Harbour GO Terminal
CF Lime Ridge Terminal	X	0 Transfers	0 Transfers	0 Transfers	0 Transfers	0 Transfers	0 Transfers	0 Transfers
Eastgate Terminal	0 Transfers	X	0 Transfers	0 Transfers	0 Transfers	0 Transfers	0 Transfers	0 Transfers
Heritage Greene Terminal	0 Transfers	0 Transfers	X	0 Transfers	0 Transfers	0 Transfers	0 Transfers	0 Transfers
King & James	0 Transfers	0 Transfers	0 Transfers	X	0 Transfers	0 Transfers	0 Transfers	0 Transfers
McMaster University Terminal	0 Transfers	0 Transfers	0 Transfers	0 Transfers	X	0 Transfers	0 Transfers	0 Transfers

Meadowlands	0 Transfers	0 Transfers	0 Transfers	0 Transfers	0 Transfers	X	0 Transfers	0 Transfers
Mohawk College	0 Transfers	0 Transfers	0 Transfers	0 Transfers	0 Transfers	0 Transfers	X	0 Transfers
West Harbour GO	0 Transfers	0 Transfers	0 Transfers	0 Transfers	0 Transfers	0 Transfers	0 Transfers	X

** Shaded cells represent BLAST connection between hubs.*

Table 3-7: Connectivity of major destinations (Proposed Network)

	Ancaster Fairgrounds Gateway	Centre Mall Terminal	CF Lime Ridge Terminal	Confederation GO Terminal	Downtown Dundas Terminal	Eastgate Terminal	Elfrida Gateway	Hamilton GO Centre	Heritage Greene Terminal	King & James	McMaster University Terminal	Meadowlands Terminal	Mohawk College Terminal	Mountain Transit Centre	Parkdale Terminal	Stoney Creek Gateway	Waterdown Gateway	West Harbour GO Terminal
% In Compliance	**100%**	**100%**	**100%**	**100%**	**94%**	**100%**	**94%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**94%**	**100%**	**88%**	**94%**	**100%**
Ancaster Fairgrounds Gateway	X	1	1	1	1	1	1	1	0	1	0	0	1	1	0	1	1	0
Centre Mall Terminal	1	X	0	1	1	1	1	0	1	0	1	1	0	1	0	1	0	0
CF Lime Ridge Terminal	1	0	X	1	0	0	1	0	0	0	0	0	0	1	1	1	0	0
Confederation GO Terminal	1	1	1	X	1	0	0	1	0	1	1	1	1	1	1	1	1*	0*
Downtown Dundas Terminal	1	1	0	1	X	1	1	0	0	0	0	1	1	1	1	2 Transfers	1	1
Eastgate Terminal	1	1	0	0	0	X	0	1	0	0	0	1	1	1	0	0	1	1
Elfrida Gateway	1	1	1	0	1	0	X	1	0	1	1	1	1	1	1	1	2 Transfers	1
Hamilton GO Centre	1	0	0	1	0	1	1	X	1	0	0	0	0	0	1	1	0	0*
Heritage Greene Terminal	0	1	0	0	1	0	0	1	X	0	0	0	0	1	0	1	1	1
King & James	1	0	0	1	0	0	1	0	0	X	0	0	0	0	0	1	0	0
McMaster University Terminal	0	1	0	1	0	0	1	0	0	0	X	0	1	1	0	1	1	1
Meadowlands Terminal	0	1	0	1	1	1	1	0	0	0	0	X	0	1	1	1	1	0
Mohawk College Terminal	1	0	0	1	1	1	1	0	0	0	1	0	X	0	1	1	0	0
Mountain Transit Centre	1	1	1	1	1	1	1	0	1	0	1	1	0	X	1	2 Transfers	1	0
Parkdale Terminal	0	0	1	1	1	0	1	1	0	0	0	1	1	1	X	0	1	1
Stoney Creek Gateway	1	1	1	1	2 Transfers	0	1	1	1	1	1	1	1	2 Transfers	0	X	1	1
Waterdown Gateway	1	0	0	1	1	1	2 Transfers	0	1	0	1	1	0	1	1	1	X	0*
West Harbour GO Terminal	0	0	0	0*	1	1	1	0*	1	0	1	0	0	0	1	1	1*	X

Primary Hub to Primary Hub: Zero Transfers
Primary Hub to Secondary Hub: maximum one Transfer
Secondary Hub to Secondary Hub: One Transfer
**Uses GO Transit for part of trip (assumes train service between Aldershot, West Harbour, & Confederation GOs)*

Table 3-8: Connectivity of major destinations (current network)

	Ancaster Fairgrounds Gateway	Centre Mall Terminal	CF Lime Ridge Terminal	Confederation GO Terminal	Downtown Dundas Terminal	Eastgate Terminal	Elfrida Gateway	Hamilton GO Centre	Heritage Greene Terminal	King & James	McMaster University Terminal	Meadowlands Terminal	Mohawk College Terminal	Mountain Transit Centre	Parkdale Terminal	Stoney Creek Gateway	Waterdown Gateway	West Harbour GO Terminal
% In Compliance	**0%**	**82%**	**71%**	**94%**	**76%**	**88%**	**82%**	**88%**	**88%**	**94%**	**82%**	**82%**	**82%**	**82%**	**88%**	**47%**	**18%**	**82%**
Ancaster Fairgrounds Gateway	X	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP	NP
Centre Mall Terminal	NP	X	0	1	1	1	1	0	1	0	1	1	1	1	1	2	2	1
CF Lime Ridge Terminal	NP	0	X	1	1	1	1	0	0	0	2	1	1	1	1	2	2	2
Confederation GO Terminal	NP	1	1	X	1	0	0	1	0	1	1	1	1	1	1	1	1	0*
Downtown Dundas Terminal	NP	1	1	1	X	1	2	0	1	0	0	1	1	1	1	2	2	1
Eastgate Terminal	NP	1	1	0	1	X	0	1	0	1	0	1	1	1	0	0	2	1
Elfrida Gateway	NP	1	1	0	2	0	X	1	0	1	1	1	1	1	1	0	3	1
Hamilton GO Centre	NP	0	0	1	0	1	1	X	1	0	0	0	0	0	1	1	2	0*
Heritage Greene Terminal	NP	1	0	0	1	0	0	1	X	1	1	0	0	1	0	1	2	1
King & James	NP	0	0	1	0	0	1	0	1	X	0	0	0	0	0	1	1	0
McMaster University Terminal	NP	1	2	1	0	0	1	0	1	0	X	0	1	1	0	1	2	1
Meadowlands Terminal	NP	1	1	1	1	1	1	0	0	0	0	X	1	1	1	2	2	1
Mohawk College Terminal	NP	1	1	1	1	1	1	0	0	0	1	1	X	0	1	2	2	0
Mountain Transit Centre	NP	1	1	1	1	1	1	0	1	0	1	1	0	X	1	2	2	0
Parkdale Terminal	NP	1	1	1	1	0	1	1	0	0	0	1	1	1	X	1	2	1
Stoney Creek Gateway	NP	2	2	1	2	0	1	1	1	1	1	2	2	2	1	X	3	2
Waterdown Gateway	NP	2	2	1*	2	2	3	2	2	1	2	2	2	2	2	3	X	1*
West Harbour GO Terminal	NP	1	2	0*	1	1	1	0*	1	0	1	1	0	0	1	2	1*	X

**Uses GO Transit for part of trip (assumes train service between Aldershot, West Harbour, & Confederation GOs)*
NP = Not possible

Furthermore, the metrics displayed in Table 3-7 and Table 3-8 provide clear indications on the higher connectivity between major destinations at the city of Hamilton.

Table 3-9: Connectivity analysis (proposed vs. Current network)

	Proposed Network	Current Network	Connectivity Difference
Average %	**98%**	**74%**	**24%**
Ancaster Fairgrounds Gateway	100%	0%	100%
Centre Mall Terminal	100%	82%	18%
CF Lime Ridge Terminal	100%	71%	29%
Confederation GO Terminal	100%	94%	6%
Downtown Dundas Terminal	94%	76%	18%
Eastgate Terminal	100%	88%	12%
Elfrida Gateway	94%	82%	12%
Hamilton GO Centre	100%	88%	12%
Heritage Greene Terminal	100%	88%	12%
King & James	100%	94%	6%
McMaster University Terminal	100%	82%	18%
Meadowlands Terminal	100%	82%	18%
Mohawk College Terminal	100%	82%	18%
Mountain Transit Centre	94%	82%	12%
Parkdale Terminal	100%	88%	12%
Stoney Creek Gateway	88%	47%	41%
Waterdown Gateway	94%	18%	76%
West Harbour GO Terminal	100%	82%	18%

3.5. Network Robustness Assessment

There are no universal definitions of network robustness in the transportation context. While this report does not aim to resolve this issue, the report adopts the following definitions in the context of the present study. ***Static-robustness*** is defined as *"a holistic network-level measure that quantifies the overall network performance as a function of its comprising components."*

In this respect, the HSR network robustness is evaluated using three static measures. These measures consider the spatial arrangements routes, directions, and stops, as well as some of the temporal aspects such as service frequency. While it falls short in accommodating service occupancy features service such as bus occupancy. The three measures implemented herein are frequently utilized in the literature and include:

The Robustness Indicator (R^t) (Eq. 1) relates the robustness of the service based on the number of alternative routes between stations, as an indication of the integrity of the network.

$$\text{Robustness Indicator} \quad R^t = \frac{L_T - N_{TE} - L_m + 1}{N_{Total}} \qquad (1)$$

While the Robustness Metric (r^T) (Eq. 2) does not consider the number of multiple routes operating on the same link in the estimation of network robustness.

$$\text{Robustness Metric} \quad r^T = \frac{ln\,(L_T - N_{TE} + 2)}{N_{Total}} \qquad (2)$$

The Critical Threshold (f_c) refers to the fraction (number) of non-operational stations that causes a completely disconnected network (Eq. 3).

$$\text{Critical Threshold} \qquad f_c = 1 - \frac{1}{\frac{K_{av.}^2}{K_{av.}} - 1} \quad (3)$$

These measures were applied at the network-level for the existing HSR operation and the proposed reconfiguration. The values of these measures are used to compare the robustness of the two alternatives as a holistic assessment of network robustness.

The robustness assessment results are illustrated in Table 3-10. The results indicate that the proposed network is more robust across all measures.

In other words, the magnitude of the cascading impacts (e.g., cancelled trips, delayed trips, etc.) arising from any incident during operation in the proposed network is less sever compared to the existing network.

Table 3-10. Robustness Assessment of HSR Network

Network	Robustness Indicator $\mathbf{R^t}$	Robustness Metric r^T	Critical Threshold $\mathbf{f_c}$
Existing HSR Network	0.201	0.014	0.692
Proposed Reconfiguration	0.408	0.221	0.873

3.6. Assessment of Reconfiguration Guidelines

The proposed network fulfills all the reconfiguration guidelines introduced in Chapter 2, which in turn were based on the data collection, modelling, and analysis of Hamiltonians' needs from HSR. Revisiting these guidelines is critical to evaluate the proposed network.

Hub-to-Hub No-Transfer Service

- There are direct trips (no transfer) that connect the eight proposed transit hubs in Hamilton.
- The current HSR network falls short in providing such connectivity as the network is not designed based on a hierarchical process.

Hub-to-Origin/Designation One-Transfer Service

- Each transit hub is supported by local routes that provide access to the local community. Therefore, any trip connecting the HSR hubs to/from any place in Hamilton would be carried out with only one transfer. Often, this transfer is to a higher-order transit service (i.e., Express and BRT).
- Most of the trips in the current network requires approximately two transfers.

Higher-Order Fast-Frequent Transit Service

- Relative to the existing network, the proposed reconfiguration provides a higher level of service and frequencies. Further, it provides higher order-based service, which in turn enables Hamiltonians to entertain several options while travelling within the city and to regional connectivity.
- The higher-order is established from a clear service hierarchy in the proposed five-tier route classification.

Regional-Connectivity

- The proposed network provides regional connectivity to Go Services (Bus and Rail) through three dedicated regional routes and four express routes, and 12 collector routes.

Resilient & Robust Network

- The proposed network exhibits a higher overall network robustness index. This is attributed to the integration between grid, radial, and local routes, as well as the hierarchical nature of the routes.

Last-Mile Accessibility All Week

- *Last-mile access through local routes is provided all week with a minimum of 30 minutes headway (2 buses per hour).*

Demand-based Stop/Infrastructure Planning

- Although the proposed two BRT routes will contribute to addressing Hamiltonians needs for weather protection at stop and will increase the spacing between stops, additional efforts are required to guide the infrastructure (stops/station) planning process. This is fundamental for the successful implementation of the proposed reconfiguration.

Enhanced & Reliable Level of Service

- Although not observed from the network reconfiguration, it is strongly recommended to implement a continuous improvement loop with its focus on improving transit network speed and reliability. This could be established through a new unit/department within the HSR. This is fundamental to address/smooth any service disruptions during daily operations. Such a department would also be responsible for updating the on-time performance matrix to ensure a reliable level of service.

CHAPTER 4

DATA-driven Reconfiguration Process

4. Data-driven Reconfiguration Process

The reconfiguration process is informed by a wealth of data and models detailed in Reports 1 & 2. First, the HSR public survey data is utilized to model Hamiltonians' preferences towards the HSR service attributes. The survey is aimed at assessing the quality of HSR service based on user preferences and expectations. The survey is intended for those who currently use HSR service or may in the future. The McMaster Research Ethics Board (MREB) approved the survey on July 18th, 2018. Two waves of data collection have been completed in September 2018 and April 2019. The survey is structured into five main sections, including socioeconomic and demographics, travel behaviour and mobility options, HSR perceived and desired quality, stated preferences experiment, and attitudinal and behavioural orientations. Second, the HSR operation and infrastructure data is used to benchmark the service performance across both spatial (infrastructure distribution) and temporal (on-time performance) dimensions.

While Hamilton prides itself on being "A City of Many Communities," it is the HSR's role to connect those communities together. By having a transit system that provides quality service to the entire city, it promotes and distributes economic prosperity, provides environmental benefits, and improves the quality of life.

For that system to truly function effectively, routes and service levels within those communities must be determined by overarching city-building goals and data. Efficiencies and attractiveness of a transit system as a choice mode of travel should be built around the overarching holistic City building goals and not based on individual communities' support or non-support of transit.

Overall, this chapter bridges the findings from user engagement models and service benchmarking assessments from one hand and the proposed service configuration from the other hand.

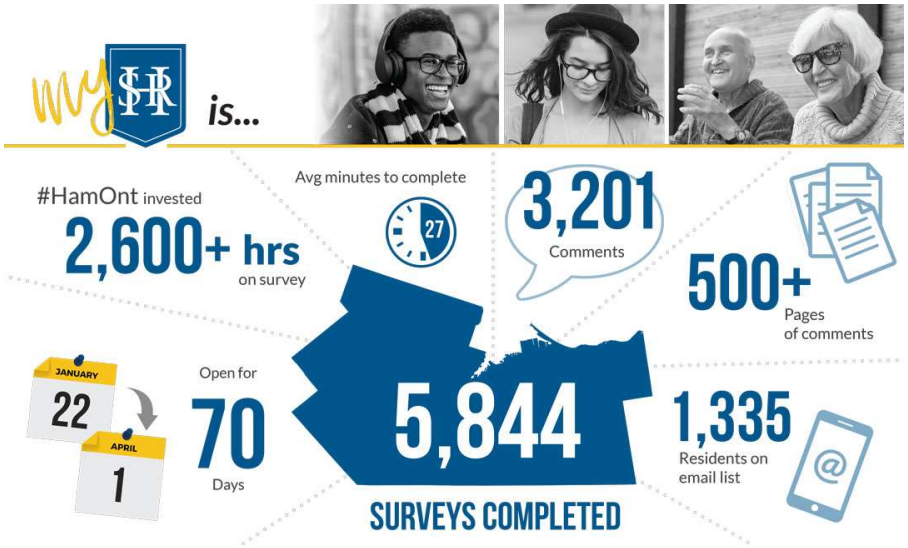


Figure 4-1. Infographic of HSR Public Survey

The reconfiguration process draws upon the findings derived from user preferences models as well as service operation benchmarking, land use development, and travel demand in Hamilton. The following sub-sections provide a brief description of the models utilized to inform the reconfiguration philosophy. It should be noted that the details of the modelling efforts are provided in previous reports.

4.1. Importance Performance Analysis (IPA)

The IPA model integrates the relative importance of each service attribute with the associated level of satisfaction expressed towards these attributes. IPA models are beneficial for the microscopic analysis, explicitly to depict the differences between the desired and perceived levels of quality, with the aim of identifying attributes that will provide the most significant improvement to overall service satisfaction. The results of the IPA models are graphically displayed on a two-dimensional matrix, the x-axis represents satisfaction (performance), and the y-axis represents importance, which forms four quadrants, as shown in Figure 4-2 .

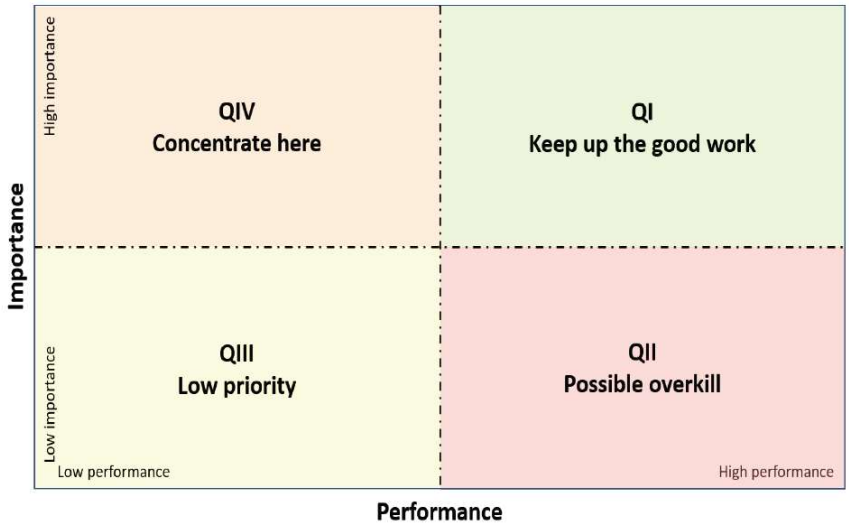


Figure 4-2: The IPA matrix quadrants

The IPA was applied to the entire sample as well as on the route-level. The results of the IPA informed the network reconfiguration task by prioritizing transit service aspects.

4.2. Transportation Tomorrow Survey (TTS)

The 2016 Transportation Tomorrow Survey (TTS), which is administered by the Data Management Group at the University of Toronto, is utilized to characterize, and understand trip-making behaviour in Hamilton. The TTS survey utilizes a large sample of households in the Greater Golden Horseshoe region and aims to understand the travel behaviour in a typical weekday for the sampled households. The 2016 data first became available in early 2018 and introduced a full range of intra-metropolitan trip-types, such as journey-to-work, discretionary, and others. In the current analysis, all trip purposes are included in aggregate traffic analysis zones. Table 4-1 shows the total daily Origin-Destination (OD) matrix for transit trips based on 19 aggregated zones representing the City of Hamilton.

Table 4-1: Total daily flow of transit trips

Depart	Arrive: Downtown	Dundurn	Westdale	Central	East	Industrial	West Mo..	Central M..	East Mou..	Rosedale..	East Ston..	West Sto..	Upper St..	Dundas	Waterdo..	Ancaster	Ancaster ..	Glanbrook	Flamboro..	Grand To..
Downtown	1,613	449	2,611	1,465	1,148	0	1,436	1,674	447	225	121	308	116	315	0	226	0	0	40	12,194
Dundurn	504	90	473	338	175	55	339	213	26	29	0	203	0	23	0	21	0	26	0	2,515
Westdale	2,751	421	3,211	1,267	407	62	494	679	87	0	243	247	81	382	0	395	0	0	0	10,727
Central	1,334	255	1,150	1,024	697	249	863	434	32	180	67	593	0	144	27	17	0	36	0	7,102
East	1,225	175	445	452	416	43	486	70	83	267	95	888	0	30	0	0	28	0	0	4,703
Industrial	0	55	62	198	43	0	0	56	0	0	31	86	15	0	0	0	0	0	0	546
West Mountain	1,385	282	665	738	486	0	1,857	1,662	730	118	48	233	64	143	0	103	0	0	0	8,514
Central Mountain	1,634	230	849	592	121	56	1,637	2,490	632	49	27	126	113	26	0	101	30	0	57	8,770
East Mountain	341	0	87	76	37	0	633	658	324	0	0	0	92	34	0	0	0	0	0	2,282
Rosedale/ Red Hill	254	29	26	180	181	0	89	49	0	66	0	290	0	0	0	0	0	0	0	1,164
East Stoney Creek	69	0	340	149	244	31	150	27	0	0	134	144	0	100	0	0	0	0	0	1,388
West Stoney Creek	353	203	129	434	897	86	255	131	0	359	144	515	87	0	0	44	0	0	0	3,637
Upper Stoney Creek	116	0	170	0	0	15	64	93	79	0	0	61	0	59	0	0	0	7	0	664
Dundas	367	23	722	61	0	0	177	85	0	0	0	0	0	52	0	0	0	0	0	1,487
Waterdown	0	0	0	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	67
Ancaster	177	0	292	0	0	0	125	92	18	0	0	44	0	0	0	0	16	0	0	764
Ancaster (Rural)	0	0	0	0	0	0	110	61	0	0	0	0	0	0	0	126	0	0	0	297
Glanbrook	0	26	0	36	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	69
Flamborou..	40	0	0	0	0	0	0	57	0	0	0	0	0	0	13	0	0	0	0	110
Grand Total	12,163	2,238	11,232	7,064	4,852	597	8,715	8,531	2,458	1,293	910	3,738	575	1,308	40	1,033	74	69	110	67,000

Depart	Arrive: Downtown	Dundurn	Westdale	Central	East	Industrial	West Mo..	Central M..	East Mou..	Rosedale..	East Ston..	West Sto..	Upper St..	Dundas	Waterdo..	Ancaster	Ancaster ..	Glanbrook	Flamboro..	Grand To..
Downtown	1,613	449	2,611	1,465	1,148	0	1,436	1,674	447	225	121	308	116	315	0	226	0	0	40	12,194
Dundurn	504	90	473	338	175	55	339	213	26	29	0	203	0	23	0	21	0	26	0	2,515
Westdale	2,751	421	3,211	1,267	407	62	494	679	87	0	243	247	81	382	0	395	0	0	0	10,727
Central	1,334	255	1,150	1,024	697	249	863	434	32	180	67	593	0	144	27	17	0	36	0	7,102
East	1,225	175	445	452	416	43	486	70	83	267	95	888	0	30	0	0	28	0	0	4,703
Industrial	0	55	62	198	43	0	0	56	0	0	31	86	15	0	0	0	0	0	0	546
West Mountain	1,385	282	665	738	486	0	1,857	1,662	730	118	48	233	64	143	0	103	0	0	0	8,514
Central Mountain	1,634	230	849	592	121	56	1,637	2,490	632	49	27	126	113	26	0	101	30	0	57	8,770
East Mountain	341	0	87	76	37	0	633	658	324	0	0	0	92	34	0	0	0	0	0	2,282
Rosedale/ Red Hill	254	29	26	180	181	0	89	49	0	66	0	290	0	0	0	0	0	0	0	1,164
East Stoney Creek	69	0	340	149	244	31	150	27	0	0	134	144	0	100	0	0	0	0	0	1,388
West Stoney Creek	353	203	129	434	897	86	255	131	0	359	144	515	87	0	0	44	0	0	0	3,637
Upper Stoney Creek	116	0	170	0	0	15	64	93	79	0	0	61	0	59	0	0	0	7	0	664
Dundas	367	23	722	61	0	0	177	85	0	0	0	0	0	52	0	0	0	0	0	1,487
Waterdown	0	0	0	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	67
Ancaster	177	0	292	0	0	0	125	92	18	0	0	44	0	0	0	0	16	0	0	764
Ancaster (Rural)	0	0	0	0	0	0	110	61	0	0	0	0	0	0	0	126	0	0	0	297
Glanbrook	0	26	0	36	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	69
Flamborou..	40	0	0	0	0	0	0	57	0	0	0	0	0	0	13	0	0	0	0	110
Grand Total	12,163	2,238	11,232	7,064	4,852	597	8,715	8,531	2,458	1,293	910	3,738	575	1,308	40	1,033	74	69	110	67,000

From the TTS data, the analysis utilized the data associated with 234 Traffic Analysis Zones (TAZs) that represent the City of Hamilton. The O-D matrices are constructed to represent daily (all travel modes) interzonal trip flow as well as trips between all zones. The O-D matrices help to:

1) Better understand trip-making behaviour in Hamilton for all travel modes,
2) Better understand the geography of trips, trip volumes, and mode-shares associated with key origins and destinations, and
3) Interpret identifiable patterns in terms of how they link to existing HSR routes and possible implications.

This, in turn, provides an additional lens to support the allocation of HSR services.

4.3. Benchmarking HSR service

Benchmarking the HSR service from an operational perspective is of utmost importance for identifying the gaps and better-allocating HSR resources. The assessment of service allocation, productivity, and operation was utilized to inform the following aspects:

1) Examining the HSR service allocation including route frequency and stop utilization, and highlighting the variation on service allocation over time and space,
2) Estimating route productivity index as a function of ridership rates and the desired occupancy for each route, and
3) Assessing the reliability of HSR operation and service on-time performance indices at both route- and stop-levels.

Figure 4-3 shows a sample of the Stop Utilization Index (i.e., one of the indices used in benchmarking the service). The Stop Utilization Index demonstrates the number of buses per hour serving each stop. The benchmarking of existing transit service informs the reconfiguring of the network by identifying where deficiencies in the current system are present and where service is under or over-utilized. Further, it informs the required modifications for existing service operation standards and the dire need for a continued monitoring HSR service operation and planning.

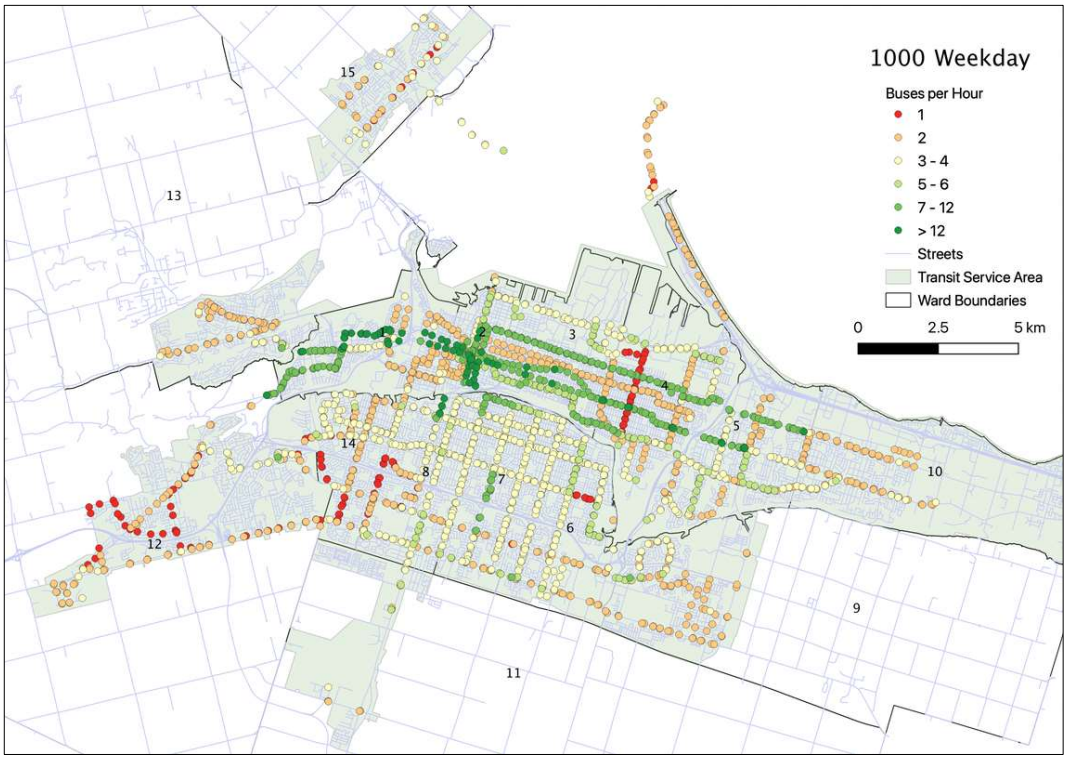


Figure 4-3: Sample of Stop Utilization Index (Weekday – 10:00 AM)

4.4. Desired and Perceived Quality

The desired quality from HSR service, for all respondents, is evaluated based on a self-reported level of importance associated with 30 suggested service improvements. In addition to identifying the HSR desired service quality, the variation of the desired quality measures is tested across routes as well as across different

socio-economic demographic characteristics. Figure 4-4 shows the importance of HSR service improvements as an example.

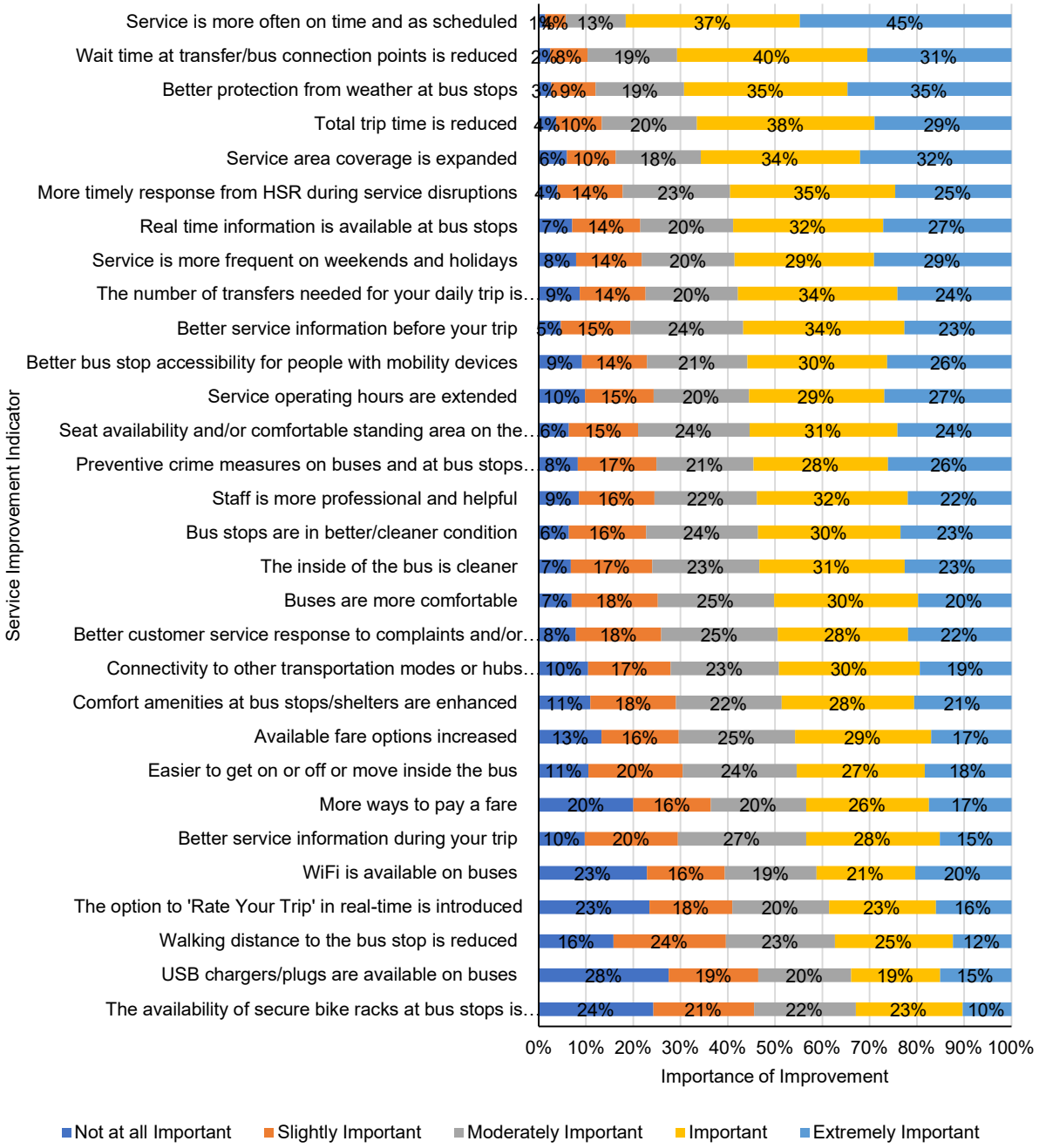


Figure 4-4: Importance of improvements to HSR service

While the perceived quality from HSR service, for transit users only, is evaluated based on consumers' self-reported satisfaction of 29 service indicators. Also, the variation of HSR perceived service quality is tested across different routes and socioeconomic demographic characteristics.

Taken together, the desired and perceived quality measures identify the necessary aspects to satisfy current users and attract potential users, hence informing network reconfiguration. Figure 4-5 shows the satisfaction level associated with different HSR aspects.

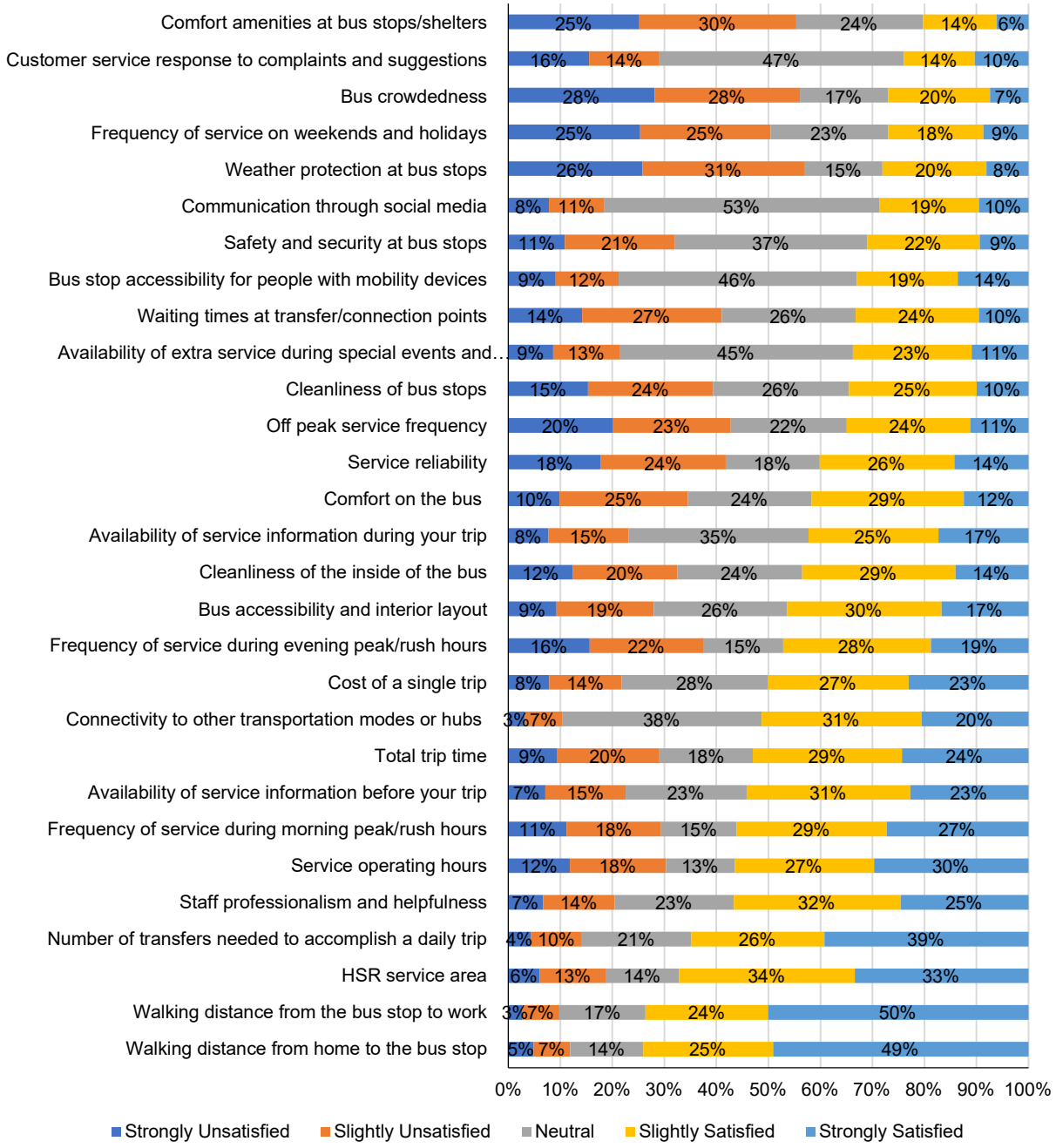


Figure 4-5: Satisfaction level associated with HSR service aspects.

4.5. Willingness To Pay Models

Willingness to pay (WTP) estimates for service improvements are based on advanced statistical models, and the data derived from two Stated Choice Experiments: labelled and unlabelled. WTP estimates are also an implicit way of presenting customer preferences towards service attributes. WTP estimates were

calculated for daily, regular, and infrequent customers. WTP estimates are used to identify the influence of each service attributes on the overall transit utility and mode choice.

Table 4-2 shows the willingness to pay estimates for service improvements regarding the unlabelled choice experiment.

Table 4-2: WTP estimates for the unlabelled experiment.

	All	Infrequent/ Non-customers	Regular customers	Daily customers
Journey time (CDN$ per 10 minutes reduction)	**$0.96**	$1.35	$0.82	$0.85
Walking time (CDN$ per 5 minutes reduction)	**$0.20**	$0.53	$0.09	$0.12
Service headway (CDN$ per 5 minutes reduction)	**$0.34**	$0.33	$0.33	$0.37
Zero transfer (CDN$ per trip)	**$2.69**	$4.33	$2.36	$2.04
One transfer (CDN$ per trip)	**$1.89**	$2.71	$1.65	$1.64
Real-time info. At-stop (CDN$ per trip)	**$0.59**	$0.41	$0.55	$0.68
Real-time info. On-board (CDN$ per trip)	**$0.89**	$0.93	$0.88	$0.88

Red cells refer to lower WTP and Green cells refer to higher WTP.

4.6. HSR routes legacy

Respecting the legacy of HSR routes is essential for building transit ridership as it is highly influenced by residents' familiarity with the transit system. In this respect, HSR staff completed questionnaires to develop HSR Legacy Q-Cards. Those Q-cards include, among other points, historical perspective, major attractions, interlining, and last performed intervention. Those Q-Cards, as shown in Figure 4-6, are an excellent source for steering network reconfiguration while preserving HSR routes legacy.

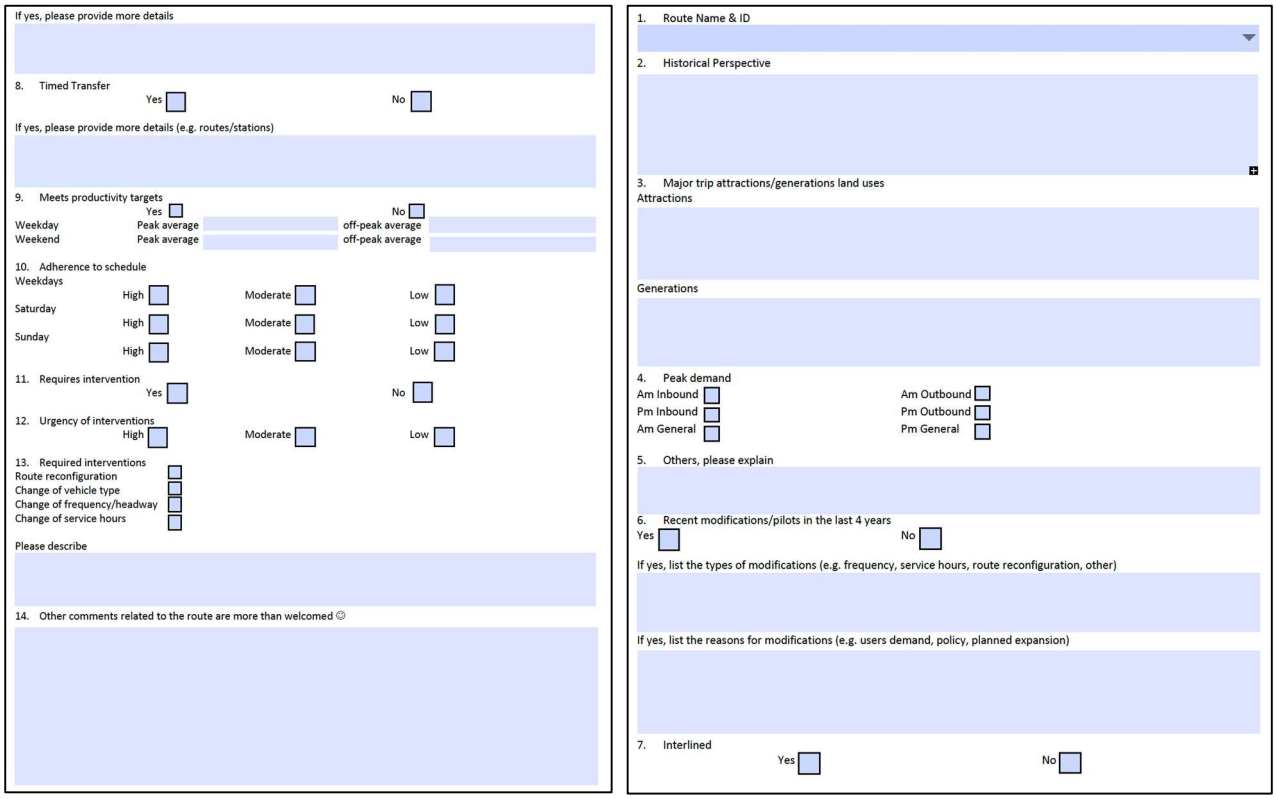


Figure 4-6: A template of HSR Routes Q-Cards

4.7. Land uses

As the effectiveness of any urban transit systems depends mainly on the integration between public transit and land use. The existing and planned land uses for the City of Hamilton were considered in the network reconfiguration. The importance of each land use reflects how supportive this land use to transit service (i.e., the anticipated travel demand), which was determined based on best practices and supported through workshops with HSR personnel. The importance of land use, from a transit perspective, were modelled to justify the allocation of transit services. Figure 4-7 shows the importance of the land uses for the City of Hamilton from a transit perspective.

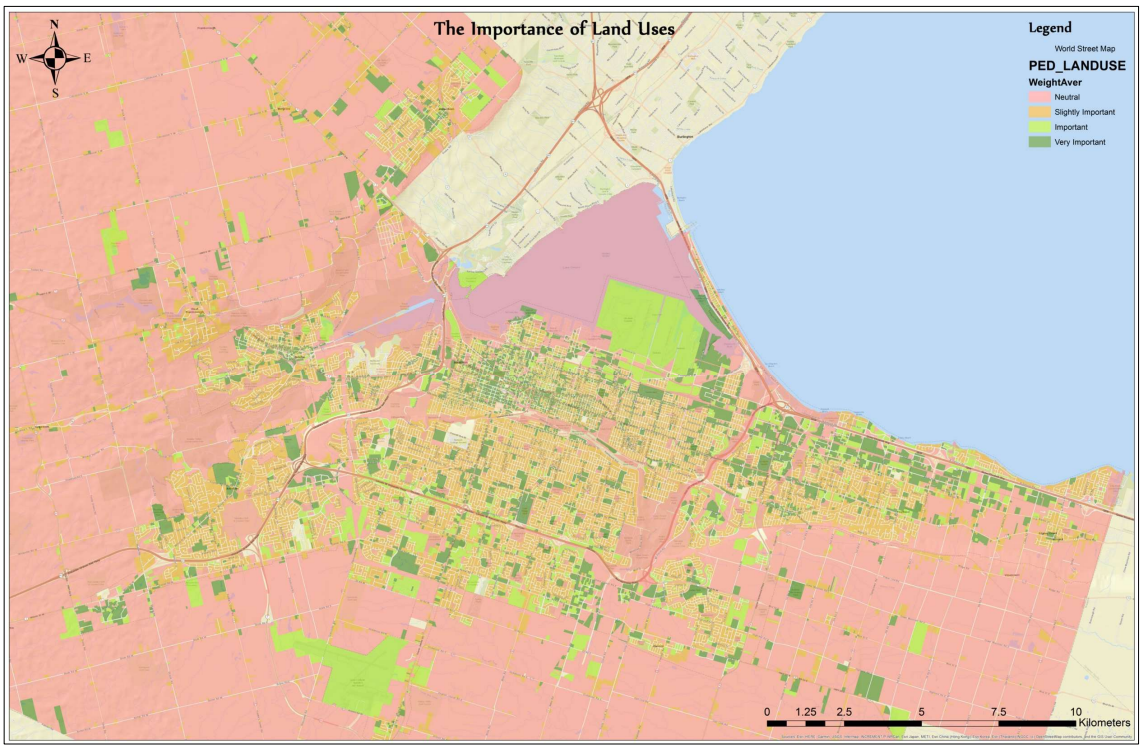


Figure 4-7: The importance of land uses from a transit perspective.

CHAPTER 5
ROUTE-SPECIFIC RECONFIGURATION

5. Route-Specific Reconfiguration

This chapter illustrates the proposed network reconfiguration at the route level. The reconfigured routes are assigned to one of the following five categories: Bus Rapid Transit, Express, Collectors, Local, and Regional routes. Each category represents a distinct operation profile.

As outlined in Chapter 2, the five categories are grounded on the total-trip concept for the proposed network and could be seen in a hierarchical arrangement, where the proposed BRT is the apex of the hierarchy. That said, each existing route is presented side-by-side with the reconfigured service to ease comparison.

5.1. Express Services

As outlined in Chapter 2, connecting HSR hubs without transfers is one of the main planning objectives derived from the analysis. The proposed eight express routes will enable hub-to-hub direct and fast trips. The service is proposed to operate all week with frequencies ranging from 6-12 buses per hour (5-10 mins headway). In addition, a stop rationalization analysis is required to eliminate the need for frequent stopping on express routes. The proposed express routes will replace existing (not necessarily express) routes as detailed in the following subsections.

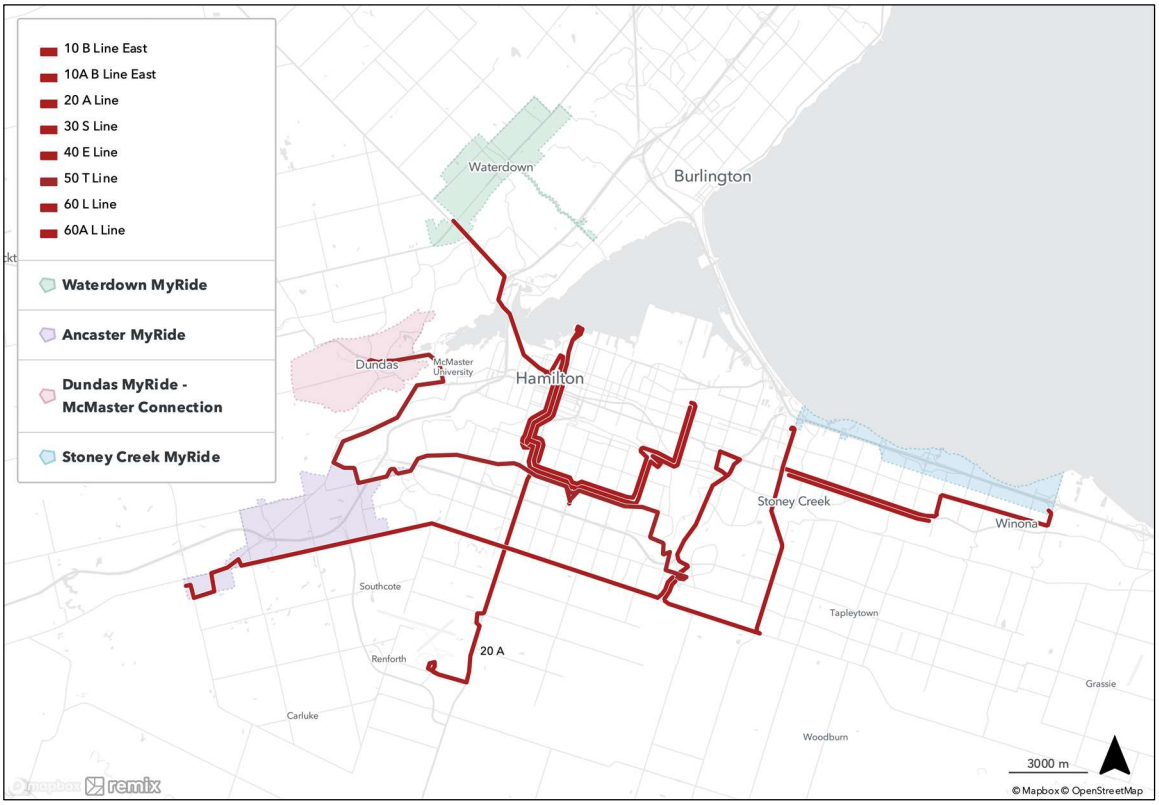


Figure 5-1: Proposed Express Routes (n=8)

Express Route – 10 B Line East Express

This is a Rapid transit route that travels from Eastgate Square Terminal in the west to Winona Crossing Terminal in the east, via Queenston Rd/Highway 8, Jones Rd, Stoney Creek Gateway, and Barton St E. Service would run seven days a week, and the route serves around 19,500 population within 400 m of proposed stops. Figure 5-2 shows the proposed alignment of Route 10 B Line East.

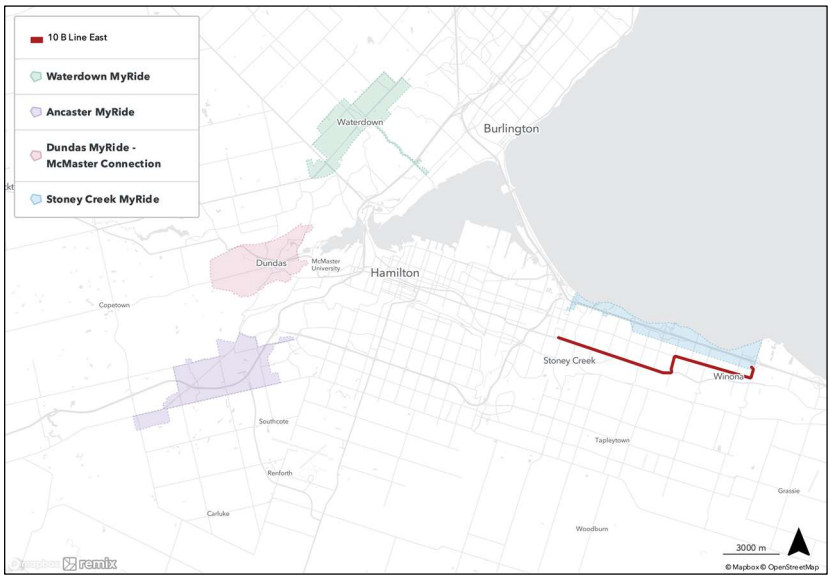


Figure 5-2: The proposed alignment of route 10 B East (Express)

Express Route – 10 B A Line East Express

This is a Rapid transit route that travels from Eastgate Square Terminal in the west to Stoney Creek Gateway in the east, via Queenston Rd/Highway 8. This route is intended to increase frequency along the Queenston Rd/Highway 8 corridor between Eastgate and Stoney Creek Gateway, where demand will be highest. Service would run seven days a week, and the route serves around 15,100 population within 400 m of proposed stops. Figure 5-3 shows the proposed alignment of Route 10A B Line East.

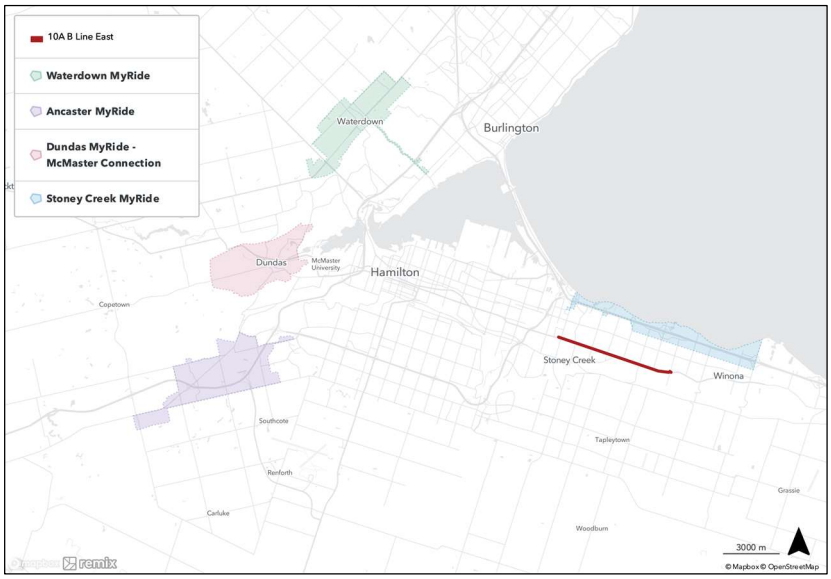


Figure 5-3: The proposed alignment of route 10 B A East (Express)

Express Route – 20 A Express

This is a Rapid transit route that travels from Hamilton International Airport in the south to the Pier 8 Waterfront in the north, via Upper James, Mohawk College Terminal, James St, and Downtown Hamilton. Service would run seven days a week, and the route serves around 22,800 population within 400 m of proposed stops. Figure 5-4 shows the proposed alignment of Route 20 A Line.

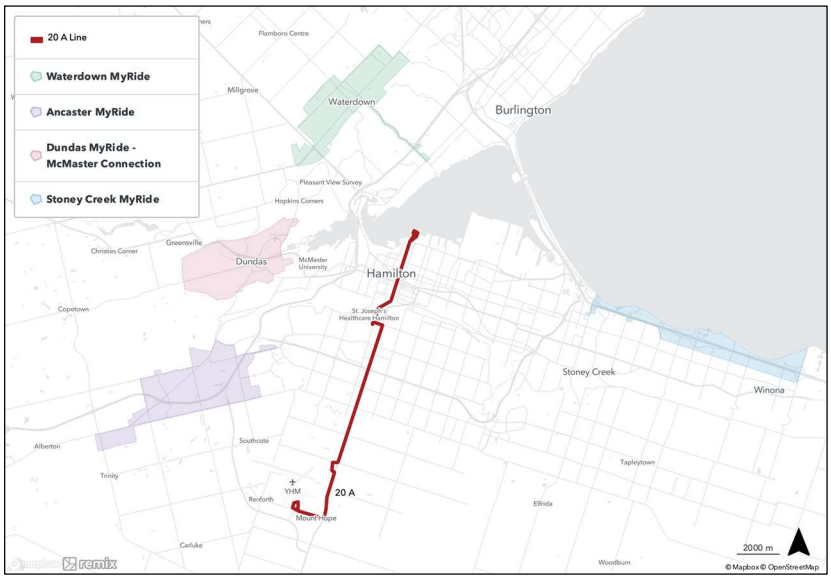


Figure 5-4: The proposed alignment of route 20 A (Express)

Express Route – 30 S Express

This is a Rapid transit route that travels from Ancaster Fairgrounds Gateway in the west to Parkdale Terminal in the east, via Garner Rd/Rymal Rd, Heritage Greene Terminal, and the Red Hill Valley Parkway. Service would run seven days a week, and the route serves around 20,900 population within 400 m of proposed stops. Figure 5-5 shows the proposed alignment of Route 30 S Line.

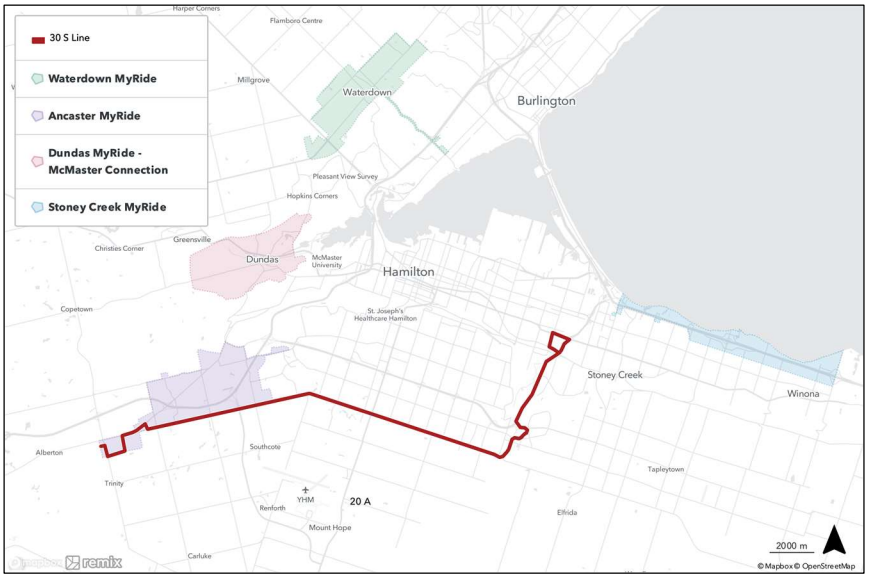


Figure 5-5: The proposed alignment of route 30 S (Express)

Express Route – 40 E Express

This is a Rapid transit route that travels from Heritage Greene Terminal in the south to Confederation GO Station in the north, via Rymal Rd E, Elfrida Gateway, Upper Centennial Pkwy, Eastgate Square Terminal, and Centennial Pkwy. Service would run seven days a week, and the route serves around 10,400 population within 400 m of proposed stops. Figure 5-6 shows the proposed alignment of Route 40 E Line.

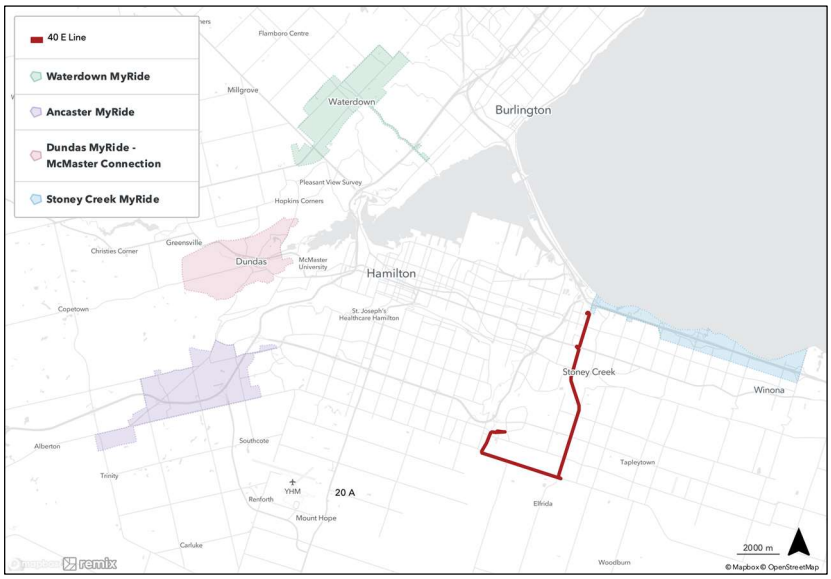


Figure 5-6: The proposed alignment of route 40 E (Express)

Express Route – 50 T Express

This is a Rapid transit route that travels from Downtown Dundas Terminal in the west to Heritage Greene Terminal in the east, via Cootes Dr, Main St W/Wilson St E, Golf Links Rd, Meadowlands Terminal, Mohawk Rd, CF Lime Ridge Terminal, and Upper Kenilworth Ave. Service would run seven days a week, and the route serves around 37,700 population within 400 m of proposed stops. Figure 5-7 shows the proposed alignment of Route 50 T Line.

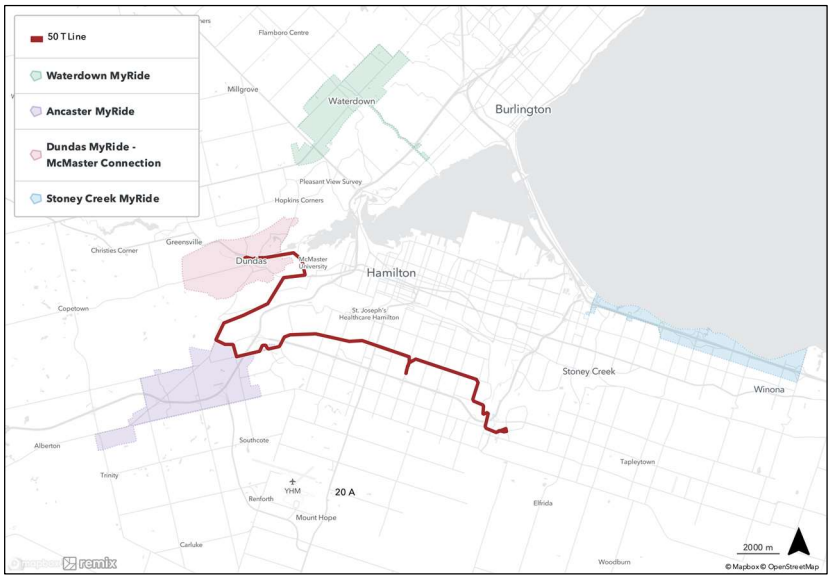


Figure 5-7: The proposed alignment of route 50 T (Express)

Express Route – 60 L Express

This is a Rapid transit route that travels from Waterdown Gateway in the west to Centre Mall Terminal in the east, via Highway 6, Highway 403, York Blvd, James St, Downtown Hamilton, Mohawk College Terminal, Upper James St, Mohawk Rd E, CF Lime Ridge Terminal, Upper Ottawa St, and Kenilworth Ave. In addition to providing a direct connection to Waterdown from Downtown Hamilton, this route increases

the frequency along the busiest sections of the A and T Line corridors. Service would run seven days a week, and the route serves around 43,800 population within 400 m of proposed stops. Figure 5-8shows the proposed alignment of Route 60 L Line.

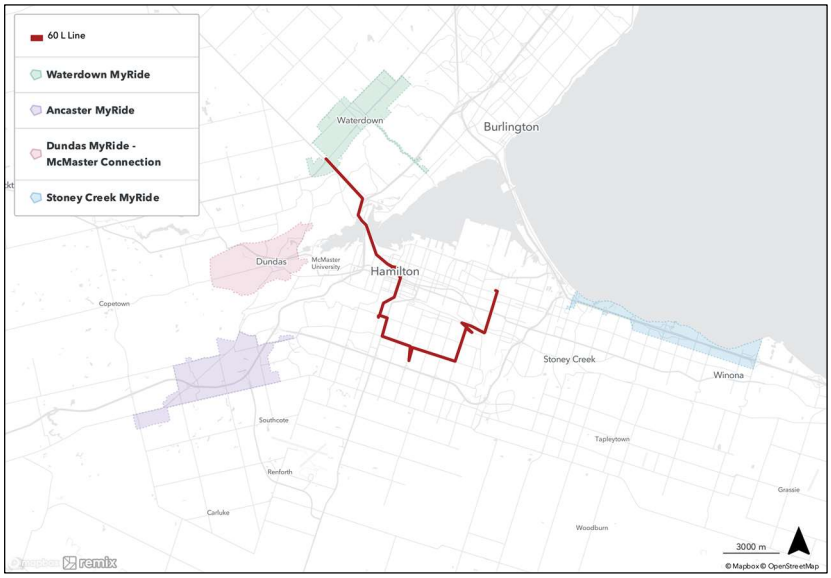


Figure 5-8: The proposed alignment of route 60 L (Express)

Express Route – 60A L Express

This is a Rapid transit route that travels from West Harbour GO Station in the west to Centre Mall Terminal in the east, via James St, Downtown Hamilton, Mohawk College Terminal, Upper James St, Mohawk Rd E, CF Lime Ridge Terminal, Upper Ottawa St, and Kenilworth Ave. This route increases the frequency along the busiest sections of the A and T Line corridors. Service would run seven days a week, and the route serves around 41,200 population within 400 m of proposed stops. Figure 5-9 shows the proposed alignment of Route 60A L Line.

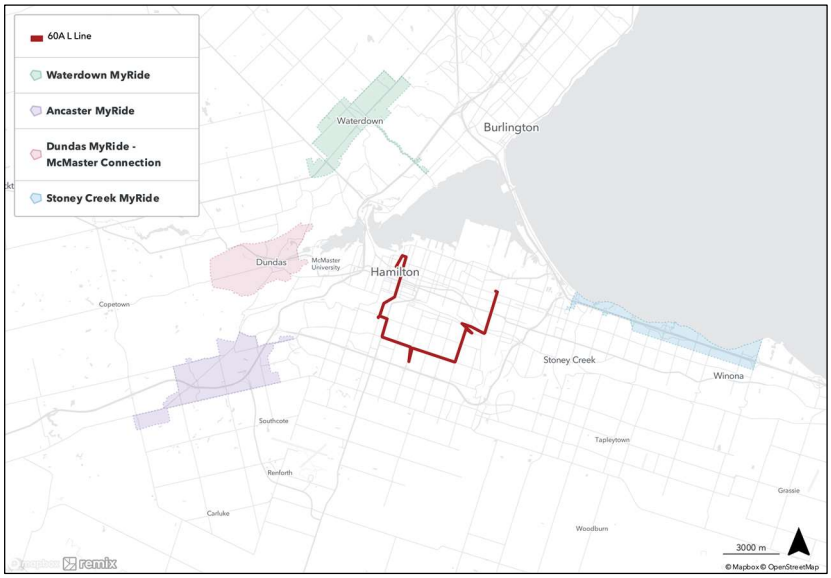


Figure 5-9: The proposed alignment of route 60A L (Express)

5.2. Collectors

Collectors are the dominant route category in the service (16 routes). Similar to express services, these routes provide hub-to-hub connectivity. However, they offer relatively a higher level of coverage (spatially) and more stops. The proposed collector routes are presented in Figure 5-10.The frequency of the collector routes range between 2-4 buses per hour (15-30 mins headway).

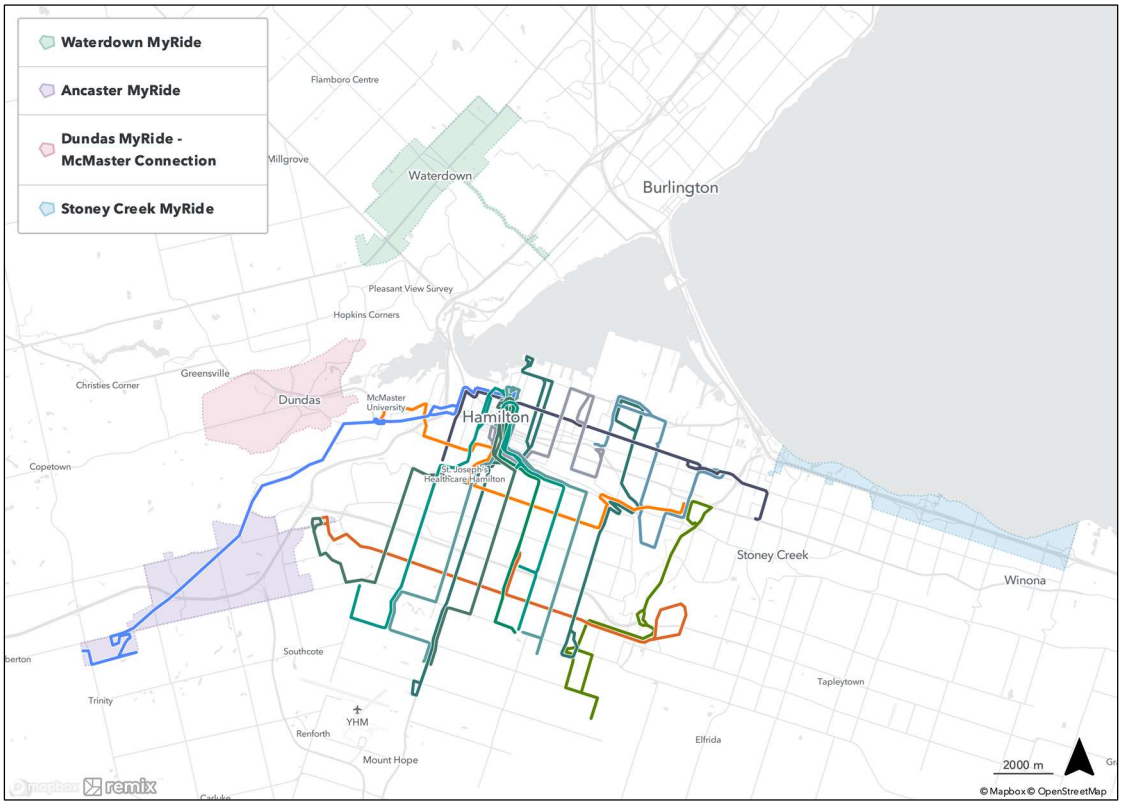


Figure 5-10: Proposed Collectors routes (n=16)

5.2.1. Proposed Collectors East-West

A total of six East-West (Figure 5-11) collector routes are proposed. The frequency of each route is informed by the demand observed from the current operation, in addition to the data outlined in Chapter 2.

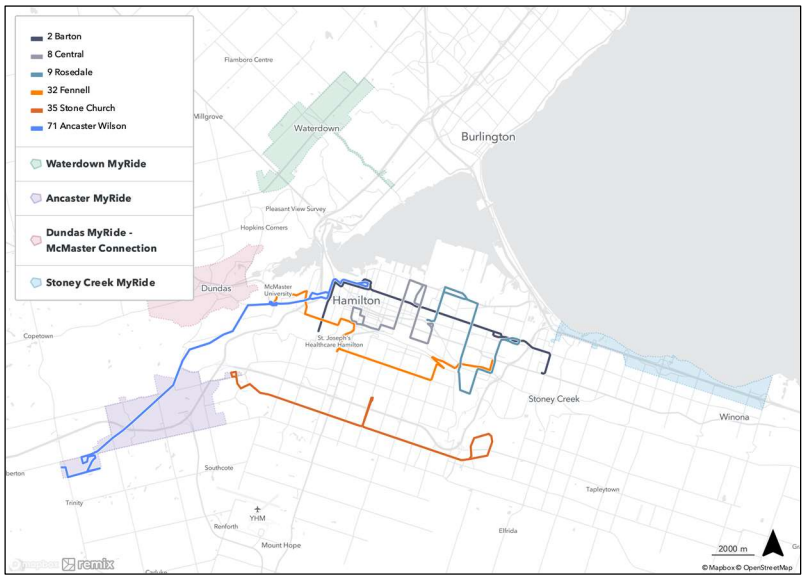


Figure 5-11: Proposed Collectors Routes (East-West)

Route – 2 Barton

This is a Collector transit route that travels from downtown Hamilton to Stoney Creek Hub (Eastgate square mall) in the east through Barton Street. Service would run seven days a week, and the route serves around 44,100 population within 400 m of proposed stops.

Route – 8 Central

This is a Core transit route that travels from Hamilton GO Centre in the west to Scott Park LRT Station in the east, via Bay St, Charlton Ave, Stinson St, Wentworth St, Burlington St, Birch Ave & Sherman Ave, Cumberland St, and Gage Ave. The primary purpose of the route is to act as a feeder to the LRT line, running in a 'zig zag' pattern through the Lower City. The route intersects the LRT at multiple stations, allowing for transfer opportunities between the two. Service would run seven days a week, and the route serves around 47,900 population within 400 m of proposed stops.

Route – 9 Rosedale

This is a Core transit route that travels from Scott Park LRT station in the west to Parkdale Terminal in the east, via Gage Ave, Burlington St, Kenilworth Ave, Centre Mall Terminal, Kimberly Dr, Greenhill Ave, Cochrane Rd, King St, Parkdale Ave, Barton St, and Melvin Ave. Like the Route 8 Central, the primary purpose of this route is to act as a feeder to the LRT line. Routes 8 Central and 9 Rosedale can be operated as a single through service, or independently, depending on operational preferences. Service would run seven days a week, and the route serves around 31,000 population within 400 m of proposed stops.

Route – 32 Fennell

This is a Core transit route that travels from McMaster University Terminal in the west to Parkdale Terminal in the east, via Sterling St, Longwood Rd, Aberdeen Ave, Herkimer St and Charlton Ave, James Mountain Rd, Mohawk College Terminal, Fennell Ave, Kenilworth Access, King St, and Parkdale Ave. This route provides a direct connection between McMaster University, the McMaster Innovation Park, and Mohawk College. Service would run seven days a week, and the route serves around 44,700 population within 400 m of proposed stops.

Route – 35 Stone Church

This is a Core transit route that travels from Meadowlands Terminal in the west to Valley Park Loop in the east, via Cloverleaf Dr, Stonehenge Dr, Stone Church Rd, CF Lime Ridge Terminal, Heritage Greene Terminal, and Paramount Dr. The route intersects the LRT at multiple stations, allowing for transfer opportunities between the two. Service would run seven days a week, and the route serves around 33,000 population within 400 m of proposed stops.

Route – 71 Ancaster Wilson

This is a Core transit route that travels from Ancaster Fairgrounds Gateway in the west to the West Harbour GO Station in the east, via the Ancaster Business Park, Wilson St, Main St, McMaster University, Dundurn St, York Blvd, Locke St, and Barton St. This route provides a direct connection between Ancaster, McMaster University, and GO Transit's Lakeshore West line. Service would run seven days a week, and the route serves around 23,900 population within 400 m of proposed stops.

5.2.2. Proposed Collectors North-South

A total of nine collector routes are proposed along the North-South corridors, as illustrated in Figure 5-12.

Figure 5-12: Proposed Collectors Routes (North-South)

Route – 21 Upper Paradise

This is a Core transit route that travels from Meadowlands Terminal in the south to West Harbour GO Station in the north, via Meadowlands Blvd, Raymond Rd, Rymal Rd, Upper Paradise Rd, Scenic Dr, Fennell Ave, Mohawk College Terminal, James Mountain Rd, James St. Service would run seven days a week, and the route serves around 34,500 population within 400 m of proposed stops.

Route – 22 Upper Ottawa

This is a Core transit route that travels from Upper Ottawa & Rymal in the south to Industrial & Depew in the north, via Upper Ottawa St, Kenilworth Access, and Ottawa St. This route also has a direct connection to Route 41 Red Hill for trips into the Red Hill Industrial Park. Service would run seven days a week, and the route serves around 24,600 population within 400 m of proposed stops.

Route – 23 Upper Gage
This is a Core transit route that travels from Upper Sherman Loop in the south to West Harbour GO Station in the north, via Upper Sherman Ave, Rymal Rd, Upper Gage Ave, Concession St, Jolley Cut, and James St. Service would run seven days a week, and the route serves around 43,600 population within 400 m of proposed stops.

Route – 24 Upper Sherman
This is a Core transit route that travels from Upper Sherman Loop in the south to West Harbour GO Station in the north, via Upper Sherman Ave, Limeridge Rd, CF Lime Ridge Terminal, Concession St, Jolley Cut, and James St. Service would run seven days a week, and the route serves around 38,200 population within 400 m of proposed stops.

Route – 25 Upper Wentworth
This is a Core transit route that travels from Upper Sherman Loop in the south to West Harbour GO Station in the north, via Upper Sherman Ave, Rymal Rd, Upper Wentworth St, CF Lime Ridge Terminal, Concession St, Jolley Cut, and James St. Service would run seven days a week, and the route serves around 35,100 population within 400 m of proposed stops.

Route – 26 Upper Wellington
This is a Core transit route that travels from the Mountain Transit Centre in the south to West Harbour GO Station in the north, via Upper James St, Rymal Rd, Upper Wellington St, Jolley Cut, and James St. Service would run seven days a week, and the route serves around 33,600 population within 400 m of proposed stops.

Route – 27 Upper James
This is a Core transit route that travels from the Mountain Transit Centre in the south to West Harbour GO Station in the north, via Upper James St, Rymal Rd, Upper Wellington St, Jolley Cut, and James St. Service would run seven days a week, and the route serves around 27,300 population within 400 m of proposed stops.

Route – 28 West 5th
This is a Core transit route that travels from the Mountain Transit Centre in the south to West Harbour GO Station in the north, via Upper James St, Twenty Rd, Garth St, Rymal Rd, West 5th St, Mohawk College Terminal, James Mountain Rd, and James St. Service would run seven days a week, and the route serves around 28,200 population within 400 m of proposed stops.

Route – 29 Garth
This is a Core transit route that travels from Glancaster Loop in the south to West Harbour GO Station in the north, via Glancaster Rd, Twenty Rd, Garth St, Beckett Dr, Queen St and Hess St, and Stuart St. Service would run seven days a week, and the route serves around 34,200 population within 400 m of proposed stops.

Route – 41 Red Hill
This is a Core transit route that travels from Upper Ottawa & Rymal in the south to Parkdale Terminal in the north, via Glover Rd, Twenty Rd, Nebo Rd and Dartnall Rd, Stone Church Rd, Heritage Greene Terminal, and the Red Hill Valley Pkwy. This route provides a direct connection between the LRT and the Red Hill Business Park. Service would run seven days a week, and the route serves around 7,400 population within 400 m of proposed stops.

5.3. Local Routes

Local routes are the main feeders to proposed HSR hubs, collectors, express routes as well as the LRT. The main aim of each local route is to increase the service accessibility at the first/last mile operation. Therefore, the proposed local routes operate at a minimum frequency of two buses per hour, which increases to three buses per hour during the peak periods. Essentially, the proposed local routes are developed to provide full-service coverage around each HSR hub. A total of 13 local routes are developed in the proposed network, as detailed in Figure 5-13.

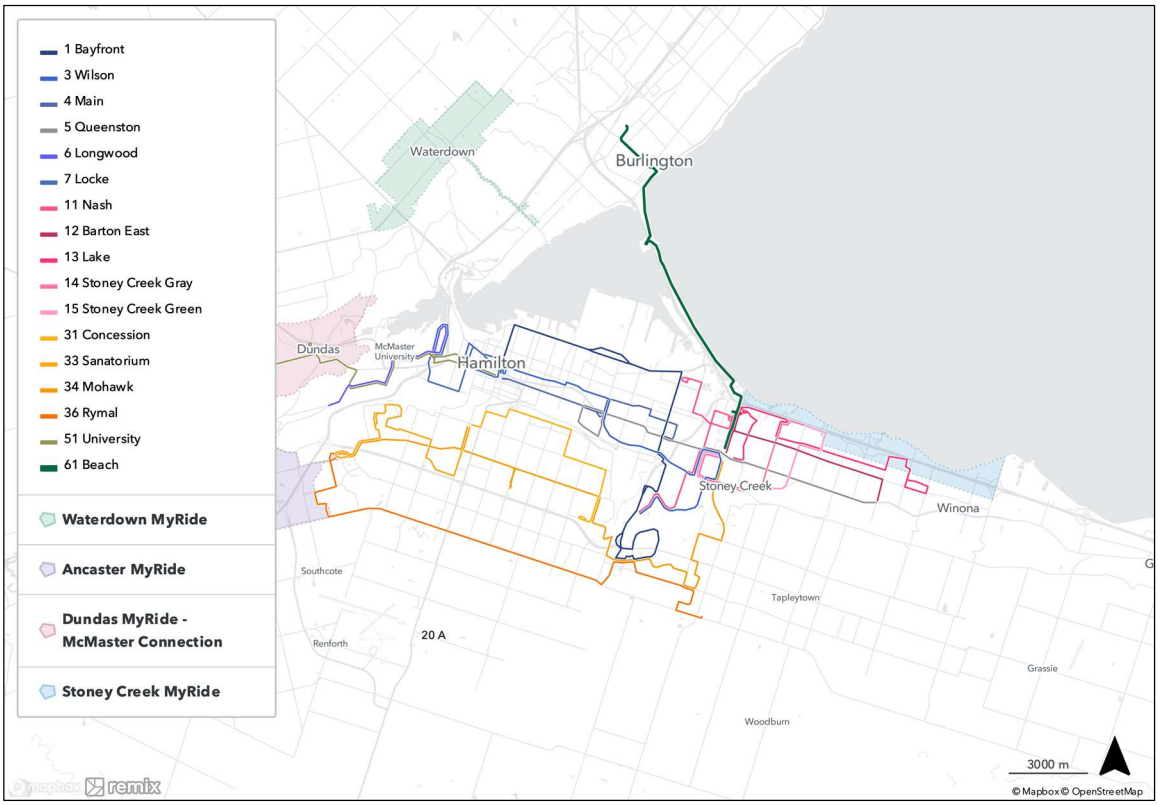


Figure 5-13: The proposed Local Routes (n=16)

Route – 1 Bayfront

This is a Local transit route that travels from Hamilton GO Centre in the west to Heritage Greene in the east, via James St, Downtown Hamilton, Burlington St, Parkdale Ave, Mount Albion Rd, the Red Hill Valley Pkwy, and Paramount Dr. Service would run seven days a week, and the route serves around 31,400 population within 400 m of proposed stops.

Route – 3 Wilson

This is a Local transit route that travels from Hamilton GO Centre in the west to Mount Albion Loop in the east, via John St and James St, Wilson St, Cannon St, Ottawa St, King St, Nash Rd, Queenston Rd, Centennial Pkwy, and Greenhill Ave. Service would run seven days a week, and the route serves around 57,700 population within 400 m of proposed stops.

Route – 4 Main

This is a Local transit route that travels from Hamilton GO Centre in the west to Parkdale Terminal in the east, via John St and James St, Main St, Ottawa St, Cannon St, Britannia Ave, Reid Ave, and Queenston Rd. Routes 3 Wilson and 4 Main run parallel to the LRT corridor through Central Hamilton and crossing each

other at Ottawa St to provide a mid-route connection to the LRT at Ottawa Station. Service would run seven days a week, and the route serves around 42,800 population within 400 m of proposed stops.

Route - 5 Queenston

This is a Local transit route that travels from Gage Park Lay-By in the west to Stoney Creek Gateway in the east, via Ottawa St, Lawrence Rd, Gage Ave, Main St, Queenston Rd, Parkdale Terminal, Eastgate Square Terminal, and Highway 8. Route 5 provides local service along the LRT corridor between the Delta and Eastgate Square Terminal and provides local service along the B Line East corridor between Eastgate Square and Stoney Creek Gateway. Service would run seven days a week, and the route serves around 36,600 population within 400 m of proposed stops.

Route – 6 Longwood

This is a Local transit route that travels from West Hamilton Loop in the west to Princess Point Loop in the east, via Main St, Whitney Ave, Emerson Ave, McMaster University, Sterling St, King St, and Longwood Rd and Macklin St. This route provides a direct connection to McMaster University and Westdale for students who live in the western end of Hamilton. Service would run seven days a week, and the route serves around 10,600 population within 400 m of proposed stops.

Route – 7 Locke

This is a Local transit route that travels from Princess Point Loop in the west to Strathcona Loop in the east, via Macklin St and Longwood Rd, Aberdeen Ave, Locke St, Main St, James St, James LRT Station, York Blvd and Cannon St, Locke St, and Strathcona Ave. This route connects the western end of Central Hamilton with Downtown. Service would run seven days a week, and the route serves around 28,800 population within 400 m of proposed stops.

Route – 11 Nash

This is a Local transit route that travels from Mount Albion Loop in the south to Parkdale & Mead in the north, via Mount Albion Rd, Greenhill Ave, Quigley Rd, Nash Rd, Bancroft Rd, Centennial Pkwy, Confederation GO Station, Barton St, Woodward Ave, and Glow Ave. This route connects the western end of Central Hamilton with Downtown. Service would run seven days a week, and the route serves around 19,700 population within 400 m of proposed stops.

Route – 12 Barton East

This is a Local route that travels from Eastgate Square Terminal in the west to Stoney Creek Gateway in the east, via Centennial Pkwy, Confederation Walmart, Barton St, and Jones Rd. Customers can access Confederation GO from Centennial Pkwy. Service would run seven days a week, and the route serves around 13,700 population within 400 m of proposed stops.

Route – 13 Lake

This is a Local route that travels from Eastgate Square Terminal in the west to 930 Arvin in the east, via Queenston Rd, Lake Ave, Confederation Walmart, South Service Rd, Grays Rd, and Arvin Ave. This route connects Eastgate Square Terminal with the Stoney Creek industrial areas north of Barton St. Service would run seven days a week, and the route serves around 12,100 population within 400 m of proposed stops.

Route – 14 Stoney Creek Gray

This is a Local route that travels from Eastgate Square Terminal in the west to South Service & Green in the east, via Queenston Rd, Nash Rd, St. Joseph's Healthcare King Campus, King St, and Gray Rd. This

route is interlined with Route 15 Stoney Creek Green. Service would run seven days a week, and the route serves around 15,800 population within 400 m of proposed stops.

Route – 15 Stoney Creek Green

This is a Local route that travels from Eastgate Square Terminal in the west to South Service Rd & Green in the east, via Queenston Rd, Nash Rd, St. Joseph's Healthcare King Campus, King St, Green Rd, Arvin Ave, and Millen Rd. This route is interlined with Route 14 Stoney Creek Gray. Service would run seven days a week, and the route serves around 17,700 population within 400 m of proposed stops.

Route – 31 Concession

This is a Local route that travels from Mohawk College Terminal in the west to Limeridge & Lennox in the east, via Fennell Ave, Upper James St, Inverness Ave, Upper Wellington St, Concession St, Upper Gage Ave, Fennell Ave, and Upper Kenilworth Ave. This route is interlined with Route 33 Sanatorium. Service would run seven days a week, and the route serves around 26,300 population within 400 m of proposed stops.

Route – 33 Sanatorium

This is a Local route that travels from Meadowlands Terminal in the west to Mohawk College Terminal in the east, via Golf Links Rd, Mohawk Rd, Magnolia Dr, Scenic Dr, Redfern Ave, Chedmac Dr, Sanatorium Rd, Garth St, Limeridge Rd, and West 5th St. This route is interlined with Route 31 Concession. Service would run seven days a week, and the route serves around 22,900 population within 400 m of proposed stops.

Route – 34 Mohawk

This is a Local route that runs from Meadowlands Terminal in the west to Eastgate Square Terminal in the east, via Golf Links Rd, Mohawk Rd, West 5th St, Mohawk College Terminal, Upper Wentworth St, CF Lime Ridge Terminal, Upper Kenilworth Ave, Limeridge Rd, Mountain Brow Rd, Pritchard Rd, Stone Church Rd, Heritage Greene Terminal, Paramount Dr, Marston St, Gordon Drummond Ave, Isaac Brock Rd, First Rd, Highland Rd, Picardy St, Trafalgar Dr, Green Mountain Rd, and Centennial Pkwy. The segment from Meadowlands Terminal to Heritage Greene Terminal provides local service along the T Line corridor. Service would run seven days a week, and the route serves around 48,700 population within 400 m of proposed stops.

Route – 36 Rymal

This is a Local route that runs from Meadowlands Terminal in the west to Elfrida Gateway in the east, via Meadowlands Blvd, Stonehenge Dr, Kitty Murray Dr, Redeemer College University, Garner Rd, Rymal Rd, Upper Red Hill Pkwy, Stone Church Rd, Heritage Green Terminal, Winterberry Dr, Highland Rd, Highbury Dr, Whitedeer Rd, and Rymal Rd. The segment from Redeemer College University to Heritage Greene Terminal provides local service along the S Line corridor. Service would run seven days a week, and the route serves around 35,200 population within 400 m of proposed stops.

Route – 51 University

This is a Local route that runs from Governors & Pirie in the west to Hamilton GO Centre in the east, via Governors Rd, Downtown Dundas Terminal, Ogilvie Rd, South St, Osler Dr, Main St, Whitney Ave, Emerson Ave, McMaster University, Sterling St, King St, and Main St. Service would run seven days a week, and the route serves around 35,600 population within 400 m of proposed stops.

Route Local – 61 Beach

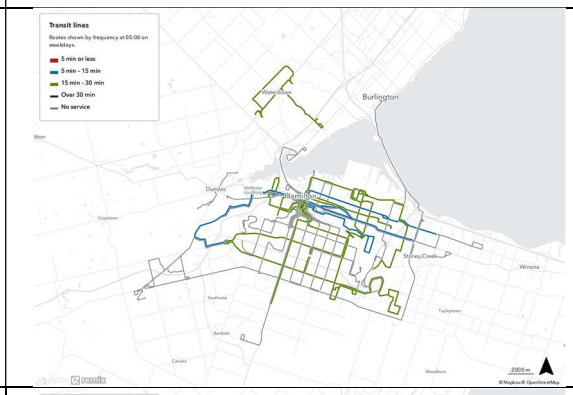
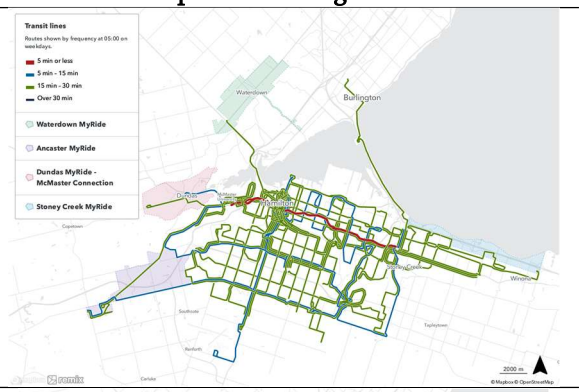
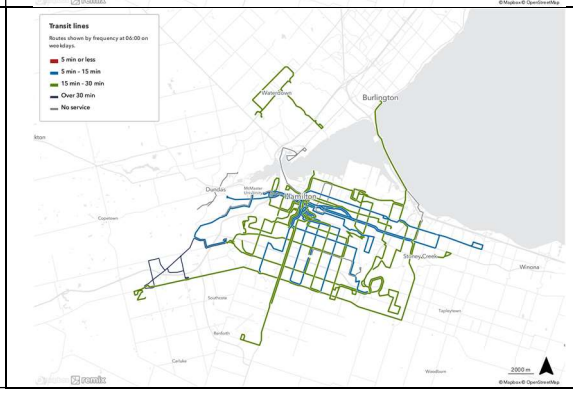
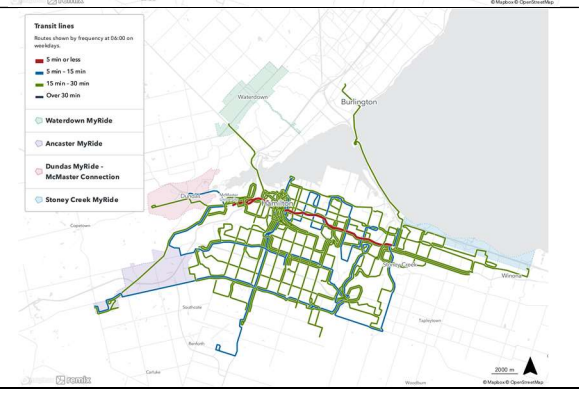
This is a Local route that runs from Eastgate Square Terminal in the south to Burlington GO Station in the north, via Centennial Pkwy, Confederation GO Station, Van Wagners Beach Rd, Beach Blvd, Eastport Dr, the Canada Centre for Inland Waters (CCIW), Lakeshore Rd, Downtown Burlington Terminal, Brant St, and Fairview St. This route provides a connection between the east end of Hamilton, Stoney Creek, and Burlington. Service would run seven days a week, and the route serves around 16,300 population within 400 m of proposed stops.

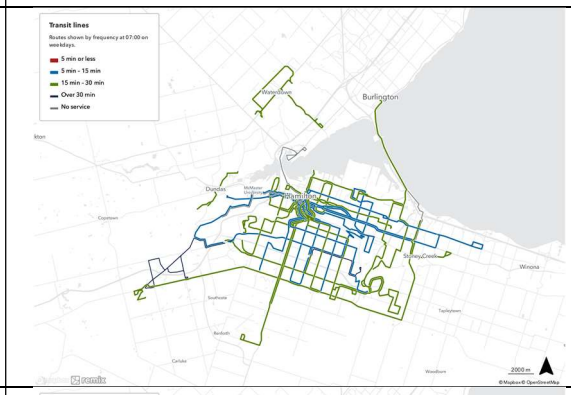
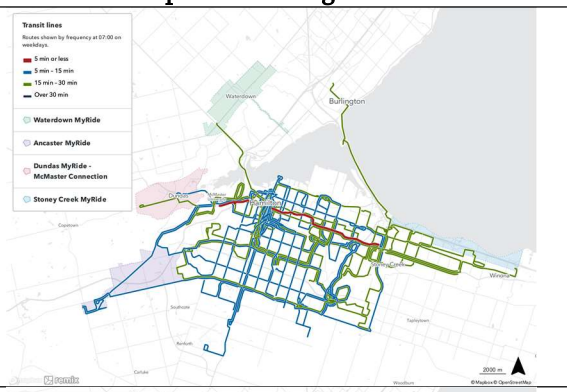
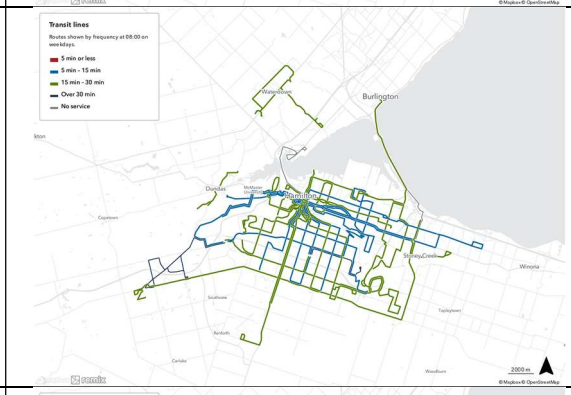
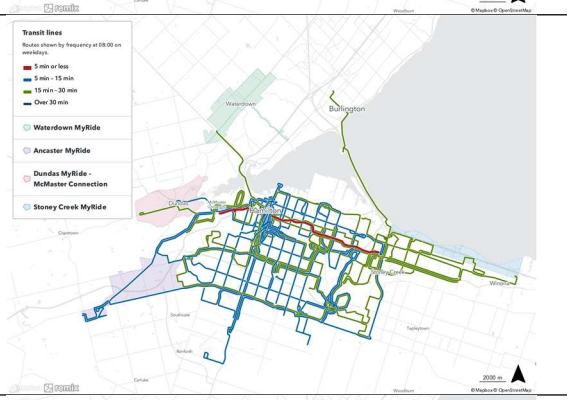
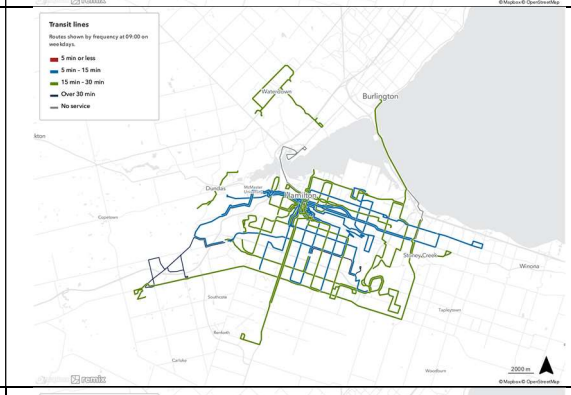
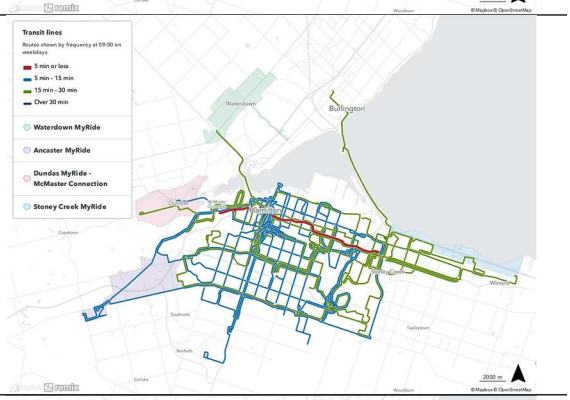
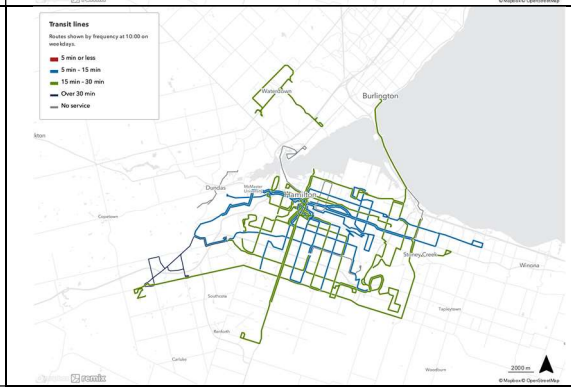
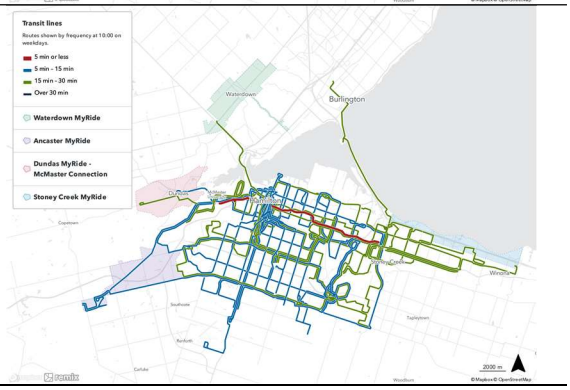
5.4. Overview of the proposed network

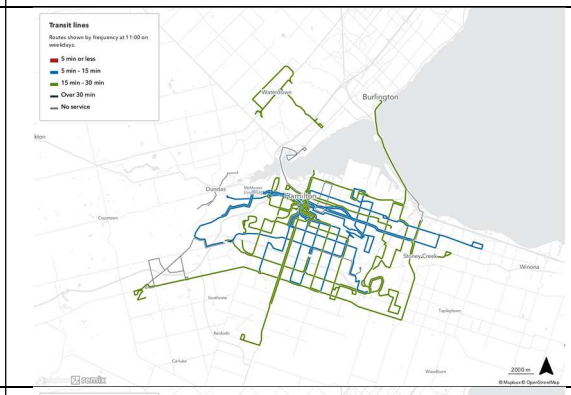
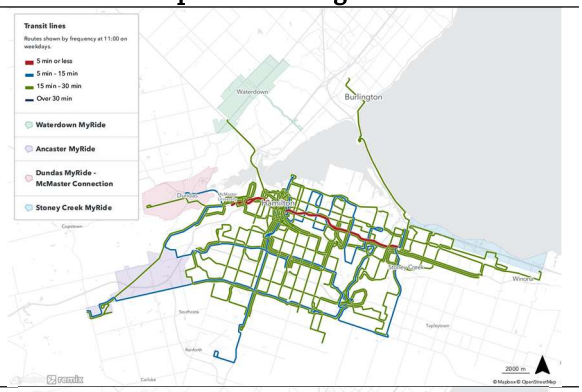
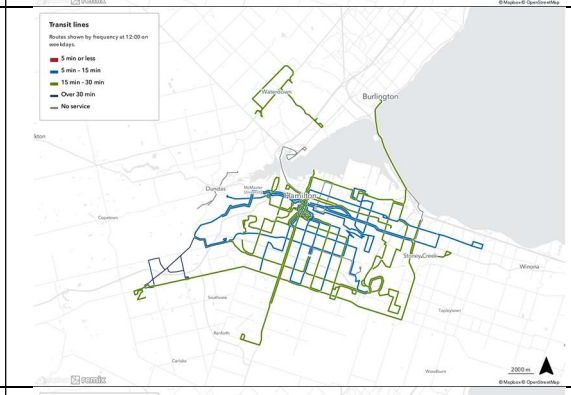
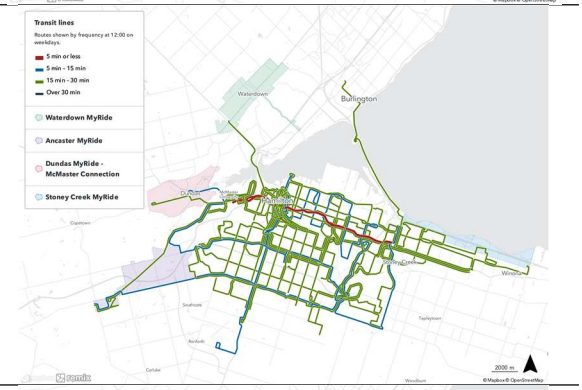
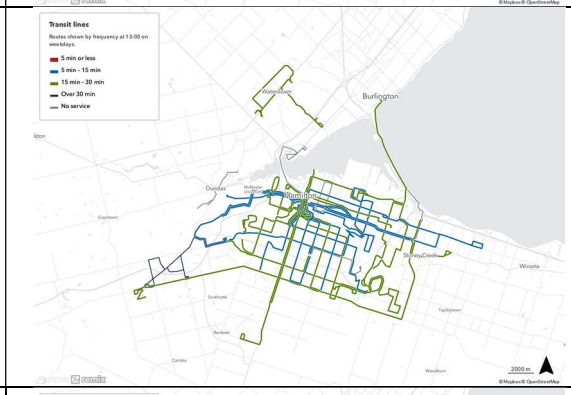
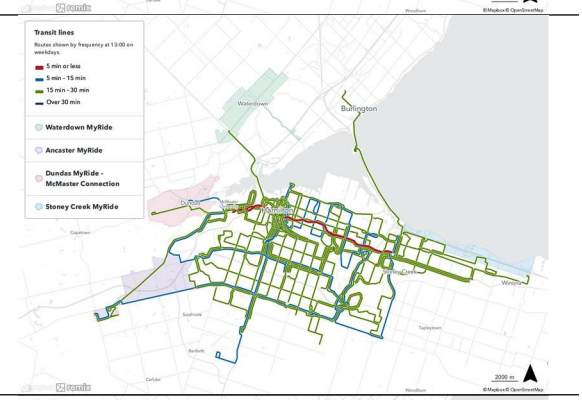
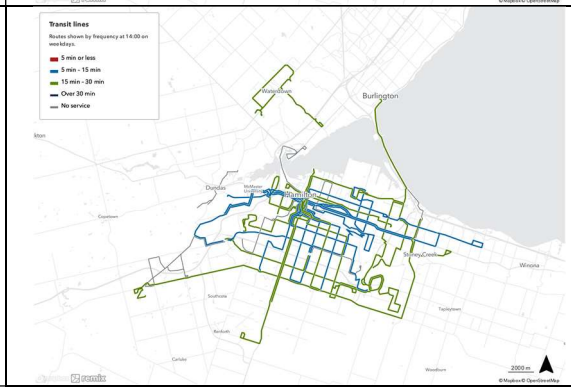
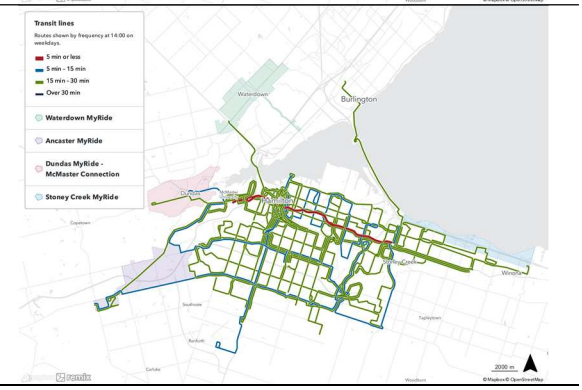
In addition, Table 5-1 provides a side-by-side comparison between the current HSR network and the proposed reconfiguration with respect to the service frequency from 5:00 to 26:00 on weekdays. Similarly, Table 5-2 and Table 5-3 display the same comparison for the Saturday and Sunday respectively.

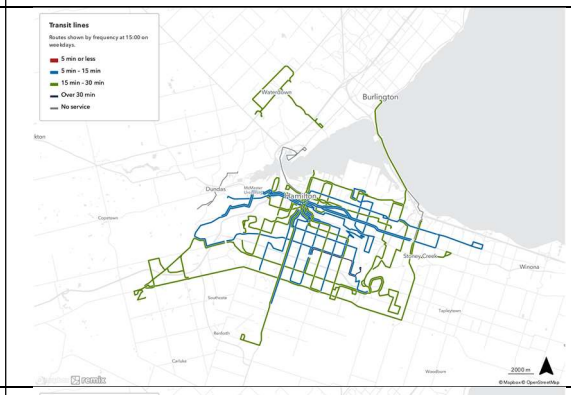
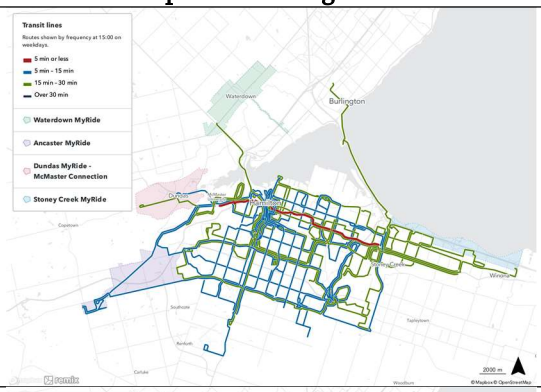
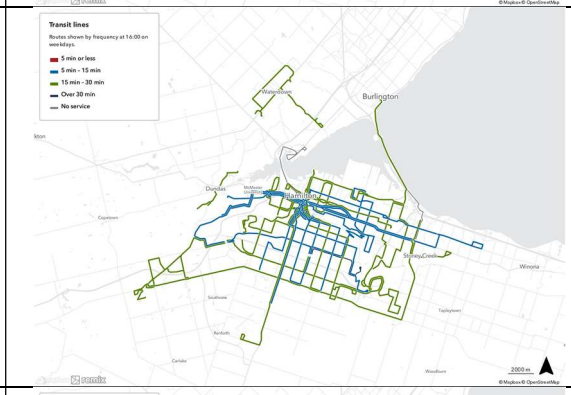
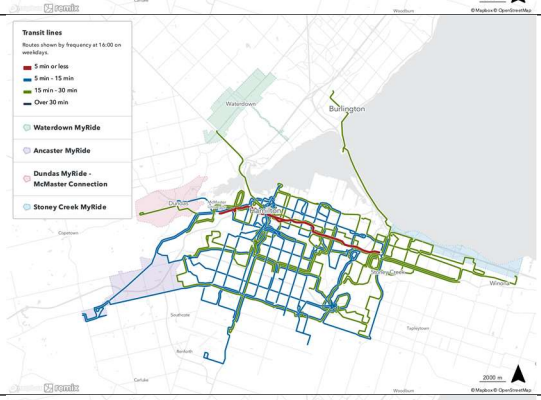
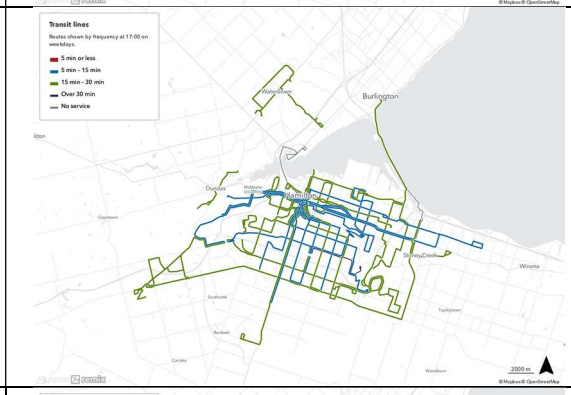
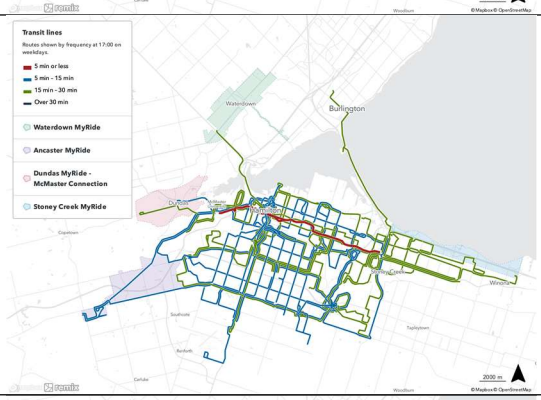
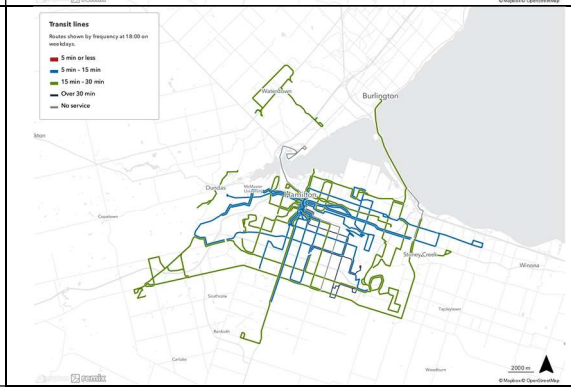
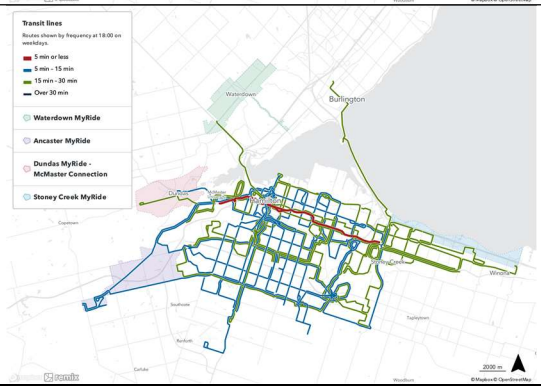
The data clearly demonstrates the superior performance of the proposed network in terms of spatial coverage, temporal accessibility, and connectivity.

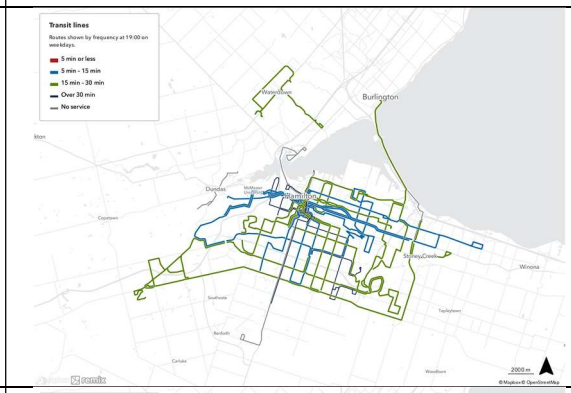
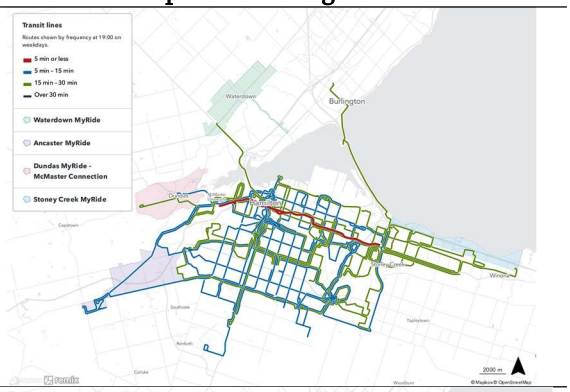
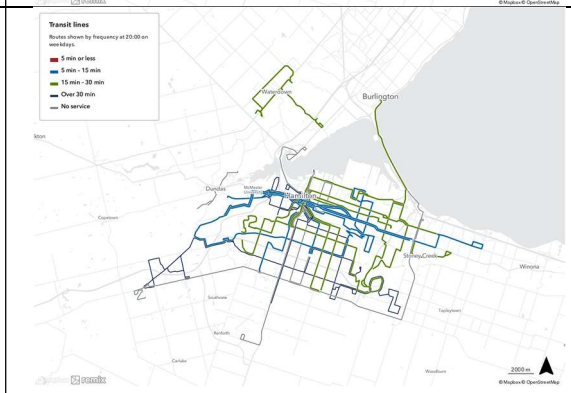
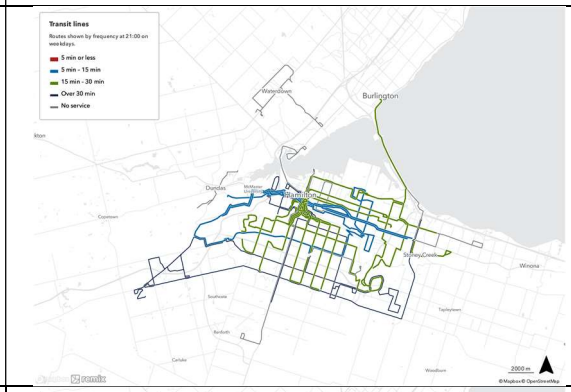
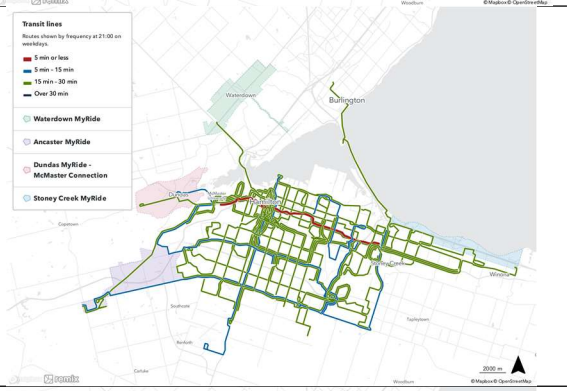
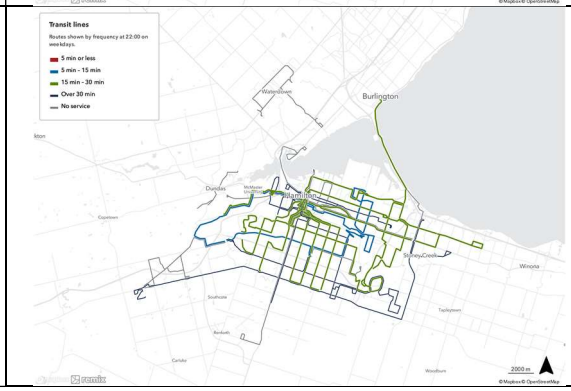
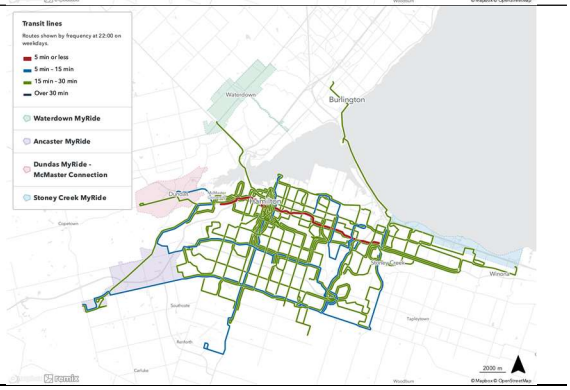
Table 5-1: Comparison of current and proposed HSR networks (frequency - Weekdays)

Time	Current HSR Network	Proposed Reconfiguration
05:00		
06:00		

Time	Current HSR Network	Proposed Reconfiguration
07:00		
08:00		
09:00		
10:00		

Time	Current HSR Network	Proposed Reconfiguration
11:00		
12:00		
13:00		
14:00		

Time	Current HSR Network	Proposed Reconfiguration
15:00		
16:00		
17:00		
18:00		

Time	Current HSR Network	Proposed Reconfiguration
19:00		
20:00		
21:00		
22:00		

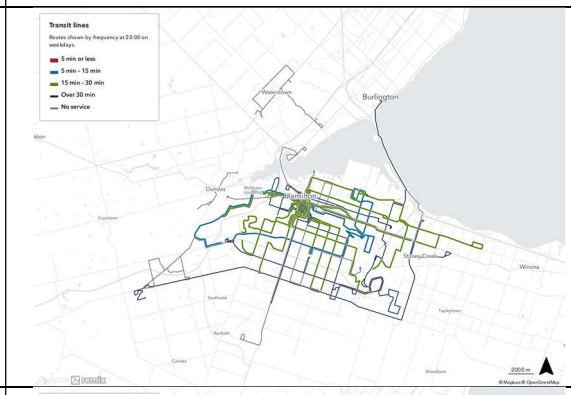
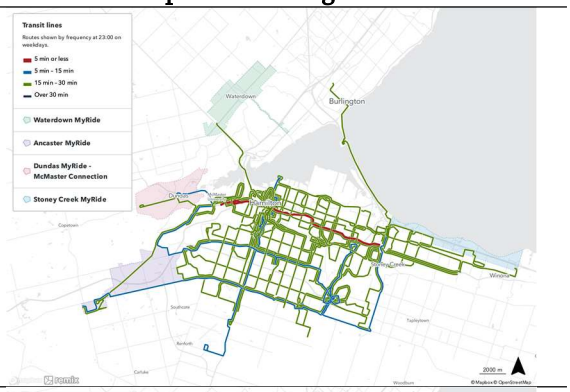
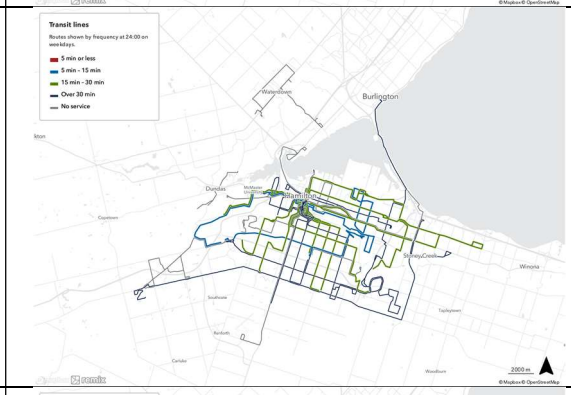
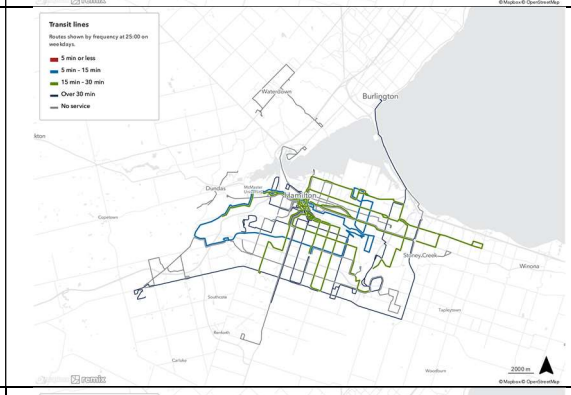
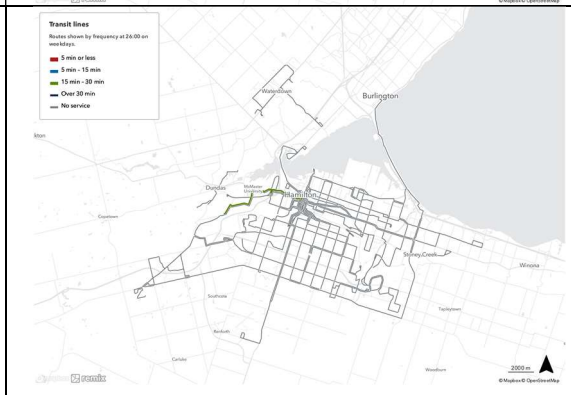
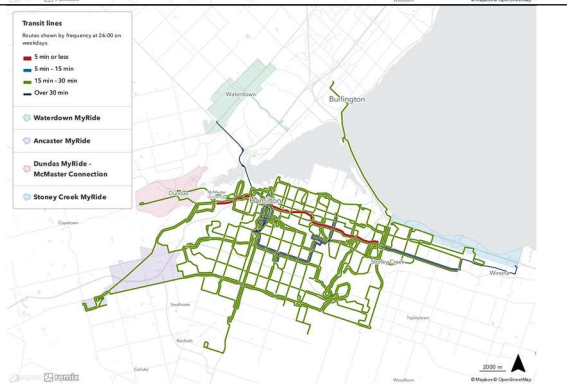
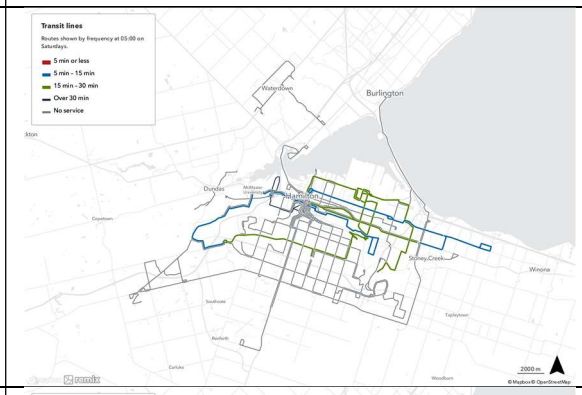
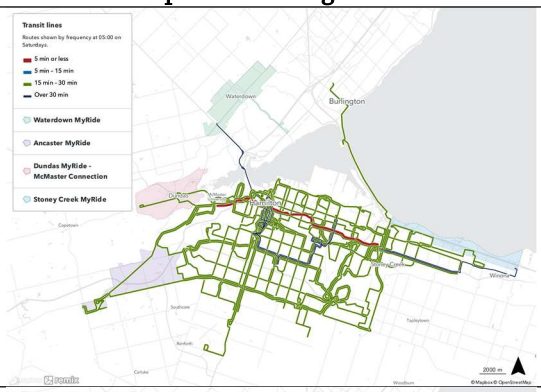
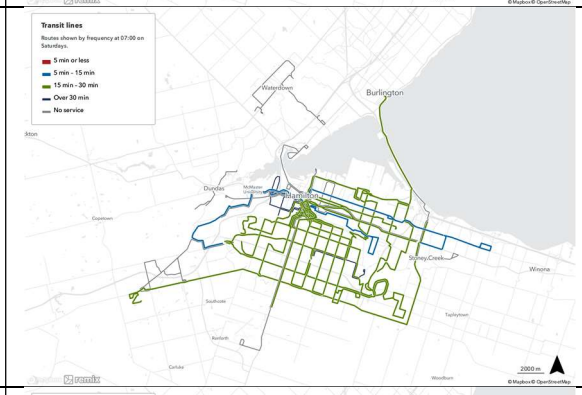
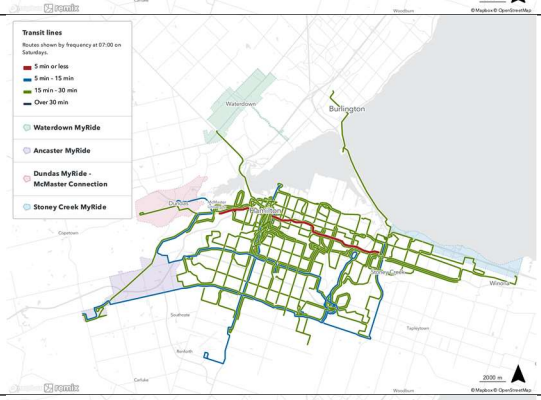
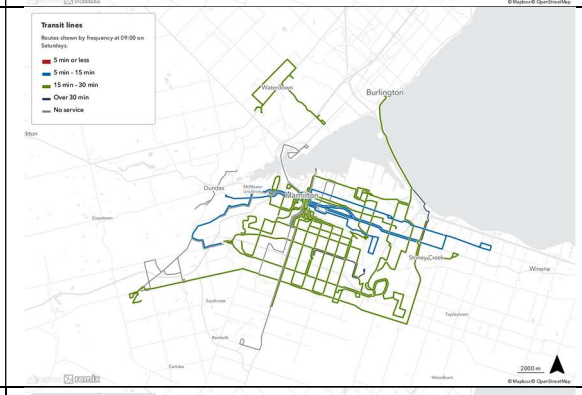
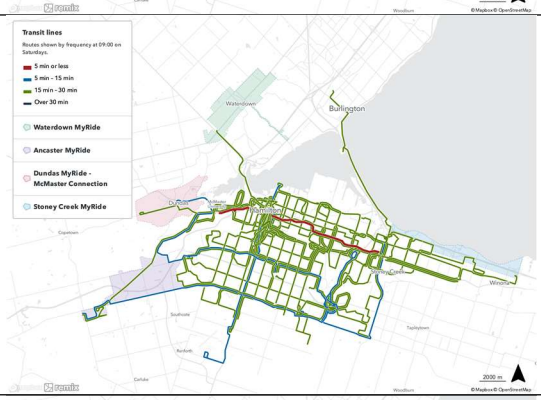
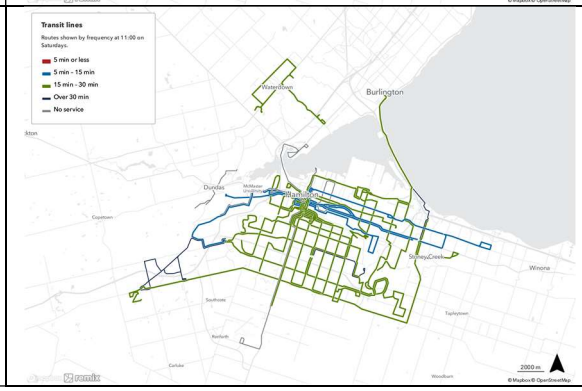
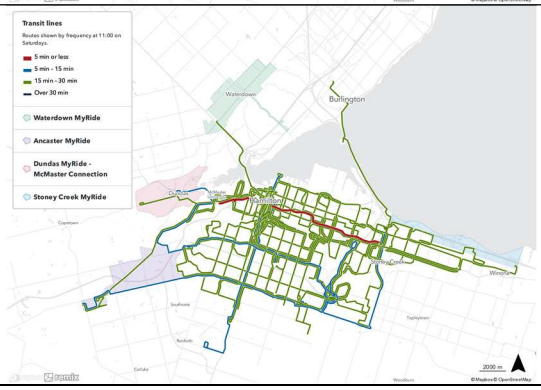
Time	Current HSR Network	Proposed Reconfiguration
23:00		
24:00		
25:00		
26:00		

Table 5-2: Comparison of current and proposed HSR networks (frequency - Saturday)

Time	Current HSR Network	Proposed Reconfiguration
05:00		
07:00		
09:00		
11:00		

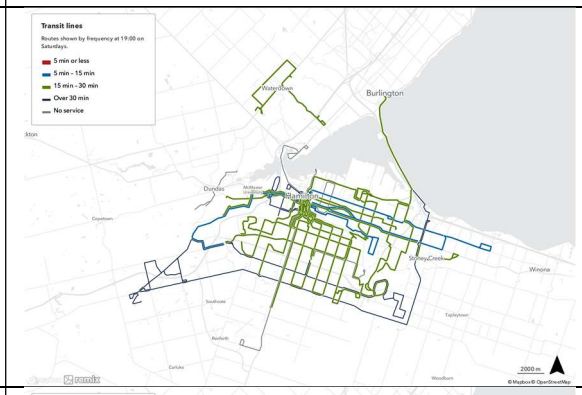
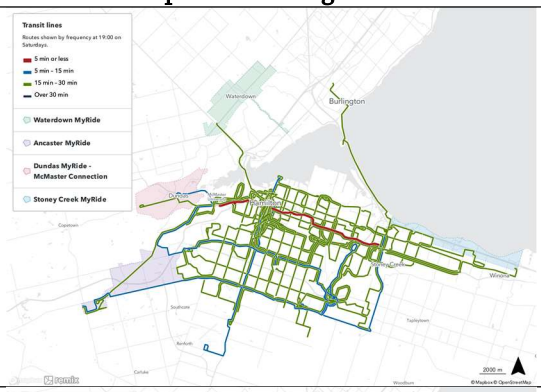
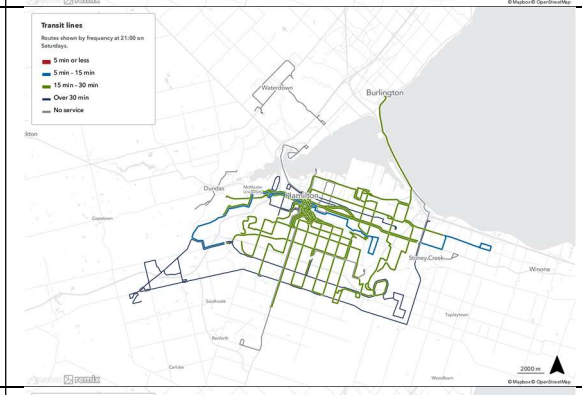
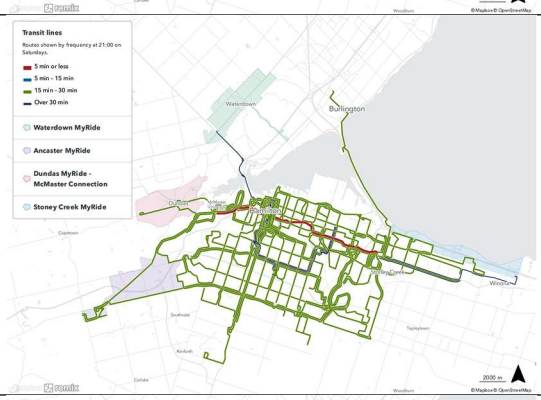
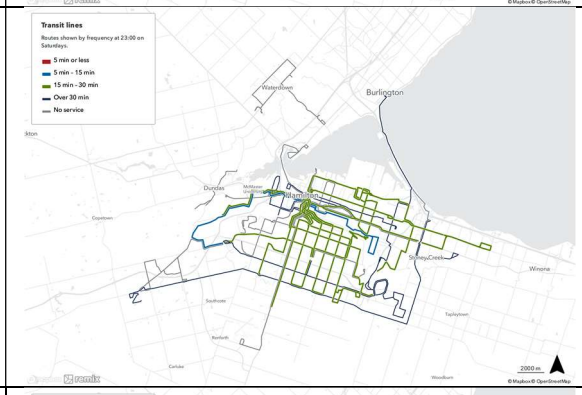
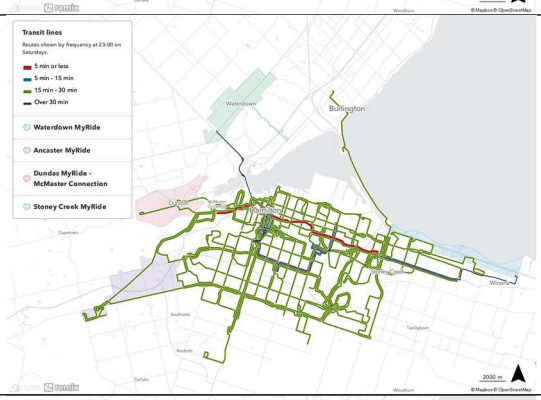
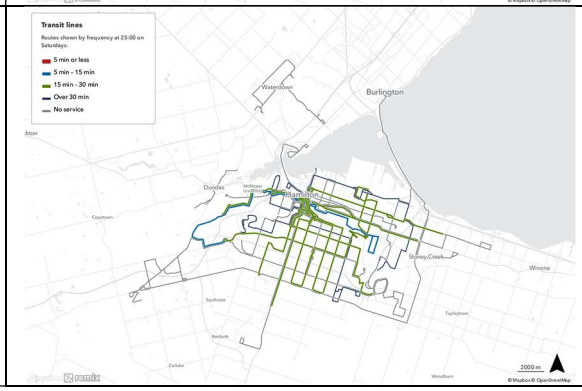
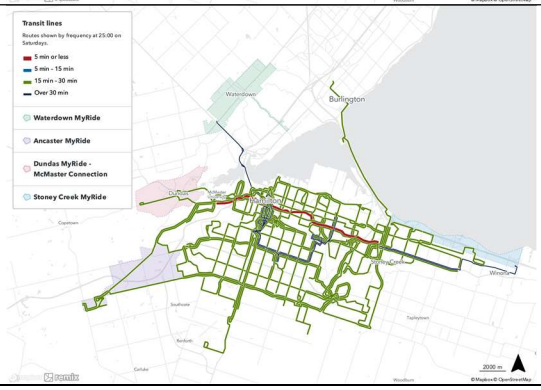
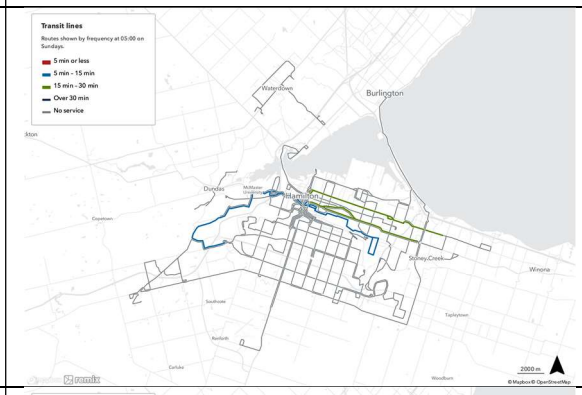
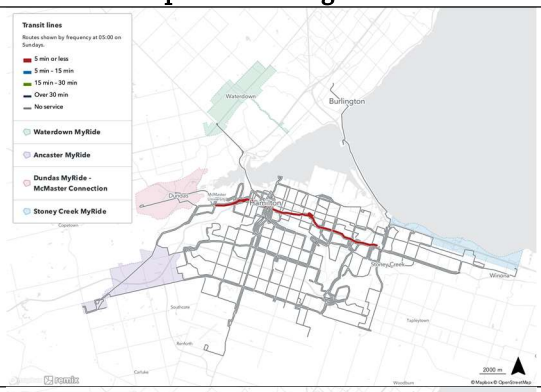
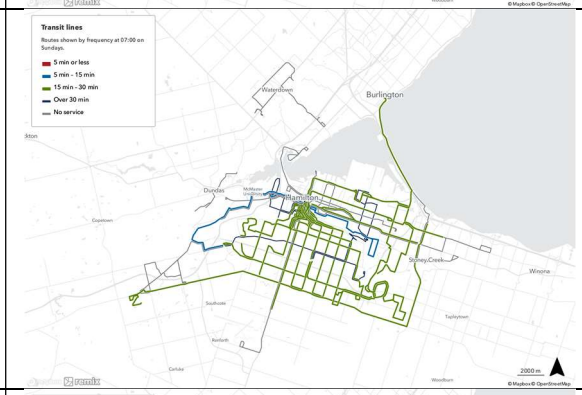
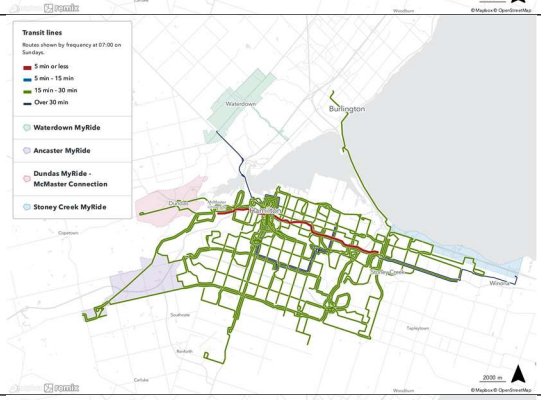
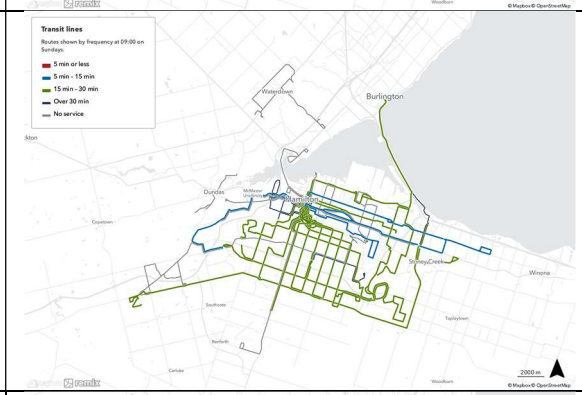
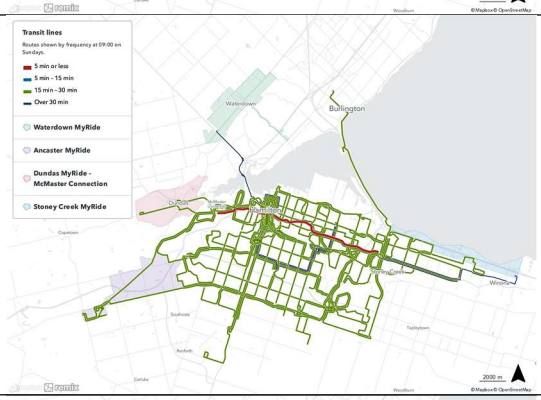
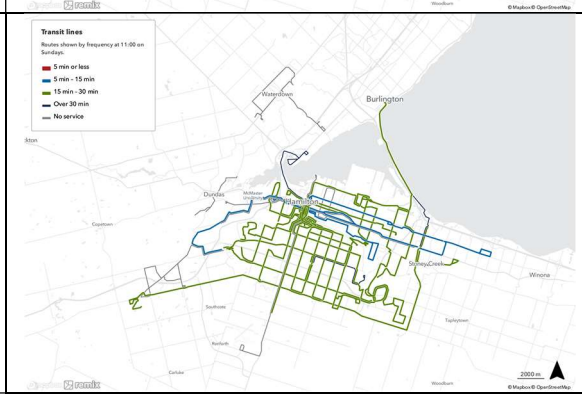
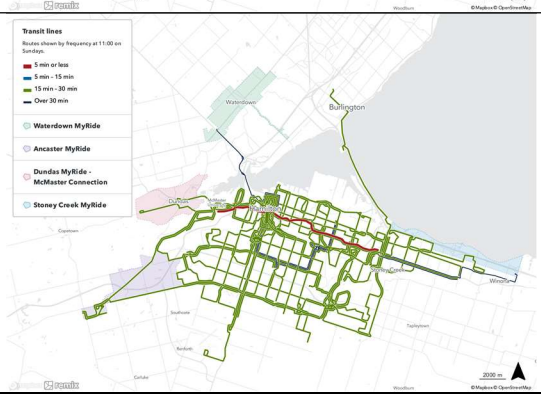
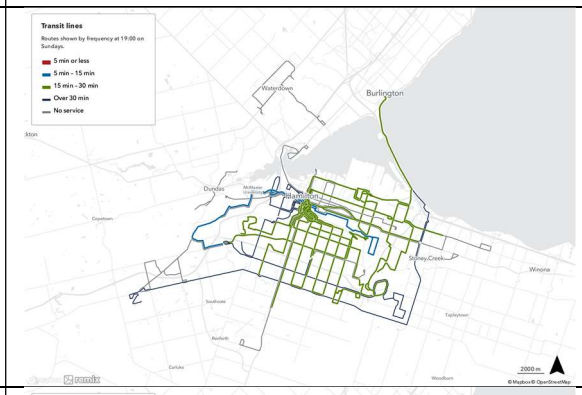
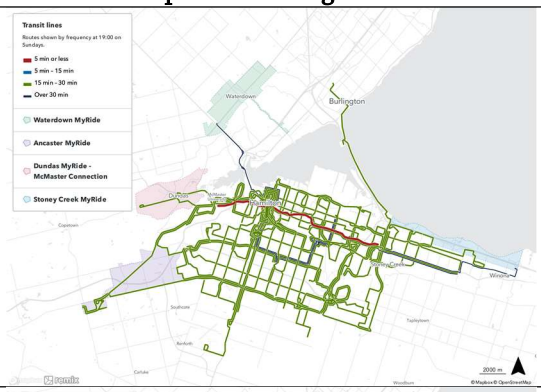
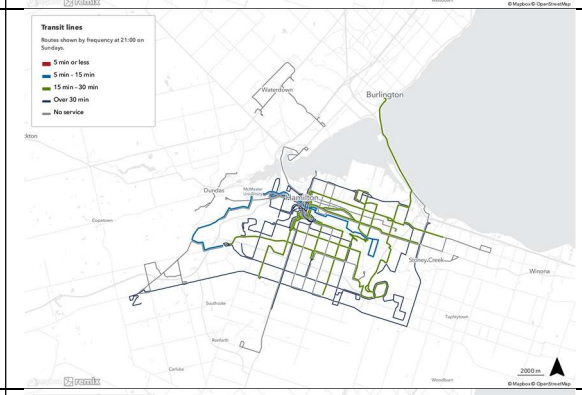
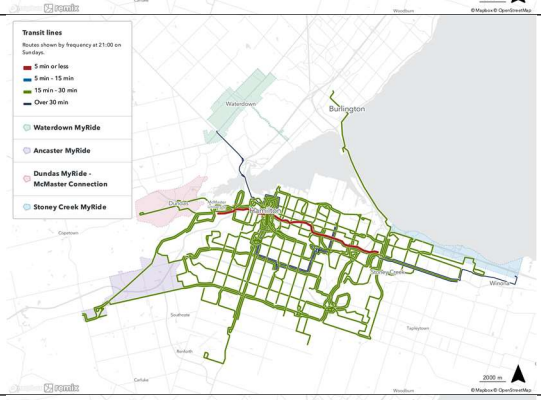
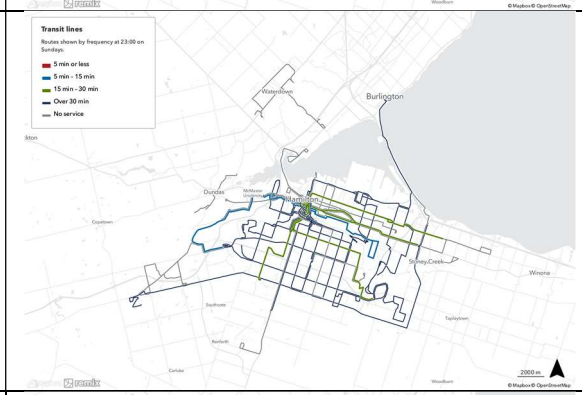
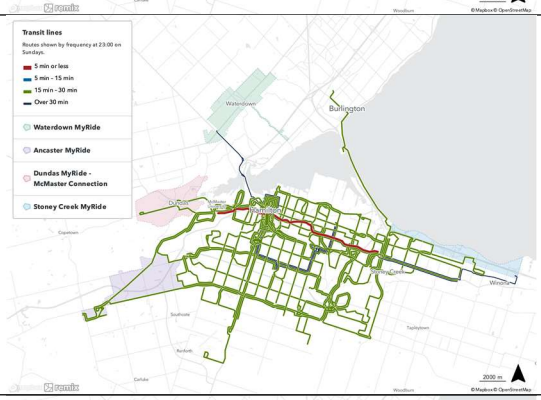
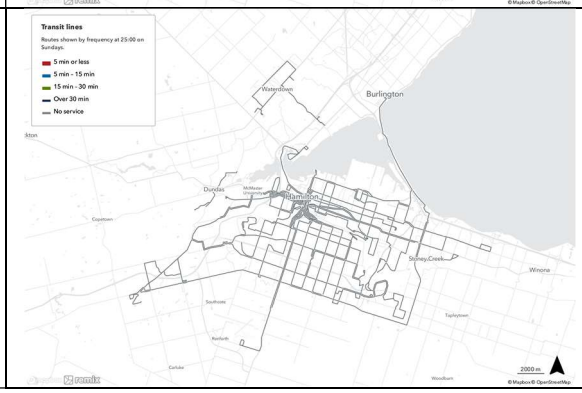
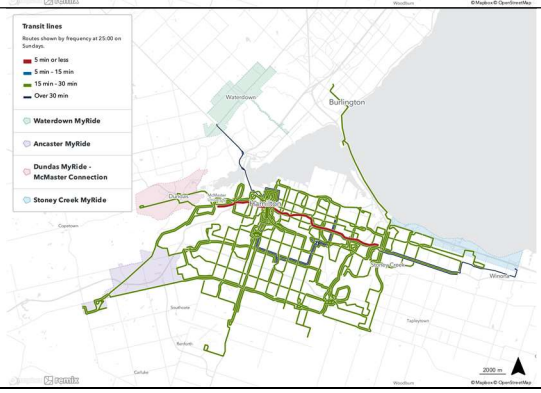
Time	Current HSR Network	Proposed Reconfiguration
19:00		
21:00		
23:00		
25:00		

Table 5-3: Comparison of current and proposed HSR networks (frequency - Sundays)

Time	Current HSR Network	Proposed Reconfiguration
05:00		
07:00		
09:00		
11:00		

Time	Current HSR Network	Proposed Reconfiguration
19:00		
21:00		
23:00		
25:00		

CHAPTER 6
CONCLUSIONS

6. Conclusions

This report is aimed at suggesting a multi-criteria reconfiguration of HSR transit service based on the evidence of our data collection and modelling efforts. The report, therefore, links previous reports to the proposed HSR network reconfiguration. The concluding remarks are arranged following the sequence of the report and presented in a bullet point format.

It should be noted though, that the cost values reported herein are extracted from Remix software. The software provides a relatively accurate approximation of the cost. However, to determine precise costs that are inclusive of all the variables specific to HSR staff and fleet resources, additional and resource demanding run-cutting and scheduling analysis is required. Therefore, additional analysis is required to model, fine-tune, optimize and cost the implementation of the proposed network reconfiguration at the micro-level using the HSR's comprehensive transit planning resources and network modelling software (Trapeze).

- The wealth and depth of data collected from several sources presented a unique opportunity to reconfigure the HSR network and operation based on multi-criteria. The developed models echoed almost similar indications for service reconfiguration and ultimately increasing HSR ridership.
- The total-trip journey philosophy was implemented, and Hamiltonians' travel needs were classified at Micro, Meso, and Macro scales. This classification is used to develop HSR route hierarchy yielding Higher-order, Express, Regional, Collectors, and Local route-types.
- Furthermore, the reconfiguration guidelines were developed based on integrating the findings of all previous reports. The reconfiguration is guided by eight guidelines to facilitate seamless transit travel for all Hamiltonians. These include: 1) Hub-to-Hub No-Transfer Service, 2) Hub-to-Origin/Designation One-Transfer Service, 3) Higher-Order Fast-Frequent Transit Service, 4) Regional-Connectivity, 5) Resilient and Robust Network, 6) Last-Mile Accessibility All Week, 7) Enhanced & Reliable Level of Service, and 8) Demand-based Stop/Infrastructure planning.
- Accordingly, eight HSR hubs are identified in Hamilton, along with four (Hamilton Go Centre, West Harbour GO, McMaster Go Transit Terminal, Centennial Go Transit Rail Terminal) access stops to regional connectivity.
- A decision was made to introduce two Bus Rapid Transit (BRT) routes that would partially operate on dedicated corridors (initially proposed for Hamilton-LRT Line B). This decision was based on the high transit demand across this corridor and the uncertainty associated with the provision of Hamilton-LRT. That said, should Hamilton LRT project moves forward, additional analysis must be completed to ensure the integration of the proposed network reconfiguration with the Hamilton LRT project.
- The integration of implementation of the reconfiguration guidelines for the HSR network yielded a proposed network of 39 routes (2 BRT, 5 Express, 3 Regional, 16 Collectors, and 13 Local routes).
- The proposed network contributes to a 7% increase in the population served by transit within a 400-meter buffer. Furthermore, there is an approximately 49.71% increase in the number of trips on Sundays/Holidays and a 45.75% increase on Saturdays. On Weekdays, the number of trips increased by 28.91%.

- Further, the proposed reconfiguration supports access to economic opportunity with a 3.33% increase for occupied dwellings, and 7.16% increase for the total number of employees within the 400-buffer threshold. Nonetheless, the percentage of the low-income population within 400 meters buffer decreased by 0.40%.
- That said, these values reflect only the network coverage regardless of service operating parameters. In this respect, accessibility to the service (with respect to the frequency of all routes) has enhanced substantially. The reachability (distance covered over time) from/to the proposed eight hubs significantly increases throughout Weekdays, Saturdays, and Sundays. This indicates that the proposed network reconfiguration provides superior travel time.
- Adding to that, the hierarchical route structure coupled with hub-to-bub connectivity contribute to a more robust and resilient network, which could withstand disruptive events.

Overall, this report provides a ready-to-implement HSR network reconfiguration that is based on the travel needs of Hamiltonians, which is expected to increase transit ridership substantially.

CHAPTER 8
REFERENCES

7. References

Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Process*, *50*, 179–211. https://doi.org/10.1016/0749-5978(91)90020-T

Ajzen, I. (2013). Theory of Planned Behaviour Questionnaire. *Measurement Instrument Database for the Social Science*, 1–7. https://doi.org/http://dx.doi.org/10.13072/midss.649

American Psychiatric Association. (2017). What is Addiction? Retrieved April 4, 2018, from https://www.psychiatry.org/patients-families/addiction/what-is-addiction

Anable, J. (2005). "Complacent Car Addicts"; or "Aspiring Environmentalists"? Identifying travel behaviour segments using attitude theory. *Transport Policy*, *12*(1), 65–78. https://doi.org/10.1016/j.tranpol.2004.11.004

Ben-Akiva, M., & R. Lerman, S. (1985). *Discrete Choice Analysis Theory and Application to Travel Demand* (Third Edit). Cambridge, Massachusetts, London, England: The Massachusetts Institute of Technology.

Ben-Akiva, M., Walker, J., Bernardino, A., Gopinath, D. A., Morikawa, T., & Polydoropoulou, A. (2002). Integration of Choice and Latent Variable Models. *In Perpetual Motion-Travel Behavior Research Opportunities and Application Challenges*, (1), 431–470. https://doi.org/10.1016/B978-008044044-6/50022-X

Bliemer, M. C. J., & Rose, J. M. (2006). *Designing Stated Choice Experiments : State-of-the-Art*.

Chowdhury, S., Zhai, K., & Khan, A. (2016). The Effects of Access and Accessibility on Public Transport Users ' Attitudes. *Journal of Public Transportation*, *19*(1), 97–113. Retrieved from http://scholarcommons.usf.edu/cgi/viewcontent.cgi?article=1459&context=jpt

Dhingra, C. (2011). *Measuring Public Transport Performance: Lessons for Developing Cities*. *Sustainable Urban Transport Technical Document* (Vol. 9). Eschborn, Germany. Retrieved from http://www.sutp.org/files/contents/documents/resources/B_Technical-Documents/GIZ_SUTP_TD9_Measuring-Public-Transport-Performance_EN.pdf

Domarchi, C., Tudela, A., & González, A. (2008). Effect of attitudes, habit and affective appraisal on mode choice: An application to university workers. *Transportation*, *35*(5), 585–599. https://doi.org/10.1007/s11116-008-9168-6

Ersche, K. D., Lim, T. V., Ward, L. H. E., Robbins, T. W., & Stochl, J. (2017). Creature of Habit: A self-report measure of habitual routines and automatic tendencies in everyday life. *Personality and Individual Differences*, *116*, 73–85. https://doi.org/10.1016/j.paid.2017.04.024

Fishbein, M., & Ajzen, I. (1975). *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research*. Reading, MA: Addison-Wesley. Retrieved from http://people.umass.edu/aizen/f&a1975.html

Flannelly, K. J., & McLeod, M. S. (1989). A multivariate analysis of socioeconomic and attitudinal factors predicting commuters' mode of travel. *Bulletin of the Psychonomic Society*, *27*(1), 64–66. https://doi.org/10.3758/BF03329899

Fu, X., & Juan, Z. (2017). Understanding public transit use behavior: integration of the theory of planned

behavior and the customer satisfaction theory. *Transportation*, *44*(5), 1021–1042. https://doi.org/10.1007/s11116-016-9692-8

Galdames, C., Tudela, A., & Carrasco, J.-A. (2011). Exploring the Role of Psychological Factors in Mode Choice Models by a Latent Variables Approach. *Transportation Research Record: Journal of the Transportation Research Board*, *2230*, 68–74. https://doi.org/10.3141/2230-08

Goldberg, L. R., Johnson, J. A., Eber, H. W., Hogan, R., Ashton, M. C., Cloninger, C. R., & Gough, H. G. (2006). The international personality item pool and the future of public-domain personality measures. *Journal of Research in Personality*, *40*(1), 84–96. https://doi.org/10.1016/j.jrp.2005.08.007

Hensher, D. A., Rose, J. M., & Greene, W. H. (2005). *Applied Choice Analysis A Primer* (First). Cambridge University Press.

Hensher, D. a. (1994). Stated preference analysis of travel choice: the state of practice. *Transportation*, *21*(2), 107–133. Retrieved from https://link.springer.com/content/pdf/10.1007%2FBF01098788.pdf

Idris, A. O. (2013). *Modal shift forecasting models for transit service planning*. *ProQuest Dissertations and Theses*. University of Toronto. Retrieved from http://search.proquest.com.ezaccess.library.uitm.edu.my/docview/1635317715?accountid=42518

McFadden, D., & Talvitie, A. (1977). *Urban Travel Demand Forecasting Project*. Retrieved from https://eml.berkeley.edu/~mcfadden/utdfp5.html

Montgomery, J. (2002). Auto Addiction. Retrieved April 4, 2018, from http://culturechange.org/issue13/autoaddict.html

Muenrit, K., Satiennam, W., Satiennam, T., & Jaensirisak, S. (2017). The Effects of Psychological Factors on Travelers ' Mode Choice Intention : A Case Study of Light Rail Transit System (LRT) in Khon Kaen , Thailand. *Journal of the Eastern Asia Society for Transportation Studies*, *12*, 1192–1200. https://doi.org/10.11175/easts.12.1192

Ortúzar, J. D. D., Martínez, F. J., & Varela, F. J. (2000). Stated preferences in modelling accessibility. *International Planning Studies*, *5*(1), 65–85. https://doi.org/10.1080/135634700111828

Ortuzar, J. de D., & Willumsen, L. G. (2011). *Modelling Transport* (Fourth Edi). West Sussex, United Kingdom: JohnWiley & Sons, Ltd.

Parkany, E., Gallagher, R., & Viveiros, P. (2004). Are Attitudes Important in Travel Choice? *Transportation Research Record: Journal of the Transportation Research Board*, *1894*(June), 127–139. https://doi.org/10.3141/1894-14

Rose, J. M., Collins, A. T., Bliemer, M. C. J., & Hensher, D. A. (2018). *Ngene 1.2 USER MANUAL & REFERENCE GUIDE* (Ngene 1.2). 2018 ChoiceMetrics. Retrieved from www.choice-metrics.com

Schuitema, G., Anable, J., Skippon, S., & Kinnear, N. (2013). The role of instrumental, hedonic and symbolic attributes in the intention to adopt electric vehicles. *Transportation Research Part A: Policy and Practice*, *48*, 39–49. https://doi.org/10.1016/j.tra.2012.10.004

Twaddle, H. A. (2011). *Stated preference survey design and pre-test for valuing influencing factors for bicycle use*. INSTITUTE OF TRANSPORTATION - TECHNISCHE UNIVERSITÄT MÜNCHEN. Retrieved from http://mediatum.ub.tum.de/doc/1130707/1130707.pdf

Van, H. T., Choocharukul, K., & Fujii, S. (2014). The effect of attitudes toward cars and public transportation on behavioral intention in commuting mode choice-A comparison across six Asian countries. *Transportation Research Part A: Policy and Practice*, *69*, 36–44. https://doi.org/10.1016/j.tra.2014.08.008

van Lierop, D., & El-Geneidy, A. (2018). Is having a positive image of public transit associated with travel satisfaction and continued transit usage? An exploratory study of bus transit. *Public Transport*. https://doi.org/10.1007/s12469-018-0175-5

END OF REPORT

CITY OF HAMILTON
PUBLIC WORKS DEPARTMENT
Transit Division

TO:	Chair and Members Public Works Committee
COMMITTEE DATE:	April 3, 2023
SUBJECT/REPORT NO:	myRide Waterdown On-Demand Pilot Review (PW23023) (Ward 15)
WARD(S) AFFECTED:	Ward 15
PREPARED BY:	Jason Vander Heide (905) 546-2424 Ext. 2390
SUBMITTED BY: **SIGNATURE:**	Maureen Cosyn Heath Director, Transit Public Works Department 

RECOMMENDATIONS

(a) That myRide Waterdown on-demand pilot that commenced on September 7, 2021, be considered complete;

(b) That the hybrid transit service, introduced on November 7, 2022 and currently operating as a combination of fixed route service and myRide on-demand service, continue to operate as the recommended transit solution for Waterdown; and

(c) That the General Manager, Public Works or designate, be directed to incorporate any future changes to service in Waterdown or any future introductions of on-demand service into the Transit growth plan recommendations.

EXECUTIVE SUMMARY

This report is the final overview of the Hamilton Street Railway's (HSR) review of the Waterdown myRide on-demand transit pilot after the full year of operation, post period changes, and recommendations for the continuation of the current transit service solution in Waterdown, as well as potential applicability for other on-demand services elsewhere in Hamilton's urban transit area.

Alternatives for Consideration – See Page 11

FINANCIAL – STAFFING – LEGAL IMPLICATIONS

Financial: N/A

Staffing: N/A

Legal: N/A

HISTORICAL BACKGROUND

In September 2021, the myRide Waterdown on-demand pilot was launched to test a Software as a Service (SaaS) product that would allow existing HSR resources to be leveraged to provide a different type of service solution than had been provided in Hamilton previously.

The on-demand model is a “stop to stop” service that dynamically adjusts the route of the bus as customers request to be picked up rather than the traditional model of service where a customer waits at a bus stop for the next bus to pass based on a fixed schedule.

The goal of myRide was to improve the customer experience through more direct trips, quicker journeys, and shorter wait times, while making their trip as efficient as possible.

Key performance indicators (KPI’s) were measured and compared to the pre-pilot period of traditional service throughout the pilot. These KPI’s were: ridership, total kilometres driven, total hours of operation, coverage area, operating costs, service performance, and resource requirements of each service model. Additionally, the pilot review considers the voice of customer through feedback provided throughout as well as lessons learned and data analysis from pre-launch through launch, implementation, and operation of the one-year period.

On April 22, 2022, an Information Report (PW22024) was provided to Committee as a review of the first 6 months of the pilot. In this review, staff identified a list of objectives to accomplish during the remainder of the pilot to continue to improve the transit service in Waterdown. These objectives included:

- A virtual stop utilization assessment (removal of unused stops and addition of new stops in anticipated growth areas);
- Assessment of an on-demand hybrid model with a more robust and predictable connection to Aldershot GO and Burlington Transit during peak demand periods;

- Enhancements to the customer-app in both functionality and notifications about trip specific information;
- Improved communication about trip details for the customer;
- Proceeding with an additional pilot period to test the unrealized flexibility of on-demand transit during significant construction projects on Parkside Drive and Waterdown Road, during which the operation of conventional transit would be significantly impacted and explore the potential of hybrid on-demand modelling for this purpose;
- Beginning to explore the potential to deploy on-demand transit in areas of the City that traditionally experience low ridership demand on existing fixed routes or in areas that do not have access to transit; and
- Reporting back with a full year evaluation and recommendations in 2023.

During the second 6-month assessment and review of the pilot and based on extensive service analysis in combination with customer feedback, the previously anticipated need to re-think the fully on-demand service model and look for ways to provide a more robust and predictable connection to Aldershot GO and to Burlington Transit during all time periods was supported. It was clear that the myRide on-demand service could not operationally provide the desired outcome of good, connected service to interregional and neighbouring transit service and that a modification was needed; however, the myRide on-demand data proved to be invaluable and played a crucial role in identifying the best case for re-introducing a fixed route to operate in combination with the myRide on-demand service as a hybrid service delivery model. This new service model better meets the transportation needs of this diverse and growing community, while retaining some of the benefits that myRide on-demand provided that a fully fixed route service could not.

On October 18, 2022, a Communication Update (TRN2202) informed Committee of the intention to launch this new hybrid service on November 7, 2022. The hybrid service went into operation on the identified date as planned and has been operating successfully as a balanced solution up until the time of this report.

Service models in each scenario remained consistent with the pre-pilot service spans to operate Monday to Saturday with the same service span on weekdays between 5 a.m. to 7:30 p.m. and 8:30 a.m. to 7:30 p.m. on Saturdays. There is no service on Sundays.

POLICY IMPLICATIONS AND LEGISLATED REQUIREMENTS

N/A

RELEVANT CONSULTATION

Prior to the pilot and through the early stages of the (Re)envision project, staff from both the Transit and Economic Development divisions along with the Ward 15 Councillor, consulted with Waterdown businesses and noted the challenges that they experienced with recruiting and retaining staff because of limited transportation options available to them.

Throughout the pilot, staff have continued to engage and consult with customers, employers, and the Ward 15 Councillor's office to identify and operate the "best transit fit" for the Waterdown community.

Customers have been provided an opportunity to provide feedback on the myRide on-demand pilot through the service app., through our customer contact center, through the Ward 15 Councillor office and through surveys both during the early days of the pilot and again after the hybrid service model was introduced.

ANALYSIS AND RATIONALE FOR RECOMMENDATION

Ridership

Transit ridership in Waterdown as a community has been historically low. As it relates to the Council approved service standard for productivity ridership on service provided to the community, it never met the minimum standard to justify further investment in service.

An objective of this pilot was to assess whether a change to the service model could stimulate more transit use to recover ridership in the near to mid-term and grow ridership in the long term. As evidenced in data collected from prior to the pilot, throughout the pilot and during the post pilot and hybrid periods, this objective has not been realized.

Figures 1 and 2 of Appendix "A" attached to report PW23023 show ridership levels as they compare to the Council approved service standard for productivity and as they relate to the average boarding per revenue service hour during the various time periods.

Coverage Area

During the pre-pilot consultation efforts between staff, the Ward 15 Councillor, and employers, it was identified that transit service was not being provided in the western portion of the community where new and expanding business areas were being developed. There were also areas of growth in the town centre and on the eastern portion of the community that were not within 400m of transit during weekday peaks,

leaving parts of the community falling short of contributing to the overall measurement of the Council approved service standard for coverage.

An objective of this pilot was to find a way to deliver service to these areas, while remaining cost neutral, given that transit ridership has been historically low in Waterdown. Given that the myRide on-demand service is dynamically routed based on individual customer needs rather than following a traditional fixed route model, a greater coverage area could be established with the same, or less, resource requirements to achieve a similar result.

As evidenced in figure 3 of Appendix "A" attached to report PW23023, the service coverage area increased from 11 square kms prior to the pilot to 16 square kms throughout the pilot and during the post pilot and hybrid periods.

While there has not been a boom of new ridership in the new service areas, there were 3,532 trips originating from or destined for these areas throughout the pilot. Therefore, staff are recommending continuing to provide service into these new areas through the continuation of the hybrid service model.

Total Operating Kilometres

The total number of kilometres operated by a service is a key indicator in the efficiency of the service provided. In combination with historically low ridership prior to the pilot, many kilometres driven were either empty or underutilized. As a result, fuel and carbon emissions are being used or generated unnecessarily.

An objective of this pilot was to find a way to deliver service in a more efficient manner and to reduce the number of operating kilometres being driven through the dynamically routed service as compared to a traditional fixed route service. As evidenced in figure 4 of Appendix "A" attached to report PW23023, and despite having increased the service coverage area by 45%, there was marked reduction in total operating kilometres throughout the pilot and during the post pilot and hybrid periods, resulting in operational efficiencies.

Total Operating Hours

The total number of hours operated by a service is the key driver of total operating costs. Total operating hours are determined by how long a single bus is on the road from the time it departs the transit garage until the time it returns to the transit garage, inclusive of the time to get to and from the route location (non-revenue time) and the time driven in service (revenue time), multiplied by the total number of buses on route needed to provide the desired service level.

An objective of this pilot was to assess whether a change to the service model could result in a reduction in the number of total operating hours given that service might be able to be delivered more efficiently.

As evidenced in figure 5 of Appendix "A" attached to report PW23023, there was a marked decrease in total operating hours during the pilot; however, during the post pilot period when there was a subtle increase in demand, performance of the exclusively on-demand model suffered to the point that additional resources comparable to the pre-pilot service levels were being considered and which would have negated most, if not all, of any decrease in total operating hours experienced during the pilot period.

During the hybrid period and with demand returning, total operating hours are returning closer to the pre-pilot operating hours. Accordingly, staff concluded that on-demand, while suitable in a small-scale situation, it is largely susceptible to being influenced by demand and as such, is more suitable to be operated in combination to complement fixed route service rather than being scaled up to meet demand levels while maintaining performance. Staff have also concluded there should be no expectation that an exclusively on-demand model will reduce total operating hours long term, but could be used as a service in a new area that has not previously had fixed route to keep total operating hours lower at the beginning before introducing fixed route service.

Total Operating Costs

Total operating costs are determined by the number of hours operated by all buses on route needed to provide a desired level of service multiplied by a cost per hour to operate, inclusive of vehicle and staffing costs.

An objective of this pilot was to assess whether a change to the service model could result in a reduction in the total operating costs of the service given that service might be able to be delivered more efficiently and with fewer resource requirements.

As evidenced in figure 6 of Appendix "A" attached to report PW23023, there was a marked decrease in total operating costs during the pilot and post pilot periods, despite having a slightly increased cost per hour due to the inclusion of the licensing fee for the SaaS use and some upfront costs related to telephone reservations, as well as some upfront capital costs for tablets and tablet mounts on the buses.

However, as demand has been subtly increasing and the hybrid model was introduced requiring a return to the same resource level as was in place prior to the pilot, the gap between the pre-pilot total operating cost and the current model total operating costs is narrowing. Retaining the current hybrid model is expected to remain cost neutral when compared to the pre-pilot service period.

Based on the analysis, staff have concluded that an exclusively on-demand service is largely susceptible to fluctuating costs due to changes in demand, and as such it is more suitable to be operated in combination to complement fixed route service rather than being scaled up to meet demand levels while maintaining performance. Staff have also concluded there should be no expectation that an exclusively on-demand service will reduce total operating hours long term but could be used as a service in a new area that has not previously had fixed route to keep total operating costs lower at the beginning before introducing fixed route service.

Service Performance

How a service performs is a key indicator of what the customer experience and satisfaction with the service will be, which inevitably can impact whether more or less people decide to use the service.

An objective of this pilot was to assess whether a change to the service model could improve service performance.

As evidenced in figure 7 of Appendix “A” attached to report PW23023, there was a marked increase in the on-time performance, as measured based on advertised departure time throughout the pilot, post pilot and hybrid periods compared to the pre-pilot period. However, there was a noted drop in performance during the post pilot period and prior to the hybrid service being introduced as demand subtly started to pick up in September 2022. Additionally, in figure 7 of Appendix “A” attached to report PW23023, a comparison of the average wait time in minutes for service shows the benefits of reduced wait times provided by an on-demand service versus a fixed route service, and how in the post pilot period wait times increased when subtle increases in demand occurred. The introduction of the hybrid model restored improved wait times for customers using the on-demand portion of service while balancing the predictability of wait times for customers using the fixed route portion of service.

Based on the analysis, staff have concluded that an exclusively on-demand service is largely susceptible to fluctuating performance due to changes in demand, and without adding resources to compensate for said increases, the overall performance of the service will suffer long term. As such, staff have concluded that exclusive on-demand service is more suitable to be operated in combination to complement fixed route service rather than being scaled up to meet demand levels while finding a balance in maintaining performance and overall operating costs.

Resource Requirements

The number of resources, vehicles, operators and supporting staff, required to deliver service is a key driver of overall costs to deliver a service.

An objective of this pilot was to assess whether a change to the service model could result in fewer resource requirements to deliver the service which would result in a reduction in the total operating costs of the service given that service might be able to be delivered more efficiently.

As evidenced in figure 8 of Appendix "A" attached to report PW23023, there was a marked decrease in the resources required to deliver the revenue portion of the service; however, an exclusively on-demand service does require less obvious operational changes in resources than is shown within figure 8. There were 3 key takeaways from the pilot as they relate to the less obvious operational changes in resources.

Firstly, given that service is not running on a fixed route and the schedule is being dictated in real time and dynamically based on individual customer needs, there is a requirement to overlap buses and operators for short durations throughout the day while one operator is starting their shift, and another is ending their shift. This results in a phenomenon not experienced with fixed route service where in this case during the pilot period there were 3 buses in revenue service and 3 buses in non-revenue service at the same time to complete this transition and continue to maintain bus availability to customers. While the overall costs and hours are contemplated into their respective comparisons, this does cause a nuanced increase in the non-revenue portion of the overall hours when compared to the pre-pilot period.

Secondly, given that service is operated differently and booked differently than traditional transit service, there is a need for some extra monitoring by Operations Supervision as well as some extra booking duties by Customer Service representatives for those bookings not done in the service app. In both cases, the myRide pilot was small enough to not require additional staff to perform these duties; however, staff have concluded that scaling the service up into new areas will require additional supporting staff to manage the monitoring and bookings for on-demand service.

Lastly, when using a dynamic routing model and to maximize use of a local street network, small vehicles must be used. In the case of the myRide pilot, existing smaller 30-foot buses have been used to operate the service. Staff have concluded that scaling the service up into new areas will require a review of smaller vehicle types that can navigate neighbourhoods in all weather conditions, so service is more of a door to door/stop service rather than a stop to stop service.

Customer Feedback

Customer satisfaction is a key indicator as to how a service is performing, whether it is fitting the needs of the community, and if the service has the potential to attract new customers.

An objective of this pilot was to assess how a change to the service model would impact existing customers, benefit potential customers, and attract new customers.

Customers have been provided an opportunity to provide feedback on the myRide on-demand pilot through the service app, through our customer contact center, through the Councillor office and through surveys both during the early days of the pilot, throughout the pilot period, and again after the hybrid service model was introduced.

As evidenced in figure 9 of Appendix "A" attached to report PW23023, there has been considerable feedback from customers providing both positive and negative feedback on the pilot and hybrid service models both from a design and delivery perspective.

From the feedback received, sentiment related to the service model design has been mixed with some customers favouring the predictability of a traditional service model and some customers being more attracted to the conveniences of an on-demand model. There is a strong indication in the short period of operation that most customers are in favour of the hybrid model over either of the other models as a service that provides the best of both worlds and customer feedback in general has provided an indication that customers would like to see service span increased to later evening and Sundays.

Transit conducted a 25-question survey in Winter 2023 to assess customer sentiment towards the myRide on-demand service and the change to the hybrid service model that was launched in November 2022. There were over 500 respondents to the survey with general sentiment favouring positive responses to the questions about each service model. A few key takeaways from the feedback received in the survey were:

- Of customers using the myRide on-demand service:
    - 96% of respondents had access to a mobile device with cellular or data.
    - 68% of respondents were satisfied with the wait times for the service.
    - 73% of respondents were satisfied with the directness of their trips.

- Of customers using the fixed route portion of the hybrid service:
    - 42% of respondents were challenged by the lack of ease in connecting to Burlington Transit, while 77% of respondents found it easy to connect with GO Transit.
    - 64% overall satisfied with the service, but customers transferring from myRide to fixed route were finding this challenging and would like to see improvements in the connections between service models.

Conclusion

The testing of a Software as a Service (SaaS) to support an on-demand service model has resulted in several benefits and lessons learned. It provided sufficient information to drive data-based decision-making based on where transit customers in Waterdown are travelling to and from, to inform the change to the hybrid service model currently in operation. It has shown potential benefits as they relate to how much resourcing and investment is required to meet the demand of a specific area, and specifically what type of resourcing might be needed to introduce a new service at a lower cost than what would be required to do the same with a traditional fixed route service. It has also benefited customers who value shorter, more direct trips that are personalized to their travel needs while providing more access to transit in general in this community.

However, staff have concluded that while on-demand service has many benefits and is a valuable addition to the family of transit services that a municipality can offer residents, it is not a one size fits all solution. During the pilot, staff determined that on-demand service has potential for success in suburban areas where there currently is not good access to fixed route service, where demand is relatively low, where the geographic area or zone in which it operates is small, and where it can connect to a complimentary fixed route service to take advantage of the economies of scale that exist within a larger group of customers taking one vehicle to a common destination.

It has also been concluded that on-demand service has limitations wherein it is largely susceptible to fluctuating costs and performance resulting from changes in demand. In essence, over the long term, if successful in attracting new transit customers, on-demand service would become a victim of its own success, whereby more resources might be required to fulfil individual trip demand than would be required to provide a fixed route service to many people using it all at once. The threshold to trigger this is likely to be less than the traditional service standard for productivity, which is currently used to justify investments.

Potential future use cases for on-demand service in Hamilton's urban transit area include the following suburban areas, provided that complimentary fixed route service is also in operations during the same periods:

- Stoney Creek
- Waterdown
- Dundas
- Ancaster

Introduction of on-demand service into these areas could be as a replacement of a portion of existing fixed route service that meanders through neighbourhood streets; as a replacement for other alternative service delivery models; or as a new service to

provide increased access and to build service towards transitioning service over to fixed route service in the long term. There are also benefits to on-demand transit as a mobility option for integration with accessible transportation services. These implementations should be considered as part of the longer-term transit growth plan, how they could connect into the Rail Ready network, and with consideration to a full analysis of the anticipated cost implications of scaling on-demand services inclusive of a review of vehicle types to best deliver this type of service, a review of staff requirements (Operators, Supervisors, Customer Service) to best support this type of service, and how this type of service could be best integrated into other service models as a family of services.

ALTERNATIVES FOR CONSIDERATION

1. Return to the exclusively fixed route transit service model that operated prior to the pilot; however, this would result in the loss of ~5 square kilometres of service coverage within which customers have benefited from reaching new destination locations by transit, particularly in the western most part of Waterdown and along Hamilton Street in the town centre.

   Financial: Financial implications associated with this alternative remain cost neutral*. The pre-pilot fixed route model utilizes the same number of (4) buses as the current hybrid model.

   Staffing: N/A

   Legal: N/A

2. Return to the exclusively fully dynamic on-demand transit service model that operated throughout the pilot; however, this would result in the loss of the more predictable and robust connection to interregional and neighbouring transit services that form the vast majority of trip purposes for customers in Waterdown and will be very susceptible to performance and customer satisfaction indicators, based on demand.

   Financial: Financial implications associated with this alternative remain cost neutral*. The dynamic on-demand model utilizes the same number of (4) buses as the current hybrid model.

   Staffing: N/A

   Legal: N/A

Alternatives (1) and (2) are not recommended.

* To respond to increases in demand due to post-COVID growth in trips and land use changes, it would be inevitable that more resources would be needed to support the service, inclusive of vehicle acquisition and staff hiring, which could result in a scenario where the annual operating costs for the service exceeds that of the pre-pilot and post pilot service alternatives, in order to meet demand at a satisfactory performance level.

ALIGNMENT TO THE 2016 – 2025 STRATEGIC PLAN

Healthy and Safe Communities
Hamilton is a safe and supportive City where people are active, healthy, and have a high quality of life.

Clean and Green
Hamilton is environmentally sustainable with a healthy balance of natural and urban spaces.

Built Environment and Infrastructure
Hamilton is supported by state-of-the-art infrastructure, transportation options, buildings and public spaces that create a dynamic City.

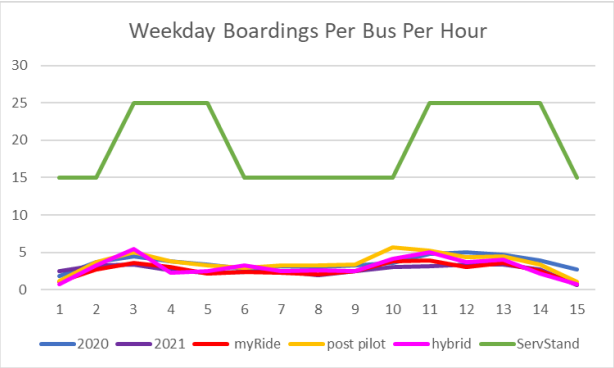
Our People and Performance
Hamiltonians have a high level of trust and confidence in their City government.

APPENDICES AND SCHEDULES ATTACHED

Appendix “A” to Report PW23023 – myRide Assessment Data

myRide Pilot Review Data

Figure 1 – Productivity



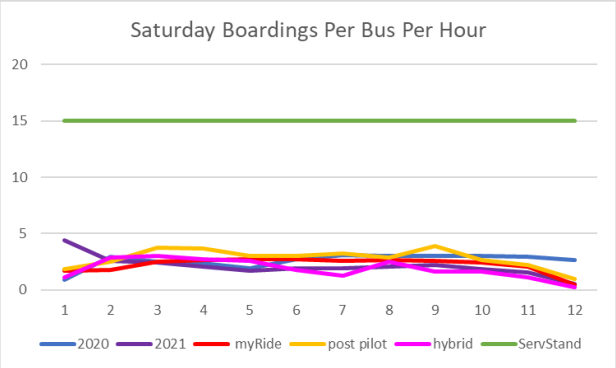


Figure 2 – Boardings per revenue service hour

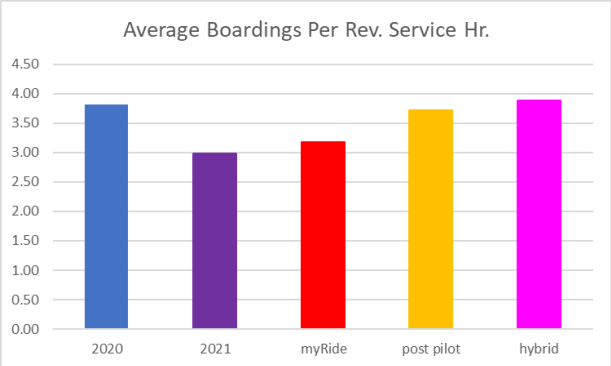
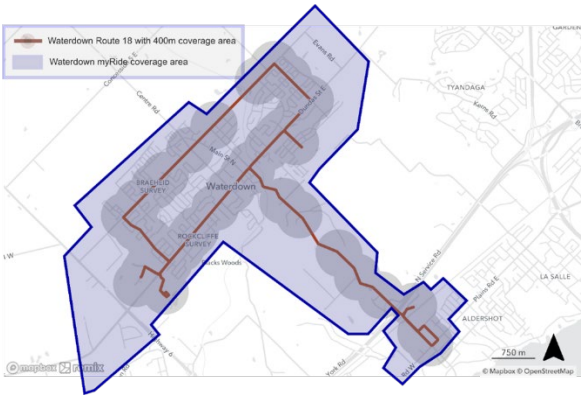


Figure 3 – Coverage Area



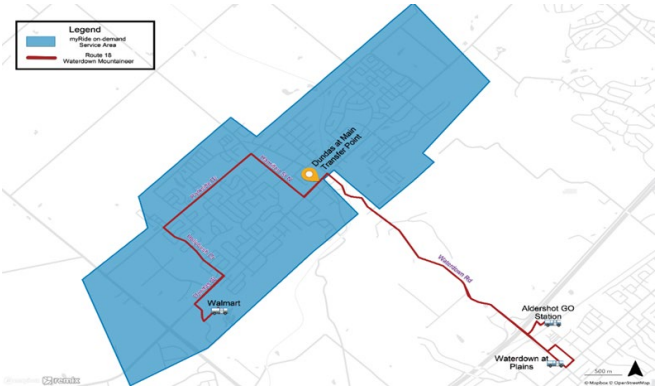
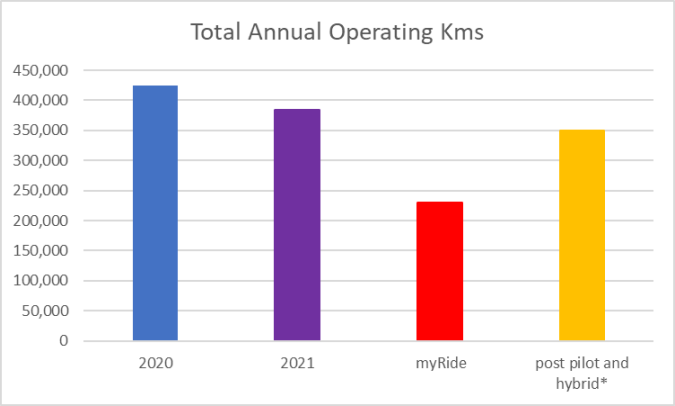
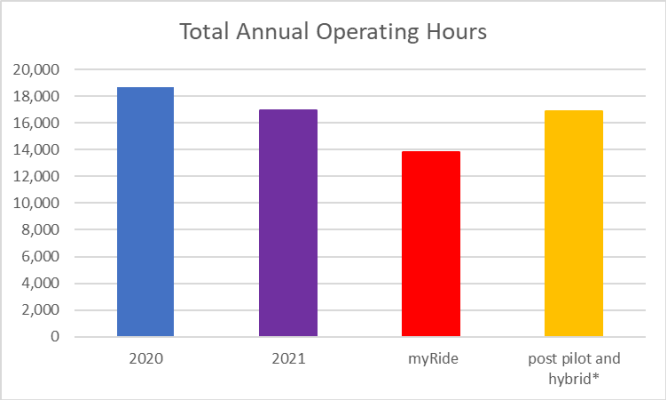


Figure 4 – Total Annual Operating Kms



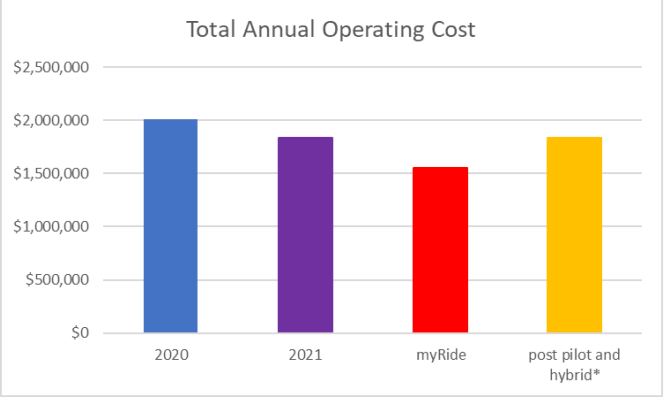
*projected

Figure 5 – Total Annual Operating Hours



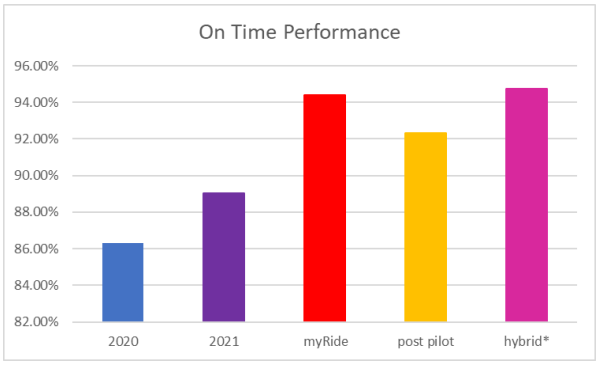
*projected

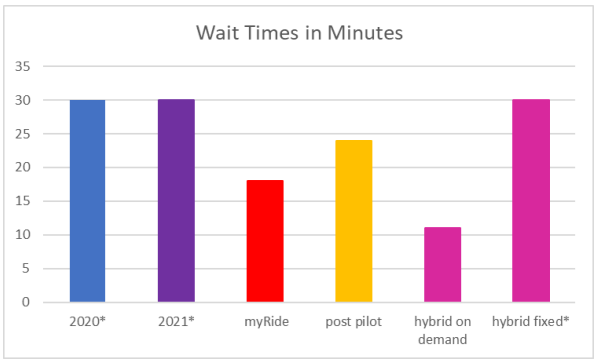
Figure 6 – Total Annual Operating Costs



*projected

Figure 7 – Performance

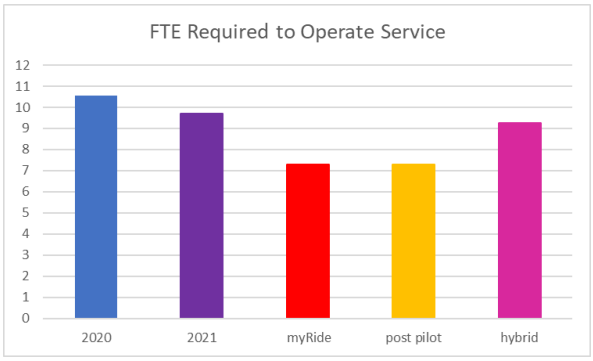


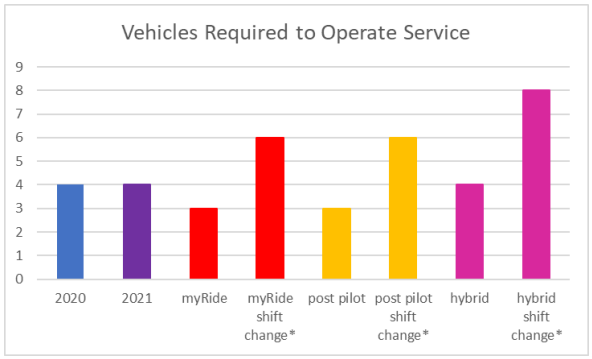


*to date

*maximum based on fixed schedule

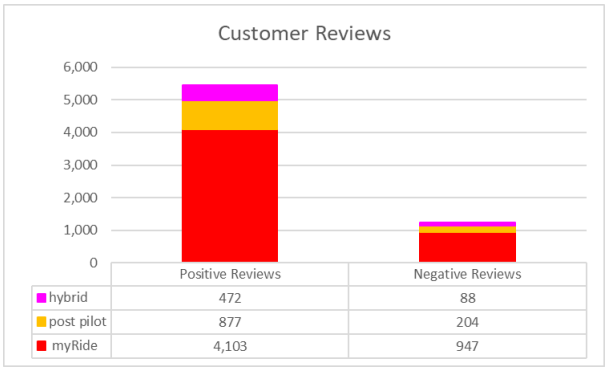
Figure 8 – Resource Requirement

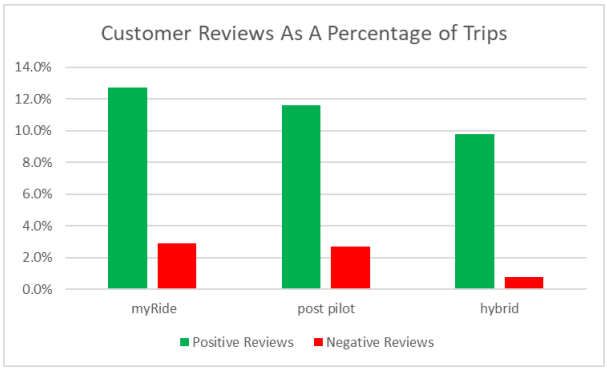




*temporary need during shift changes

Figure 9 – Customer Feedback





CITY OF HAMILTON
PUBLIC WORKS DEPARTMENT
Transit Division

TO:	Mayor and Members Public Works Committee
COMMITTEE DATE:	April 3, 2023
SUBJECT/REPORT NO:	Hamilton Street Railway (HSR) Fare Policies (PW23024) (City Wide)
WARD(S) AFFECTED:	City Wide
PREPARED BY:	Nancy Purser (905) 546-2424 Ext. 1876
SUBMITTED BY: **SIGNATURE:**	Maureen Cosyn Heath Director, Transit Public Works Department 

RECOMMENDATIONS

(a) That the General Manager, Public Works or designate, be directed to implement free fare as a permanent fare concession program for children ages 6-12 who use a PRESTO card, effective May 1, 2023; and

(b) That the General Manager, Public Works or designate, be directed to seek stakeholder feedback on the Fare Assist Program through public consultation to be completed by May 31, 2023, with a recommendation back to the Public Works Committee.

EXECUTIVE SUMMARY

The Transit Division (HSR) strives to offer fair and equitable fare policies by delivering options which remove accessibility barriers, considering policies which advance equity and inclusion, and creating a space that celebrates the diversity of staff and customers as set out in HSR's Guiding Principles. Transit recognizes that those on low and fixed income have been disproportionately impacted by the COVID-19 pandemic and recent economic events such as high inflation and have seen their buying power further reduced. Historically, price-sensitivity and affordability have been identified areas of concern with transit customers.

One such example of a pilot program designed to provide relief to rising costs was introduced November 1, 2021, allowing children ages 6 – 12 with a PRESTO card to ride free until April 30, 2023.

Based on the 2021 census data, 88,380 people in Hamilton live at or below the Low-Income Measure After-Tax (LIM-AT). The published LIM-AT has income levels for a one-person household, $26,570, up to a 10-person household, $84,022. Of these 88,380 people, the group includes: 19,140 children (ages 0-17), 55,690 adults (ages 18 – 64) and 13,550 seniors (65+).

Given the above statistics, HSR is developing a Fare Assist program that is unique to other fare options as it is designed to look at family income. Based on the draft program currently in development, qualification for the HSR Fare Assist program will require an annual application and approval process, and should the applicant be approved, the program will offer a 30% subsidy to existing Council-approved fares. The fare assist subsidy will also be extended to approved persons' partner and children ages 0 - 17 residing in the same household.

Fare Assist is being designed to offer several features which will benefit customers:

- "Pay as you go" format will enable eligible participants to load funds only as needed on their PRESTO card and pay a reduced fare per trip, not only reducing the cost per trip, but eliminating the need to have sufficient cash to buy a monthly pass.
- The program offers greater flexibility to the customer, putting them in control of how much to load on their card at a time to fulfil their transit needs. For example, a customer can load the ticket value for their current trip only, which will cost $1.89 for an adult, versus loading $59.40 at once for the affordable transit pass.
- HSR loyalty program will automatically apply, meaning customers enrolled in this program will automatically receive free fare faster once they exceed the weekly ride cap for the week travelling Monday to Sunday.
- Once qualified, the subsidy will extend to household members including spouse/partner and children.

As the HSR Fare Assist program encompasses the approved applicant, their partner and children, the benefits of this program far exceed the current Affordable Transit Pass program and Temporary Transit Fare Special Program, making transit more affordable for a much higher number of Hamiltonians. Therefore, staff anticipate recommending that the two legacy policies be suspended while piloting the new program. Noting these programs are longstanding, staff will consult with stakeholders to understand the full impact of this policy change before making recommendations on the Fare Assist program to the Public Works Committee.

Alternatives for Consideration – N/A

FINANCIAL – STAFFING – LEGAL IMPLICATIONS

Financial: Revenue reduction for the children ages 6 -12 ride free program amounts to $162,189.

Staffing: N/A

Legal: N/A

HISTORICAL BACKGROUND

Children 6-12 years Ride Free Pilot Program

In 2021, Council approved a pilot program allowing children aged 6 – 12 to ride for free until April 30, 2023. 2019 ridership figures were used to determine the impact on revenues as well as ridership to provide a guide to determine the success of the program. Revenues from 2019 totalled $163,189 based on 81,986 rides.

Council has two fare programs that can be described as early attempts at affordable fare programs.

Affordable Transit Pass

In 2007, the Affordable Transit Pass program was introduced as a pilot. The initial program was intended for low-income earners who were below the 2006 Low Income Cut Off (LICO) limit. In 2009, the program was expanded to include OW and ODSP recipients who were also employed. The program provides a 50% discount off the Adult monthly pass ($59.40 as of September 1, 2023), to applicants ages 18 – 64 who meet the financial requirement and have either full-time, part-time, or casual employment.

To purchase the pass, customers must come in person to the HSR office at 36 Hunter Street East to have their PRESTO card setup. This program does not include those who qualify for HSR's student or senior fares and OW/ODSP clients who are receiving transportation costs for other activities, e.g., medical costs. In 2014, Council made the program permanent and in 2019, the earning limit was raised to the most recent published Low-Income Measure After Tax (LIM-AT). The current discount is only provided to the applicant and does not extend to other family members. The annual budget for the 50% discount in the pass is $248,680.

Temporary Transit Fare Special Program

To meet the Accessibility for Ontarians with Disabilities (AODA) Transportation Standard, which required fare parity by 2013 between conventional and accessible transit services, staff recommended that the voluntary pay policy be discontinued for those using PMD's and CNIB cardholders as it offers a greater benefit to those with specific disabilities and therefore creates inequities. The relevant clauses of the AODA legislation are included in Appendix "A" attached to Report PW23024. In absence of an alternative or replacement program, these recommendations were rejected by Council.

In 2013, Council approved a Temporary Transit Fare Special Program attached as Appendix "B" to Report PW23024. This program allows customers using a Personal Mobility Device (PMD) which includes wheelchairs, scooters, and walkers, and Canadian National Institute for the Blind (CNIB) cardholders the option to pay a fare or not when boarding (voluntary pay). There is no income or eligibility requirement for these; payment is at the discretion of the customer at time of boarding.

The Temporary Transit Fare Special Program was a combination of two long standing programs that had been offered exclusively on conventional HSR transit and were put in place to allow staff time to develop a new fare discount program, which to date, has not been undertaken. The annual cost of the Temporary Transit Fare Special Program is $1,092,722.

The first program is the voluntary pay program which was introduced to incentivize persons to use low-floor buses when they were introduced into the fleet in 1996, to decrease demand on the specialized service which was overburdened. The second program allowed CNIB cardholders to ride conventional transit at no fare but pay a fare on specialized transit. Of note, most transit agencies across Canada permit free conventional transit for CNIB cardholders.

POLICY IMPLICATIONS AND LEGISLATED REQUIREMENTS

N/A

RELEVANT CONSULTATION

N/A

ANALYSIS AND RATIONALE FOR RECOMMENDATION

During this time of continued economic impact and while striving to make transit more affordable in an equitable manner, HSR recommends making children 6 – 12 years of age using a PRESTO card free permanently.

The free fares for children 6 -12 years old has been well received. Hamilton Public Library became a lead partner in the program and provided more than 4,000 free PRESTO cards to participants. In 2022, 136,856 rides were taken by children aged 6 - 12 representing a 67% increase for this group in a year that saw ridership significantly below pre-pandemic levels.

McMaster University's Transit Research Informed Practice (TRIP) Lab evaluated the program. A survey of 338 participants noted tangible and intangible benefits of the pilot program. Participants shared many perceived benefits and outcomes including saving the planet 87%, saving money 85%, getting to places in the community 83%, and participating in physical activity 70%. In addition, nearly 80% of participants believed the program improved their quality of life. Based on the improved ridership and the family outcomes, staff are recommending this program become a permanent offering. GO Transit, TTC, Durham Region, Oakville, Mississauga, and Burlington have implemented similar programs.

The Fare Assist program is designed to be an inclusive program; however, the implementation will impact customers who currently have access to the Affordable Transit Pass or the Temporary Transit Fare Special Program, therefore it is important to understand the impact of suspending these programs through consultation.

ALTERNATIVES FOR CONSIDERATION

N/A

ALIGNMENT TO THE 2016 – 2025 STRATEGIC PLAN

Economic Prosperity and Growth
Hamilton has a prosperous and diverse local economy where people have opportunities to grow and develop.

Healthy and Safe Communities
Hamilton is a safe and supportive City where people are active, healthy, and have a high quality of life.

Built Environment and Infrastructure
Hamilton is supported by state-of-the-art infrastructure, transportation options, buildings and public spaces that create a dynamic City.

APPENDICES AND SCHEDULES ATTACHED

Appendix “A” to Report PW23024 – AODA Transportation Standard – Fare Parity

Appendix “B” to Report PW23024 – Council Follow Up Notice

AODA legislation was introduced in July 2011 and states:

Fares

46. (1) No conventional transportation service provider shall charge a higher fare to a person with a disability than the fare that is charged to a person without a disability where the person with a disability uses conventional transportation services, but a conventional transportation service provider may charge a lesser fare for a person with a disability. O. Reg. 191/11, s. 46 (1).

(2) Conventional transportation service providers that do not provide specialized transportation services shall make available alternative fare payment options to persons with disabilities who cannot, because of their disability, use a fare payment option. O. Reg. 191/11, s. 46 (2).

Fare parity

66. (1) Where conventional transportation services and specialized transportation services are provided by separate transportation service providers in the same jurisdiction, the specialized transportation service provider shall not charge more than the highest fare charged for conventional transportation services in the same jurisdiction. O. Reg. 191/11, s. 66 (1).

(2) Specialized transportation service providers shall meet the requirements of subsection (1) by January 1, 2017. O. Reg. 191/11, s. 66 (2).

(3) Where a transportation service provider provides both conventional transportation services and specialized transportation services, the transportation service provider shall ensure that there is fare parity between conventional transportation services and specialized transportation services. O. Reg. 191/11, s. 66 (3).

(4) Revoked: O. Reg. 165/16, s. 13.

(5) Where a transportation service provider provides both conventional transportation services and specialized transportation services, the transportation service provider shall ensure that the same fare structure is applied to conventional transportation services and specialized transportation services. O. Reg. 191/11, s. 66 (5).

(6) Where a transportation service provider provides both conventional transportation services and specialized transportation services, the transportation service provider shall ensure that the same fare payment options are available for all transportation services, but alternative options shall be made available to persons with disabilities who cannot because of their disability use a fare payment option. O. Reg. 191/11, s. 66 (6).

(7) Revoked: O. Reg. 165/16, s. 13.

(8) In this section,

"fare structure" means the fare price determined by fare media, such as cash, tickets, passes and bulk quantity discounts and by fare category, such as adults, seniors and students, but does not include promotional fares that a transportation service provider may employ from time to time. O. Reg. 191/11, s. 66 (8).

City Clerk's Division
COUNCIL FOLLOW-UP NOTICE

TO: Gerry Davis, General Manager
Public Works
Attention: Don Hull, Director of Transportation

DATE: April 11, 2013

FROM: Carolyn Biggs
Legislative Co-ordinator

RE: **City Council Meeting – April 10, 2013**

City Council, at its meeting held on April 10, 2013, approved Motion 7.2 with respect to "Temporary Promotional Transit Fare Special Program", which reads as follows:

7.2 Temporary Promotional Transit Fare Special Program

Whereas the City of Hamilton has a long history of progressive programs that provide accommodation to persons with disabilities, has an enviable record of accommodating the needs of its disabled transit users, and has shown leadership in specialized transit, often exceeding the experiences of other municipal transit providers; and

Whereas consistent with the historical practice of nearly every transit provider in Ontario, the City had in place, for at least 40 years, a Free Fare Policy that permitted transit users who were CNIB cardholders to ride the conventional transit system without payment of fare; and

Whereas in a program unique to the City of Hamilton, a Voluntary Pay Policy was introduced more than 15 years ago that gave disabled transit riders of the conventional transit system who use a "personal mobility device" (PMD), i.e., a wheelchair, scooter, walker, or 4-pronged cane, the option of paying the applicable fare or riding the HSR at no charge; and

Whereas the City's conventional transit (HSR) fleet is fully accessible, providing low-floor, level entry and exit with no steps, and is unique in that the City is the only municipality in Canada where the entire conventional fleet is equipped with both front and rear-door boarding ramps; and

Whereas the requirements of the *Accessibility for Ontarians with Disabilities Act, 2005* (AODA) regarding transit fare parity were addressed by Staff Report PW03128e, which was approved by Public Works Committee on October 15, 2012, and ratified by Council on October 30, 2012, with implementation subsequently deferred until June 1, 2013; and

Whereas the implications of the Staff Report include, among other things, the permanent elimination of both the Free Fare Policy for CNIB cardholders and the Voluntary Pay Policy for transit riders using a PMD; and

Whereas it is desirable that Council direct Staff to study and develop options for the implementation of a new transit fare discount or subsidy program for persons with disabilities, and report back for consideration of such program; and

Whereas Council recognizes that many people with mobility and vision disabilities have experienced and continue to experience hardship, economic disadvantage, unequal opportunity, and discrimination in society generally; and

Whereas in particular, Council recognizes that transit riders who require the use of a wheelchair, walker, or scooter and CNIB cardholders will be required, as of June 1, 2013, to pay the required fare in order to ride the HSR, and that in some cases this new requirement may impose an economic disadvantage and/or contribute to financial hardship for such riders; and

Whereas Council believes that, to the extent possible, the implementation of transit fare parity and other requirements of the AODA should not result in persons with disabilities who historically enjoyed an economic benefit to experience economic disadvantage and/or financial hardship; and

Whereas Council has sought and received the input of the Ontario Human Rights Commission on issues relating to transit fare parity and the provisions of section 14 of the Ontario *Human Rights Code* regarding “special programs” (as reflected in the letter dated March 14, 2013, from the Commission, a copy of which is attached hereto);and

Whereas Council believes it is appropriate to establish, pending the receipt and consideration of Staff’s report, a temporary transit fare special program for those riders of the HSR who either require the use of a wheelchair, walker, or scooter, or are CNIB cardholders in order to ameliorate any economic disadvantage and/or financial hardship that may be experienced by such disabled riders; and

Whereas Council believes that such a temporary transit fare special program would effectively promote the use of the conventional transit system and utilize the uniqueness of the HSR fleet’s front and rear-door boarding capabilities by those disabled riders who require the use of an assistive device, thereby improving the accessibility, capacity, and convenience of the conventional transit system, while also relieving pressure on the overburdened and more expensive specialized transit system; and

Whereas Council also believes that it is desirable to design its temporary special program so as to limit, to the extent possible, the potential abuse of the program by those who do not have a bona fide need for a PMD in order to ride the HSR; and

Whereas Council understands that, pending the receipt and consideration of Staff's report, promotional transit fare programs that are temporary in nature do not form part of the "fare structure" of the conventional transit system for the purposes of section 66 of the *Integrated Accessibility Standards*, being Ontario Regulation 191/11 made under the AODA.

Therefore Be It Resolved:

(a) That, effective June 1, 2013, a temporary transit fare special program be implemented that would permit the below groups to ride the conventional public transit system (HSR) by either paying the applicable fare or riding at no charge, to be exercised at their own discretion:

1. Those transit riders who require the use of a wheelchair, walker, or scooter in order to ride the conventional public transit system (HSR);

2. Those transit riders who are Canadian National Institute for the Blind (CNIB) cardholders.

(b) That Staff be directed to develop options for the implementation of a new transit fare discount program for persons with disabilities, and report back to the General Issues Committee.

Please note that sub-section (b) requires that a report be brought back to the General Issues Committee. Therefore, this item will be placed on the Outstanding Business List until such time as the information requested is presented.

Would you please take the necessary steps to execute the directions of Council with respect to this motion.

:cab.

c.c. Jane Lee, Director of Customer Service, Access and Equity

12.1

CITY OF HAMILTON

MOTION

Public Works Committee: April 3, 2023

MOVED BY COUNCILLOR M. FRANCIS…...…….....

SECONDED BY COUNCILLOR……...

Playground Improvements at Henry & Beatrice Warden Park, 55 Lake Avenue North, Hamilton (Ward 5)

WHEREAS, the parks in Ward 5 provide valuable recreation and connectivity opportunities to residents;

WHEREAS, Henry & Beatrice Warden Park is located in the Riverdale West neighbourhood, 55 Lake Avenue North, Hamilton;

WHEREAS, the City of Hamilton's Parks & Cemeteries 2022/2023 Capital Workplan includes replacement and upgrades to the playground equipment; and

WHEREAS, additional funding is needed to replace and relocate the existing swing area.

THEREFORE, BE IT RESOLVED:

(a) That the design and installation of a replacement swing area, including safety surfacing, at Henry & Beatrice Warden Park, 55 Lake Avenue North, Hamilton, to be funded from the Ward 5 Special Capital Re-Investment Reserve Fund (#108055) to an upset limit of $32,000, be approved;

(b) That the General Manager of Public Works be authorized and directed to approve and execute all required agreements and ancillary documents, with such terms and conditions in a form satisfactory to the City Solicitor related to the design and installation of a replacement swing area, including safety surfacing, at Henry & Beatrice Warden Park, 55 Lake Avenue North, Hamilton.

12.2

CITY OF HAMILTON

MOTION

Public Works Committee: April 3, 2023

MOVED BY COUNCILLOR M. FRANCIS…...…….....

SECONDED BY COUNCILLOR……...

Pathway Improvements at Sam Manson Park, 80 Nash Road North, Hamilton (Ward 5)

WHEREAS, the parks in Ward 5 provide valuable recreation and connectivity opportunities to residents;

WHEREAS, Sam Manson Park, is located in the Kently neighbourhood, 80 Nash Road North, Hamilton; and

WHEREAS, the existing Sam Manson park pathway has deteriorated and would benefit from replacement.

THEREFORE, BE IT RESOLVED:

(a) That the replacement of the asphalt pathways located in Sam Manson Park, 80 Nash Road North, Hamilton, to be funded from the Ward 5 Special Capital Re-Investment Reserve Fund (#108055) to an upset limit of $90,000, be approved;

(b) That the General Manager of Public Works be authorized and directed to approve and execute all required agreements and ancillary documents, with such terms and conditions in a form satisfactory to the City Solicitor related to the replacement of the asphalt pathways located in Sam Manson Park, 80 Nash Road North, Hamilton.

12.3

CITY OF HAMILTON

MOTION

Public Works Committee: April 3, 2023

MOVED BY COUNCILLOR N. NANN…...…….....

SECONDED BY COUNCILLOR……...

Ottawa Street South and Maple Avenue Pedestrian Crossing (Wards 3 and 4)

WHEREAS, the Ward 3 Complete Streets Report identified areas of concerns and recommendations to provide a safer environment for all road users on neighbourhood roads based on Vision Zero and Complete Streets principles;

WHEREAS, the need for safe pedestrian crossing at Maple Avenue and Ottawa Street South was identified by residents in the Crown Point area as a safety concern hotspot in Ward 3 Complete Streets Report;

WHEREAS, at the top of the hierarchy of need in Vision Zero principles is the child pedestrian;

WHEREAS, many school routes require children, the most vulnerable road users to cross at major arterial roads to get to school and the intersection of Maple Avenue and Ottawa Street South is an active pathway for children to get to Memorial City School;

WHEREAS, Ottawa Street South is the boundary of Ward 3 and Ward 4 and both offices are prepared to jointly invest in the best technical solution to ensure safe crossing; and

WHEREAS, the Transportation Operations & Maintenance Division completed an assessment of the intersection and determined that an intersection pedestrian signal (IPS) is warranted.

THEREFORE, BE IT RESOLVED:

(a) That the design and installation of an intersection pedestrian signal at the intersection of Ottawa Street South and Maple Avenue be funded equally from the Ward 3 Capital Re-Investment Reserve #108053 and the Ward 4 Capital Re-

Investment Reserve #108054 at an upset limit, including contingency, not to exceed $200,000; and

(b) That the Mayor and City Clerk be authorized and directed to execute any required agreement(s) and ancillary documents, with such terms and conditions in a form satisfactory to the City Solicitor related to the design and installation of an intersection pedestrian signal at the intersection of Ottawa Street South and Maple Avenue.

12.4

CITY OF HAMILTON

MOTION

Public Works Committee: April 3, 2023

MOVED BY COUNCILLOR C. KROETSCH……..…….....

SECONDED BY COUNCILLOR……..

Waste Pickup for Large Community Cleanups

WHEREAS large community park and alleyway cleanups have been coordinated across the City of Hamilton for many years; and

WHEREAS the City does not currently fully support waste pickup for large community cleanups.

THEREFORE, BE IT RESOLVED:

That City staff report back to the May 15, 2023 meeting of the Public Works Committee on what would be needed to ensure that the City can fully support waste pickup for large community cleanups including the need for safety equipment and training.

12.5

CITY OF HAMILTON

MOTION

Public Works Committee: April 3, 2023

MOVED BY COUNCILLOR N. NANN…...…….....

SECONDED BY COUNCILLOR……...

Maintenance and Beautification of Birch Avenue Greenspace and Gardens (Ward 3)

WHEREAS, local residents have put time, money and effort into beautifying the Birch Avenue Greenspace over the past number of years;

WHEREAS, this has become a beautiful space to welcome folks to Hamilton who enter the City along Birch Avenue, coming south from Burlington Street East;

WHEREAS, the Birch Avenue Greenspace has become a gathering space and point of pride for local community;

WHEREAS, the GALA Planning Committee has identified individuals willing to provide maintenance to the Birch Avenue Greenspace at a paid rate for the 2023 growing season; and

WHEREAS, Kiwanis is willing to provide funding to the up-keep of the Birch Avenue Greenspace for $1,000 as long as there is matching funding provided from another source.

THEREFORE, BE IT RESOLVED:

(a) That $1,000 of matching funds to be allocated from the Ward 3 Bell Tower Funds Non-Property Tax Revenue Account (3301609603) to GALA Planning Committee towards the efforts of maintaining the Birch Avenue Greenspace;

(b) That staff be directed to review the delegation requests from the Public Works Committee on March 20, 2023 regarding support for water access to help maintain the Birch Avenue Greenspace and report back with possible recommendations that could also be applied city wide where applicable; and

(c) That the Mayor and City Clerk be authorized and directed to execute any required agreement(s) and ancillary documents, with such terms and conditions in a form satisfactory to the City Solicitor

12.6

CITY OF HAMILTON

MOTION

Public Works Committee: April 3, 2023

MOVED BY COUNCILLOR J. BEATTIE…...…….....

SECONDED BY COUNCILLOR……..……..

Park Pathway Replacements at Ferris Park, 25 Lynwood Drive, and Hunter Estates Park, 314 MacIntosh Drive, Hamilton (Ward 10)

WHEREAS, there are extensive park pathway systems in Ferris Park 25, Lynwood Drive, and Hunter Estates Park, 314 MacIntosh Drive, that connect residents to the park and greater Poplar Park and Guernsey neighbourhoods; and

WHEREAS, these pathways have surpassed their useful life span and need to be replaced to ensure a smooth, accessible path surface.

THEREFORE, BE IT RESOLVED:

(a) That funds for the park pathway replacements at Ferris Park, 25 Lynwood Drive, and Hunter Estates Park, 314 MacIntosh Drive, Hamilton, to be funded from the Ward 10 Councillor Priority Minor Maintenance account is 4031911610, at an upset limit, including contingency, not to exceed $400,000, be approved; and

(b) That the Mayor and City Clerk be authorized and directed to approve and execute all required agreements and ancillary documents, with such terms and conditions in a form satisfactory to the City Solicitor related to the park pathway replacements at Ferris Park, 25 Lynwood Drive, and Hunter Estates Park,314 MacIntosh Drive, Hamilton.

12.7

CITY OF HAMILTON

M O T I O N

Public Works Committee: April 3, 2023

MOVED BY COUNCILLOR J.P. DANKO……..……..……...

SECONDED BY COUNCILLOR……..

Installation of a Drinking Water Fountain with Bottle Filler in Newlands Park, 137 Lynbrook Drive, Hamilton (Ward 8)

WHEREAS, Newlands Park, 137 Lynbrook Drive, Hamilton, is an active neighbourhood park supporting the Rolston Neighbourhood and beyond;

WHEREAS, new recreational amenities were added to the park in 2022 through the area-rating fund, to support active recreation and promote health and fitness; and

WHEREAS, the addition of a new water drinking fountain would support residents' access to water and mitigate single use plastic.

THEREFORE, BE IT RESOLVED:

(a) That staff be directed to install a water drinking fountain with bottle filler in Newlands Park, 137 Lynbrook Drive, Hamilton, to be funded from the Ward 8 Special Capital Re-Investment Reserve Fund (#108058) at an amount not to exceed $65,000;

(b) That the annual operating impacts for the required maintenance and repairs for the water drinking fountain in Newlands Park, 137 Lynbrook Drive, Hamilton, be included in the 2024 Public Works Department base operating budget; and

(c) That the Mayor and City Clerk be authorized and directed to execute any required agreement(s) and ancillary documents, with such terms and conditions in a form satisfactory to the City Solicitor, related to the drinking water fountain in Newlands Park, 137 Lynbrook Drive, Hamilton.

12.8

CITY OF HAMILTON

M O T I O N

Public Works Committee: April 3, 2023

MOVED BY COUNCILLOR J.P. DANKO……..……..……....

SECONDED BY COUNCILLOR……..

Pedestrian Lighting Improvements at T. Melville Bailey Park, 45 Cloverhill Road, Hamilton (Ward 8)

WHEREAS, T. Melville Bailey Park. 45 Cloverhill Road, is an active neighbourhood park in Ward 8 with pathways that promote active transportation through the community;

WHEREAS, parks provide local opportunities for physical fitness and recreation, throughout the year; and

WHEREAS, the pedestrian pathway lighting that exists in T. Melville Bailey Park supporting commuters and park users is in need of lifecycle replacement.

THEREFORE, BE IT RESOLVED:

(a) That $60,000 be allocated from the Ward 8 Special Capital Re-Investment Reserve (#108058), to implement replacement pedestrian lighting along the path through T. Melville Bailey Park, 45 Cloverhill Road, Hamilton; and

(b) That the Mayor and City Clerk be authorized and directed to execute any required agreement(s) and ancillary documents, with such terms and conditions in a form satisfactory to the City Solicitor, related to the replacement of pedestrian lighting along the path through T. Melville Bailey Park, 45 Cloverhill Road, Hamilton.