



TECHNICAL APPENDICES

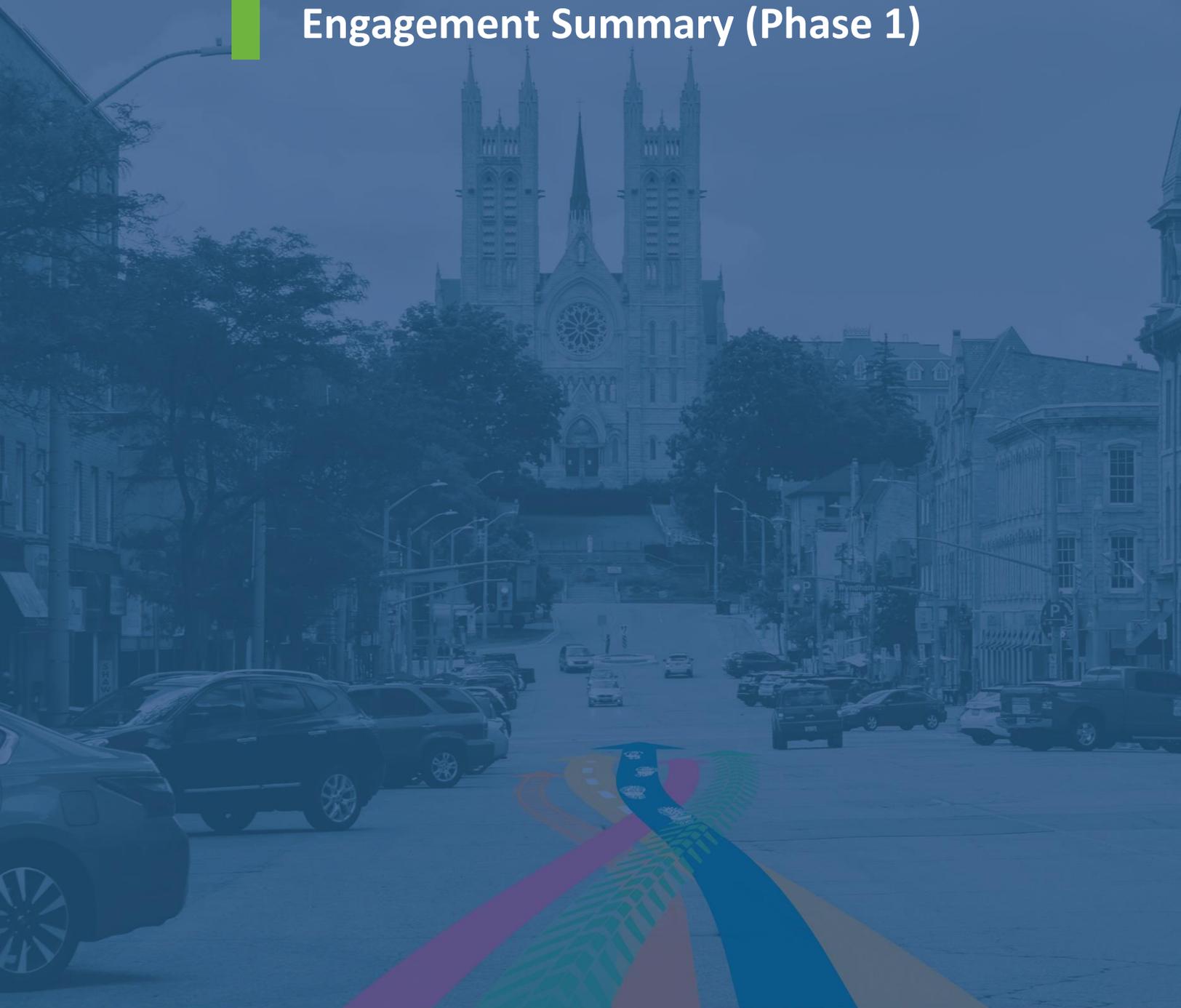
City of Guelph

Transportation Master Plan



APPENDIX A1

Engagement Summary (Phase 1)



Moving Guelph Forward

Guelph Transportation Master Plan - Phase 1 Setting the Foundation

Community Engagement Summary, July 2019

Guelph is growing and how we move around our city is changing. We're exploring transportation options to make our city move better in every way.

Over the next year, we will be exploring how new and evolving technology and travel services will shape the future of transportation in Guelph, and how to use our existing transportation services and infrastructure more efficiently.

We need to work together to create a strong plan for transportation in Guelph. We have tough choices to make to ensure we properly balance the needs of everyone in our community today and tomorrow. **Your input is a critical part of this process.**

Phase 1 Overview

Phase 1 (Spring 2019) consisted of the project launch and foundational work. The project team began collecting data on the current state of the transportation network and demands on the system, reviewing existing plans,

examining the vision for mobility as established in the Community Plan, and considering transportation goals and objectives that will support that vision. We have been asking Guelph residents: **What questions do you think this plan needs to answer?**



Project At-A-Glance

The updated Transportation Master Plan will define how our transportation system will support the community as Guelph continues to grow. The update will look at transportation planning in Guelph beyond 2031. The main objectives are:

1. to ensure the new plan is consistent with current policies, including the Official Plan and other master plans that have been approved since 2005;
2. to recommend new policies and guidelines that reflect our community's vision and that balance mobility, environment and efficiency while prioritizing safety and access for all travellers, and
3. to explore how new and evolving technologies and travel services will shape the future of transportation in Guelph.

To do this, we need your help. We need to understand how you move about the community today and what will be important to you in the future.

How We Engaged

For this opening round of community engagement, we have used a variety of techniques to reach a diversity of Guelph residents. Our objective has been to introduce our city to the Transportation Master Plan and uncover what questions our community has about the future of Transportation in Guelph. Here's how we have engaged so far.

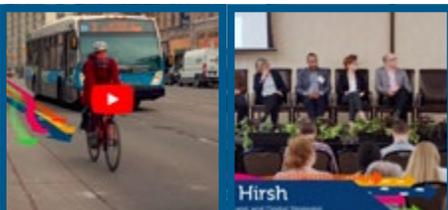


nearly **200**
attendees

at The Future of Transportation
in Guelph Panel Discussion

Moderated by Futurist and Digital Strategist, Jesse Hirsh. Panelists:

- **Andrew Miller**, Associate Director of Mobility, Sidewalk Labs
- **Jeff Casello**, Professor, Transportation Planning, University of Waterloo
- **Nancy Smith-Lea**, Director, The Centre for Active Transportation
- **Jamie Stuckless**, Executive Director, Share the Road
- **Dewan Karim**, Integrated Mobility Specialist, Dillon Consulting



Creation of a series of
Moving Guelph Forward
videos, shared online
to introduce the TMP



Project Branding

developed to build
project recognition and
communicate its purpose



Pre-engagement interviews

held with key
stakeholders to help us
develop the community
engagement approach

How We Engaged

Social Media used to spread awareness

#MovingGuelphForward
24 tweets generating almost **450** likes, retweets and clicks

4 posts generating more than **200** likes, comments and clicks

11 videos generating more than **560** views

Online engagement hub
www.HaveYourSay.Guelph.ca



Project Email
for direct communication with residents

Email newsletter sent to

1,000 recipients



The future of transportation in Guelph

1,500 Postcards distributed to promote the launch event



Pop-up engagement at the Guelph Multicultural Fest



Notifications published in the Guelph Mercury Tribune



What We Heard - The Big Questions

A new era of transportation is beginning, caused by growing awareness and impacts of climate change, new trends and technologies, shifts in how we live, work and shop, increasing congestion and persistent road safety concerns.

As a City, we need to plan ahead for these changes so that our community is prepared and can continue to thrive. Now is the time to explore how we can make Guelph move better in every way. We are exploring how to best shape the future of transportation infrastructure, technology and services in our city. We are looking at all the ways we move: walking, cycling, riding transit, driving, trucking and using trains.

Through this process, we will need to answer a number of big questions. We asked the community what questions they want to see answered as part of this plan. This is a summary of what we heard.

How are we going to better enable sustainable transportation choices, including active transportation and transit?

- How can the City encourage active transportation for more trips?
- Can we increase general awareness of the benefits of public transit?
- Can we build more bike paths, separated and protected bike lanes, even bike highways, throughout the city and beyond?



- How is active transportation going to have all-season viability?
- How can we make better use of currently underutilized cycling infrastructure?
- Can we deal with the bike theft problem?
- Can we improve our transit system?

How do we ensure our transportation system is equitable and accessible?

- Can we ensure all bus stops are fully accessible?
- Can we meet AODA compliance?
- How are we accounting for the fact that we have an aging population and walking or cycling is not always an option for many seniors?
- How do we ensure public transit is affordable for all?
- How can we ensure our streets work for all modes?

How do we ensure decision makers take action?

- Will Council embrace leading-edge, sustainable transportation plans and practices?
- Will we build smart and frequent transit routes to ensure the ridership will come?
- Can we include both short-term and long-term goals in this plan?
- How will we use land-use planning and zoning by-laws to support a sustainable future of transportation?



What We Heard - The Big Questions

Will we design a transportation system that supports our economy?

- How will we consider the movement of goods when designing the street network?
- Will the needs of all commuters be considered, including both car commuters and those that use other modes to get to and from work?
- Can we support mixed-use development that is close to transit options?



How do we improve connectivity with destinations outside of Guelph?

- Can we get better bus and other public transportation connections to Hamilton, Cambridge, Kitchener-Waterloo and Toronto?
- Are we going to be able to get an improved train schedule to make it more convenient to get to other cities by rail?

How will we ensure our transportation system supports our community and sustainability?

- What are our priorities as a community and how should they inform our transportation system? What matters to us? Health, safety, inclusion, reducing emissions, economic justice, livability, or just moving cars?
- Can we add density to the downtown so that active transportation is more realistic?

- How can we make sure that development supports transit and get serious about low carbon transportation?
- Can we rebalance our transportation system to be more equitable and sustainable?
- What are the carbon footprint differences between various modes of transportation, including ride-share options vs. car ownership models?

How will we deal with new transportation technologies?

- Can Guelph get a reloadable transit pass?
- How are we going to keep privacy issues top-of-mind when considering data-driven technologies?
- How can we prepare for drastic changes to work culture that don't require offices or commuting?
- What kind of innovative ways can we think of to encourage personal or societal transportation changes?

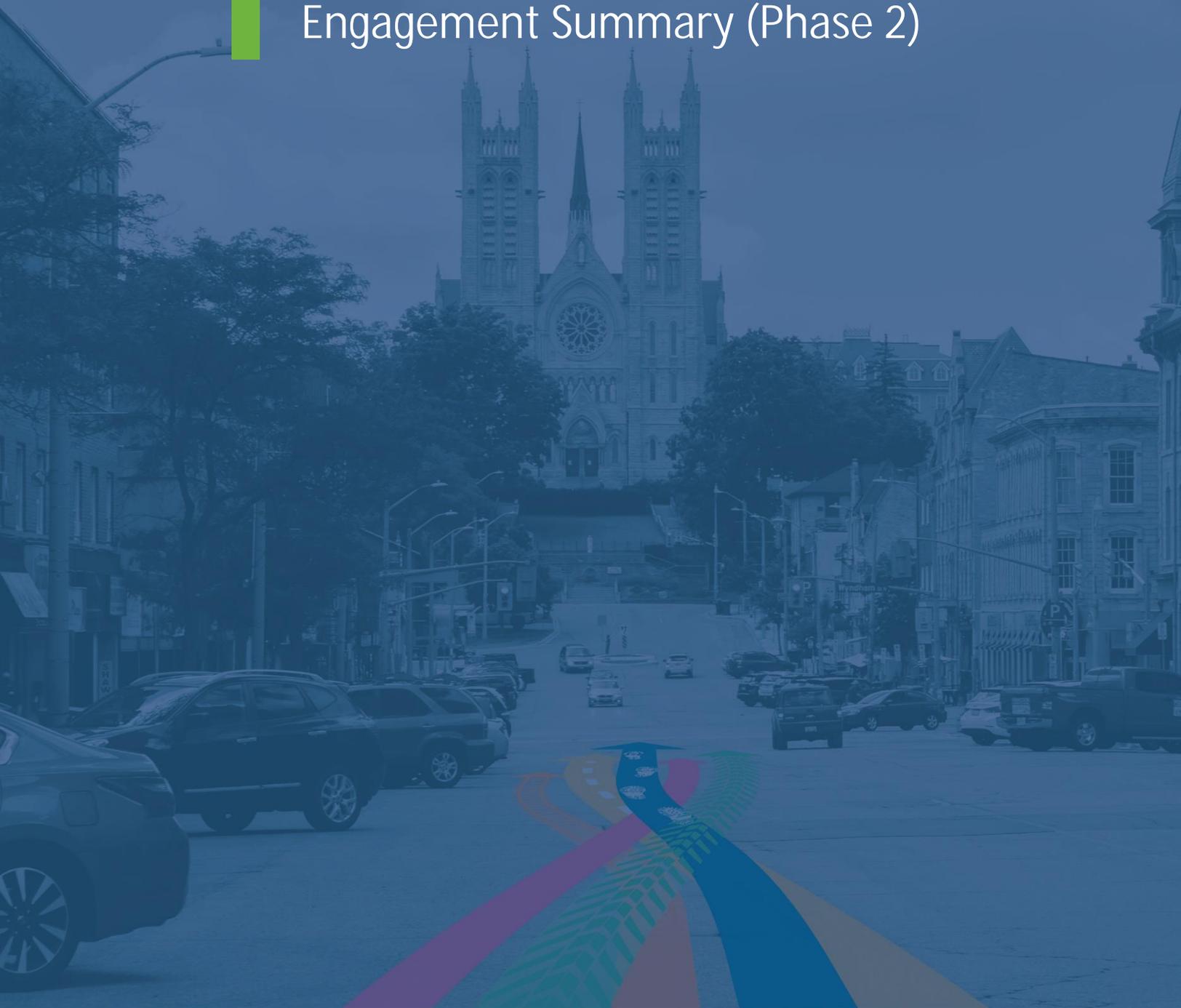
Next Steps

Feedback will directly inform subsequent work on a new vision, mission and goals that guide short to long-term actions and recommendations for improvement.



APPENDIX A2

Engagement Summary (Phase 2)



Moving Guelph Forward

Guelph Transportation Master Plan - Phase 2

Determining Needs

Community Engagement Summary, January 2020

Guelph is growing and how we move around our city is changing. We're exploring transportation options to make our city move better in every way.

Over the next year, we will be exploring how new and evolving technology and travel services will shape the future of transportation in Guelph, and how to use our existing transportation services and infrastructure more efficiently.

Phase 2 Overview

Phase 2 (Fall 2019) consisted of identifying issues and opportunities, calculating needs, and forecasting demand. For this phase of the project, the team collected input on issues and opportunities for the transportation system. The team also tested potential solutions through demonstration projects as a way to experiment with the types of changes we could see on our roads in the future. What we learned from this part of the process will help guide the ongoing Transportation Master Plan. We have been asking Guelph residents: **What are your transportation issues and what opportunities exist?** This report provides a summary of the most commonly heard comments and some bold ideas.



Project At-A-Glance

The updated Transportation Master Plan will define how our transportation system will support the community as Guelph continues to grow. The update will look at transportation planning in Guelph beyond 2031. The main objectives are:

1. to ensure the new plan is consistent with current policies, including the Official Plan and other master plans that have been approved since 2005;
2. to recommend new policies and guidelines that reflect our community's vision and that balance mobility, environment and efficiency while prioritizing safety and access for all travellers; and
3. to explore how new and evolving technologies and travel services will shape the future of transportation in Guelph.

To do this, we need broad public and stakeholder help. We need to understand how you move about the community today and what will be important to you in the future.

How We Engaged: Techniques & Results

For this phase of community engagement, we used a variety of techniques to reach a diversity of Guelph stakeholders. Our objective was to work with the community to explore the specific challenges of the City's existing transportation system, and to identify opportunities that should be considered for Guelph's future.

Online engagement tools

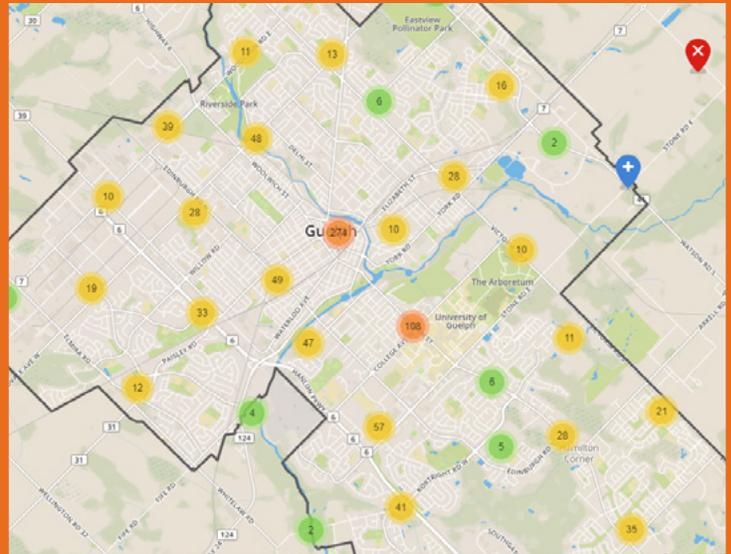
NEARLY
3,000



Submissions online at
www.HaveYourSay.Guelph.ca



Including an **interactive map** to track issues and opportunities, which received over 1,000 comments



Demonstration Projects



Bus-only lane

1,400 online comments



Protected bike lane

309 online comments

Demonstration projects are a way to physically engage people in temporary concepts to test ideas and potential solutions.

Stakeholder meetings

with the **Downtown Advisory Committee, Guelph Chamber of Commerce** members, **Accessibility Advisory Committee, Linamar truck drivers, Transit Action Alliance of Guelph, Evergreen Seniors Centre** and with **Grade 5 students** during Local Government Week to gather feedback on **current issues and potential solutions.**

How We Engaged



**Social Media used
to spread awareness**

#MovingGuelphForward

24 tweets generating almost
1,200 likes, retweets and clicks

5 Facebook posts generating more than
320 likes, comments and clicks

1 video generating more than
340 views

4 email newsletters



Sent to almost

1,200
recipients

**Notifications published
in the Guelph Mercury
Tribune**



Project Email



**for direct
communication
with residents**

- Evergreen Seniors Community Centre
- Guelph Farmer's Market
- Brant Ave Summer BBQ
- John Galt Day
- Multicultural Festival
- Zero Waste Festival
- Green Drinks Guelph
- Councillor James Gordon's Breezy Breakfast morning presentation
- Greater Kitchener Waterloo Chamber of Commerce Business Expo

Complete Streets workshop with Guelph City Council



**Pop-up engagements at
events and in public**

Pop-up Protected Bike Lane

How it worked

A temporary barrier was used to create a two-way protected bike lane on Woolwich Street between Macdonell Street and Wyndham Street from September 13 to September 20, 2019.

Why we did it

The Woolwich Street two-way protected bike lane was a temporary demonstration of how the City may achieve complete streets in existing roadways, by replacing one lane used for parking with facilities to accommodate cyclists (currently absent from the road design).

How we engaged

- 309 online comments
- Multiple survey teams at different times and days along Woolwich to survey all road users and discuss the project
- 930 trips by bike were recorded during the pop-up protected bike lane demonstration
- Created a 360 degree before and after video and posted to YouTube for residents who were unable to visit the project in-person

What we heard

The majority of feedback on the pop-up protected bike lane was received from participants that experienced the demonstration project as a person driving a car. These participants largely expressed **concerns over losing parking spaces and areas for passenger drop-off and pick-up**. This was also mentioned as an accessibility concern for those with mobility issues. The majority of participants that experienced the project as a **cyclist felt that the bike lanes made them feel safe, and that it encouraged cycling**. Overall, there was some confusion around the rules, and how cars should interact with the protected bike lane for parking, drop-off/pick-up, and deliveries along the route. Some cyclists felt that additional measures, such as consideration for safer intersection design, are needed in addition to protected bike lanes. **During the pop-up protected bike lane demonstration, there was a significant increase in the number of bicycle trips take along the route.**

Improves Safety

- The pop-up protected bike lanes made cyclists feel safe
- The bike lanes helped calm traffic and made walking on the street more enjoyable
- Drivers felt secure knowing cyclists were separate and protected

- Some were in support of removing parking spaces for protected bike lanes

Takes Away Space for Cars

- Some participants did not want parking spaces removed by protected bike lanes
- Some participants also felt that traffic congestion was worsened by the project

- Consider snow removal in bike lanes to further promote cycling
- It was difficult to do drop-off and pick-ups along the route, which is an accessibility concern
- Protected bike lanes should be installed where they are most needed and as part of a connected network

"Not having to worry about a cyclist accidentally swerving into traffic makes the drive along the pop-up bike lane so much less worrisome."

"The [bike lane] eliminated parking spots which are sorely needed downtown. I am for bike lanes but not at the expense of needed parking."

"This bike lane clearly limits parking for those with limited mobility..."

Promotes Cycling

- The bike lanes encouraged more people to cycle on this street
- Helped cyclists travel efficiently

"I have never felt this safe in my life biking in Guelph."

Other things need to be considered

- More education is needed on how to use the bike lanes
- Improve the signage and make the rules clear

More Protected Bike Lanes Are Needed

Some respondents identified other areas of the city that would benefit from protected bike lanes, such as:

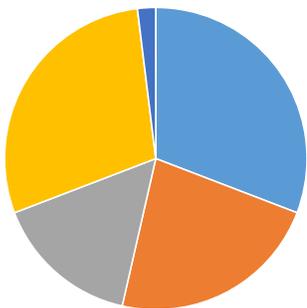
- Gordon Street
- Edinburgh Road
- Speedvale Avenue
- Wyndham Street

Online Survey Results - Pop-up Protected Bike Lane

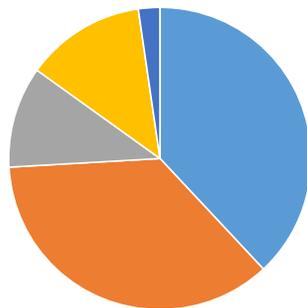
What we heard

Using the online survey tool and by directly surveying cyclists and other road users in-person along the route, we gathered feedback on design of the temporary pop-up protected bike lane, and what people liked and disliked about the demonstration project. Below is a summary of the survey responses.

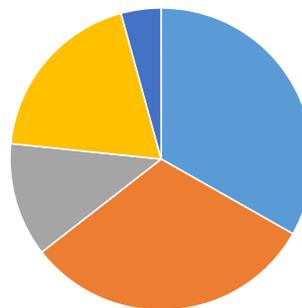
This project meets the needs of all road users: drivers, cyclists, pedestrians, and transit users.



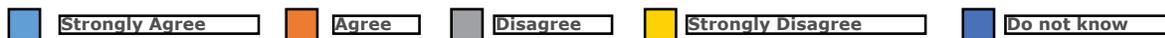
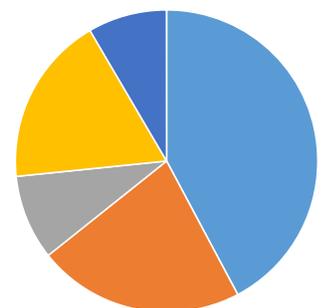
This project makes it clear where each road user is expected to travel.



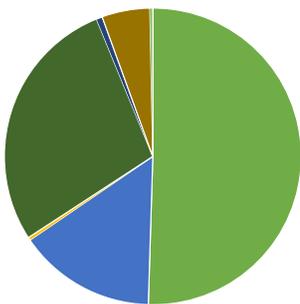
This road design feels safe to use.



This type of a road design can work in other parts of the city.



How did you experience this demonstration project?



- As a person driving a car
- As a person walking
- As a person taking transit
- As a person riding a bike
- As a person using a mobility device
- Other
- 360 degree video posted on YouTube



Temporary Bus-Only Lane

How it worked

We added a bus-only lane northbound on Gordon Street between Kortright Road and South Ring Road for 5 days from October 19 to 23, 2019.

Why we did it

The temporary bus-only lane was used to test transit priority measures as part of exploring the Community Plan vision of “transit is a priority”. **It was a way to reimagine and experiment with the types of changes we could see on our roads in the future.** The temporary bus lane demonstrated one potential concept to **balance the needs of all road users more equitably, safely, sustainably, and affordably.**

How we engaged

- **Almost 1,200** responses to the survey
- **11** Guelph Transit Bus Drivers on this route surveyed
- **2** Focus Group meetings with members of the public who experienced the temporary bus-only lane

What we heard

The majority of feedback on the temporary bus-only lane was received from participants that experienced the demonstration project as a person driving a car. Many of these participants expressed **concerns over traffic and safety, and the need for greater clarity.** A number of participants that cycled the route also had concerns about safety, observing that there was insufficient space for buses to pass cyclists comfortably. Participants that experienced the project as a person taking transit largely felt the project prioritized them and that the **buses ran smoothly and on schedule.** Overall, many participants questioned the rationale and need for the project. Through this short demonstration project, there were no significant changes in bus ridership numbers or bus speeds; however, a number of vehicle drivers reported increased traffic congestion and reduced vehicle speeds during peak travel times.

Traffic & Congestion

- The temporary bus-only lane caused traffic congestion with the reduced lane

Safety Concerns

- Visibility for turning was reduced
- There was insufficient space with the bike lane and bus lane for buses to pass cyclists safely
- Buses were traveling at a faster speed than traffic, which made turning or entering/exiting businesses and residences feel dangerous for many drivers

“... I’m all about coming up with forward thinking transit but this does not work and is confusing...”

Signage & Navigation

- Turning right across the bus lane was confusing and difficult
- Improve signage, education, and instructions on how to use the bus-only lane

Improved Transit

- The temporary bus-only lane gave priority to transit
- The bus did not get stuck in traffic and stayed on schedule
- It was especially convenient for students
- Cars did not get stuck behind buses
- Transit service should be improved in conjunction with this project

“The lanes prioritize the transit lines which is incredibly useful for someone whose main method of transportation is the bus system.”

Focus Group Results

- The bus moved faster during this time and did not block cars
- Speeding vehicles and safety was a concern
- Transit service should be improved in conjunction with the project
- Need increased density to support better transit service

Transit Operator Survey Results

- Kept buses moving
- Made the transit system feel like a priority
- Improved experience driving the bus with less interactions with traffic

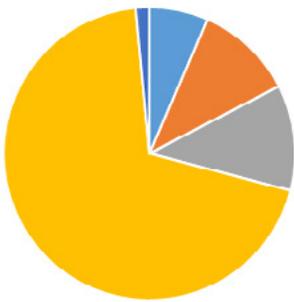
“The design greatly improved the service provided to users and made it easier to drive [as a transit operator].”

Online Survey Results - Temporary Bus-only Lane

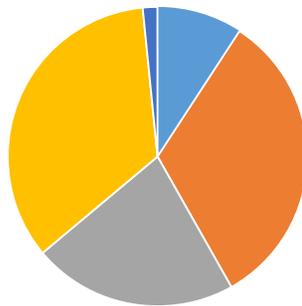
What we heard

Using the online survey tool and by directly surveying bus riders and other road users in-person along the route we gathered feedback on design of the temporary bus-only lane, and what people liked and disliked about the demonstration project. Below is a summary of the survey responses.

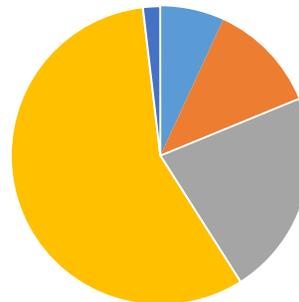
This project meets the basic needs of all road users: drivers, cyclists, pedestrians, and transit users.



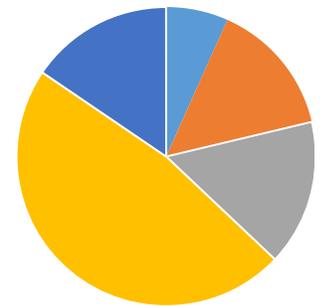
This project makes it clear where each road user is expected to travel.



This road design feels safe to use.

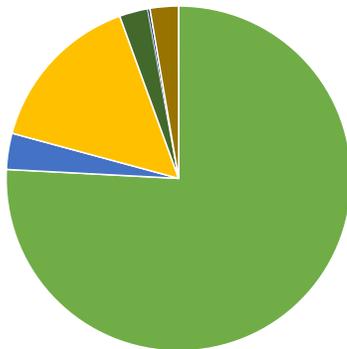


This type of a road design can work in other parts of the city.

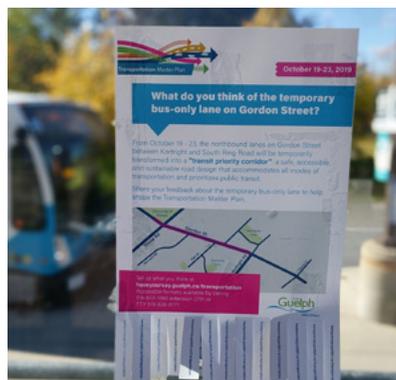


■ Strongly Agree
 ■ Agree
 ■ Disagree
 ■ Strongly Disagree
 ■ Do not know

How did you experience this demonstration project?



■ As a person driving a car
■ As a person walking
■ As a person taking transit
■ As a person riding a bike
■ As a person using a mobility device
■ Other



Local Government Week - Grade 5 Student Feedback

We collected feedback on transportation in Guelph from local Grade 5 students on what is working well and what can be improved.

What we heard

What is working well

- Trails are safe and fun to use
- Kids like to walk, bike, and scooter places

What can be improved

- Improve safety at road crossings
- Ensure snow and ice are cleared from sidewalks and roads

- Add protected bike lanes to make biking safe
- Wider sidewalks
- Improve safety on buses by adding patrols
- Improve transit with more bus stops, more bus times, and more bus shelters
- Add sidewalks on roads that do not have any

- Add pedestrian crossings to busy streets
- More electric vehicles and electric vehicle charging stations
- Provide an affordable bike share service "so people under the poverty line can afford to get around"

Downtown Advisory Committee

We asked the Downtown Advisory Committee, "What are all of your key transportation priorities we need to plan for in our downtown over the next 20 years?"

What we heard

Plan for parking

- Make it easy and convenient to park downtown
- Consider adding EV charging stations
- Ensure parking pricing is consistent across the city
- Ensure there is adequate parking

Support multi-modal transportation needs:

- Ensure residential roads are safe for all users
- Support diverse transportation needs
- Build for mode share

Improve Transit

- Ensure there is free and adequate parking for GO Train users
- Consider first and last mile options
- Improve local transit connections to GO Transit
- Add Presto card integration
- Make transit more convenient to use
- Make transit more comfortable with shelters and benches
- Improve the perception of transit, make it the norm
- Increase the frequency of buses

- Ensure bus schedules meet the needs of people with smart bus routes based on demand
- Improve transit access to employment areas

Pedestrian friendly for all

- Make streets friendly for children and seniors
- Clear snow and ice from sidewalks
- Use pedestrian refuge islands to make it easier to cross the street

Encourage Cycling

- Protected and maintained bike lanes
- Bike parking

Complete Streets Workshop with City Council

On December 11th 2019 we engaged Guelph City Council in a workshop on complete streets to educate them about the concept, answer their questions, and gather feedback. **Complete streets are streets that are designed to be safe for everyone: people who walk, cycle, take transit, or drive, and people of all ages and abilities.**

We asked council to answer “**What excites you about a complete streets approach?**” and “**What concerns you about a complete streets approach?**”. The December 11 Council Workshop materials and video can be viewed at <https://guelph.ca/city-hall/mayor-and-council/city-council/agendas-and-minutes/council-meetings/>

What we heard

What is exciting about the complete streets approach

- Quieter streets & neighbourhoods
- Safe for all
- More equity with diverse transport modes
- Aesthetic improvements for streets and the public realm
- Supports efficient & multi-modal travel
- Safe cycling options that put vehicles, cyclists, and pedestrians in separate lanes

What concerns need to be considered

- Moving towards complete streets will require changing behaviours over time
- Efficient movement of goods
- Cost of infrastructure
- Snow removal for bikes and pedestrian paths
- Adaptability of transportation infrastructure
- Convenience of travel
- Parking
- Traffic law enforcement
- Funding for transit
- Traffic flow and traffic volumes

What questions need to be answered

- How can we prepare for the future and the different modes of transportation that will be introduced?
- How will the TMP integrate with other plans?
- How will the TMP be funded?
- How can we design for adaptability?
- How can we design interconnected neighbourhoods?



What we heard - the issues and opportunities

Feedback received from the public and key stakeholders can be categorized into a number of overarching themes related to Overall, feedback received from the community and key stakeholders throughout Phase 2 can be categorized into the following overarching themes: **A Vision for the Future, Accessibility & Equity, Promote & Enhance Cycling, Safer Streets, Maintain the Trails, A Better Transit System, Efficient Roads & Traffic Flow, Planning for the Future, and Bold Ideas.** These themes will inform the development of Phase 3: Preferred Solutions, which will consider what the future of transportation will look like in Guelph.

The feedback summary below highlights the wide range of diverse opinions that were received in person and online during this phase of community engagement. Throughout engagement, important feedback was received about maintenance and operational issues that may need to be addressed in the nearer term.

A Vision for the Future

Aspirations for the future of transportation.

- Transit should be easy and convenient, safe, comfortable, reliable, affordable, and accessible
- Cycling should be safe and connected to amenities and services
- More education is needed around cycling safety / etiquette to improve safety and promote cycling
- Trails are a safe and convenient way to cycle around the city and should be maintained and expanded
- The pedestrian environment should be enjoyable and safe to walk or use
- Neighbourhoods should contain amenities within walking distance
- Invest more in public transit and active transportation planning

Equity & Accessibility

- Clear ice and snow from sidewalks in a timely manner
- Ensure at-grade rail crossings are safe and accessible for all users to cross
- Ensure trail entrances are accessible for all users
- Ensure parks, community amenities, transit stops and hubs are accessible

- Ensure trails are maintained and free of obstacles
- Wider sidewalks needed for safely and efficiently traveling with a mobility device

"Curb cuts to trails important for wheelchair accessibility."

- Reduce transit prices for people with impaired vision

Promote & Enhance Cycling

- Improve existing bike lanes with better wayfinding and clearer markings

"No winter maintenance on sidewalks makes it difficult for walking. I often had to push my stroller down the road because I couldn't use the sidewalks."

- More bike lanes are needed in the downtown core, and along main transportation routes
- Improve cyclist safety with protected bike lanes
- Improve intersection design to make left-turns more comfortable for cyclists
- Ensure bike lanes are connected to create a city-wide grid

"Safe and spacious bike lanes for families to bike..."

- Ensure bike lanes don't suddenly end
- More bike parking is needed
- Ensure community amenities, employment areas, and retail and services can be safely accessed by bike
- Add public bike repair stations throughout the bike network

"A protected intersection, similar to Stone, would be helpful to protect cyclist and pedestrian safety. Left turns are a nightmare."

- Clear snow and ice from bike lanes in a timely manner
- Hills can be difficult to cycle, consider bike routes on flatter areas of the city

"More bike parking downtown."

- Ensure bike lanes are connected for a minimum grid across city
- Implement a Bike Share for Guelph

"Need better connectivity between bike lanes."

"It's frustrating when bike lanes end in the middle of the road."

What we heard - the issues and opportunities

Safer Streets

- Sidewalks and pedestrian crossings are needed in many locations throughout the city especially to connect to bus stops, employment areas, and community amenities
- Add pedestrian refuge islands to wide intersections
- Use landscaping to create a safe and welcoming pedestrian environment along sidewalks

"Many of the main roads... don't allow a very long time for pedestrians to cross."

- Use protected bike lanes as a method of traffic calming
- Improve pedestrian safety around Central Station
- Ensure bus stops have shelters with signs, route information and lighting
- Implement Traffic Calming measures on residential streets and in the downtown core to reduce vehicle speeds
- The pedestrian environment should be enjoyable and safe to walk or use
- Consider no right turns on reds for some intersections"

"There are some intersections that seem very dangerous as a pedestrian."

Maintain the Trails

- Improve trail accessibility with signage and wayfinding
- Improve trail accessibility with curb cuts

"Disconnected trails... makes use more challenging, causes cyclists to make awkward/risky choices."

- Connect trails to protected bike lanes to make them easy and safe to access
- Connect trails to each other for a seamless route throughout the city
- Ensure trails have safe and convenient crossings where they intersect with roads and sidewalks
- Improve trail crossing on Eramosa at Woolwich

"Pedestrian/Cycling crossing at this trail intersection [on Eramosa at Woolwich] would make this much safer and easier to use without biking up the hill to the traffic lights."

A Better Transit System

- Increase bus service during rush hour
- Ensure buses are on schedule
- Ensure bus schedules are consistent

"Service should be longer. The work week has changed and is no longer Monday-Friday, 9-5."

- If bus routes are changed or modified, ensure adequate notice and communication is provided
- Improve transit schedules and routes to community amenities, retail and services
- Improve customer service on transit
- Improve transit schedules and routes to employment areas
- Improve transit to neighbourhoods where transit options are limited

"Better transit to... industrial/employment areas needed."

- Make it easier to find bus schedule and route information
- Align bus schedules to shift times in industrial employment areas
- Improve wayfinding at Guelph Central Station and at the University of Guelph

"The bus needs to come faster for people to get to their work on time."

- Improve transit from surrounding communities to downtown, including direct routes with no transfers
- Overcrowding is an issue for buses that travel to the University of Guelph

"The Guelph Central Station is in desperate need of something to make it a safer place/more desirable to use/walk through."

What we heard - the issues and opportunities

- Make Guelph Central Station more welcoming with food options
- Shorter distance between bus stops is needed
- Increase parking at GO Central Station

"Need to better connect Guelph Transit schedules to Go Train schedules."

- Ensure Central Station is safe
- Increase GO Service to Toronto
- Increase bus service to areas beyond the downtown core
- Improve service on weekends, with bus routes that are earlier and later
- Ensure retail, services and community amenities are accessible by transit
- Improve regional transit connections
- Better integration of Guelph transit with GO Transit

Efficient Roads & Traffic Flow

- Ensure road design and wayfinding is clear
- Improve visibility at intersections
- Remove traffic lights from Hanlon Expressway

"The Hanlon needs to be converted to a proper highway with on/off ramps."

- Do not add more traffic lights to Victoria Road
- Consider grade separations at rail-way crossings

- Improve traffic flow with roundabouts
- Reduce diagonal parking downtown

"Signals leave a lot to be desired. Not synchronized; inconsistencies in where advanced or not."

- Ensure parked cars do not block traffic flow
- Improve traffic flow with left turning lanes or advanced arrows
- Improve traffic flow with right turning arrows
- Improve traffic light timing

"More roundabouts, fewer red lights."

- Address congestion, noise and safety issues caused by trains blocking the road in the Junction neighbourhood

Planning for the Future

- Create Active Transportation Plans for new residential developments

"There are lots of seniors living in new apartments... who will need to be considered when planning for mobility."

- Create comprehensive traffic plans for new developments

"Comprehensive active transportation plan for Clair/ Maltby."

- Reduce parking requirements for new developments on transit routes
- Keep parking affordable downtown
- Create transit hubs on the north and south ends of Guelph
- Ensure neighbourhoods contain amenities within walking distance to promote active transportation
- Add more electric vehicle charging stations

Bold Ideas

A few ideas mentioned that set a bold vision for the future of transportation in Guelph

- Implement Transit Priority Measures to reduce transit delays, considering Gordon Street for a transit corridor or other form of rapid transit

"Transit Priority Measures would help make buses run on time, be more frequent, and give riders a chance to actually get on the bus."

- Make downtown less car-centric and add more space for people
- Create Car Free Zones in the downtown core to promote walking and cycling, and create space for cultural programming

"Make downtown car-free - even if it's for a day, weekend, etc."

- Move away from reliance on fossil fuels and promote other forms of transportation
- Make transit free



APPENDIX A3

Engagement Summary (Phase 3)

Memo



To: Terry Gayman, City of Guelph
Jennifer Juste, City of Guelph
Gwen Zhang, City of Guelph

From: Shawn Doyle, Dillon Consulting Limited (Dillon)

cc: Crystal Kaminski, City of Guelph
Mariam Bello, Dillon Consulting Limited (Dillon)
Nicole Beuglet, Dillon Consulting Limited (Dillon)

Date: January 6, 2021

Subject: What We Heard - Virtual Open House Survey Summary, November 2020

Our File: 18-8919

Introduction

The Guelph Transportation Master Plan (TMP) Virtual Open House Survey launched on November 12, 2020 concurrently with the Virtual Open House on the project engagement page at Have Your Say Guelph (<https://www.haveyoursay.guelph.ca/transportation>).

The Virtual Open House was held using ESRI StoryMaps, a multimedia webpage that displays information and images along-side interactive maps. The StoryMap was used to share the draft Vision, Values and Goals, Existing Conditions, the Problem Statements and the draft Alternative Solutions. Participants were encouraged to complete the survey after visiting the Virtual Open House.

Approximately **156** participants completed the survey. The following is a high level summary of the key themes and highlights from the survey that will help to shape and inform next steps. Please refer to Appendix A for a full survey summary and Appendix B for the survey responses report.

Summary

The key themes heard in the survey include:

- Overall, participants strongly agreed with the Vision statements, Goals, and the Problem and Opportunity Statements
- A number of participants mentioned that transit should be improved as part of the TMP update
- A number of participants mentioned that safety for vulnerable road users should be a key component of the TMP update
- A number of participants stated the desire for the TMP to focus on sustainability, and voiced support for alternatives that emphasize and advance sustainability

- A number of participants expressed concern about cars and driving, noting that the plan needs to take driving into consideration to ensure it is an accessible and convenient method of transportation into the future
- A number of participants would like to see active transportation prioritized and made safer to promote these modes of transportation into the future
- Generally, participants expressed support for Alternative 3 - Sustainability and Resilience Focus

Conclusion

Overall there is strong support for the TMP Vision, Goals and Problem Opportunity Statements. Participants expressed the desire for the TMP to enable improvements to the transit system, prioritize safety for vulnerable road users, advance sustainability, and to promote non-car modes of travel. Some participants voiced the desire for driving to remain an accessible and convenient form of travel. Through targeted stakeholder engagement, we also heard that the transportation needs of vehicles used to move goods to, from, and through Guelph needs to be considered. Overall, participants mentioned Alternative 3- Sustainability and Resilience Focus as their preferred alternative, followed by the Alternative 2 - Sustainability Focus, and then Alternative 4 - Large-Scale Infrastructure Expansion Focus.

Appendix A – Full Survey Summary

The Guelph Transportation Master Plan (TMP) Virtual Open House Survey launched on November 12, 2020 concurrently with the Virtual Open House on the project engagement page at Have Your Say Guelph (<https://www.haveyoursay.guelph.ca/transportation>).

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Summary

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- A number of participants stated the desire for the TMP to focus on sustainability, and voiced support for alternatives that emphasize and advance sustainability
- A number of participants expressed concern about cars and driving, noting that the plan needs to take driving into consideration to ensure it is an accessible and convenient method of transportation into the future
- A number of participants would like to see active transportation prioritized and made safer to promote these modes of transportation into the future
- Generally, participants expressed support for Alternative 3 - Sustainability and Resilience Focus

Travel Behaviour:

- The majority of survey respondents live in Guelph
- The majority of respondents usually travel by car, with a slightly smaller number that walk
- Many respondents' travel hasn't changed since the pandemic, with a slightly smaller number of participants now working from home and travelling less
- Most participants expect to use the same modes of transportation as before the pandemic

Vision

Participants were asked to identify their level of support for the six Values that support the Vision.

SAFE

Guelph will provide safe transportation networks for people to walk, wheel and use vehicular transportation through all corners of the city.

- Participants strongly agree with the SAFE vision statement

EQUITABLE

Transportation in Guelph will be geographically equitable – people can complete their trips comfortably and in a reasonable time, regardless of if they own a vehicle, which part of Guelph they are coming from, and which part of Guelph they are going to.

- Participants strongly agree with the EQUITABLE vision statement

SUSTAINABLE

Most people will be able to travel sustainably, minimizing the negative impacts of their trip on the environment.

- Participants strongly agree with the SUSTAINABLE vision statement

COMPLETE

The network for each mode of travel (cycling, walking, driving and transit) will be complete, enabling continuous multimodal travel throughout our city. A complete - or a connected - network is one that treats all modes of travel as equal in importance.

- Participants strongly agree with the COMPLETE vision statement

AFFORDABLE

We will accomplish the goals of this plan in a way that is affordable for the user and makes the most financially efficient use of our resources and investments.

- Participants strongly agree with the AFFORDABLE vision statement

SUPPORTIVE OF LAND USES

Our transportation network will continue to be supportive of land use, meaning that we design our streets to be context-sensitive, and enable the development of healthy, high- and medium-density, mixed-use communities.

- Participants strongly agree with the SUPPORTIVE OF LAND USES vision statement

GOALS

Participants were asked to identify their level of support for the seven Goals that support the Vision.

Goal 1: People of all ages and physical ability will be able to travel safely using any transportation mode that they choose.

- Overall, participants strongly agree with Goal 1

Goal 2: Guelph's transportation system will be easy-to-use, reliable and give people and businesses the transportation options they want when they need them.

- Overall, participants strongly agree with Goal 2

Goal 3: Transit service will provide travel times and traveler convenience at levels that are competitive with travel by car.

- Overall, participants strongly agree with Goal 3

Goal 4: The carbon footprint from the transportation sector will aim for net zero by 2050.

- Overall, participants strongly agree with Goal 4

Goal 5: Guelph's streets, trails and rail networks will align with the City's land use objectives.

- Overall, participants strongly agree with Goal 5

Goal 6: Investment decisions will be made considering the asset lifecycle costs, which includes operations and maintenance.

- Overall, participants strongly agree with Goal 6

Goal 7: Guelph's transportation system will plan for the changes of tomorrow, while delivering great service today.

- Overall, participants strongly agree with Goal 7

Problem and Opportunity Statements

Participants were asked to identify their level of support for the problem and opportunity statements.

We need to design our streets to serve the needs of a diverse group of people, of all ages and abilities.

- Overall, participants strongly agree with this statement

We need strong (fast and direct) transit connections to existing and future jobs.

- Overall, participants strongly agree with this statement

We need more safe crossings of the rivers, rail lines and highways for people walking and cycling.

- Overall, participants strongly agree with this statement

We need better walking and cycling connections to transit stops and hubs.

- Overall, participants strongly agree with this statement

We need to reduce transit travel times and improve traveler convenience to most destinations, particularly between neighbouring areas of the city.

- Overall, participants strongly agree with this statement

We need to reduce the percentage of trips made by car.

- Overall, participants strongly agree with this statement

We need to update the downtown parking strategy to align with the objectives of the TMP to reduce downtown car use.

- Overall, participants strongly agree with this statement

We need to design our streets to safely serve all modes of transportation, including walking, cycling and transit.

- Overall, participants strongly agree with this statement

We need to tap Guelph's unrealized potential for electric vehicles.

- Overall, participants strongly agree with this statement

We need to redesign streets in key growth areas (intensification corridors and mixed-use nodes identified in the Official Plan) to prioritize walking, cycling and transit.

- Overall, participants strongly agree with this statement

We need to update our road designs to reflect the unique priorities of different areas (for example: low-density residential neighbourhood, an industrial area or a natural heritage feature).

- Overall, participants strongly agree with this statement

We need to account for life-cycle costs (upfront capital costs, ongoing maintenance and replacement costs) in financial decisions on transportation projects.

- Overall, participants strongly agree with this statement

We need to improve the resiliency of Guelph's transportation system. Resilient systems have diversity (multiple options for travel), redundancy (multiple routes between destinations) and the ability to easily adapt to changing conditions.

- Overall, participants strongly agree with this statement

We need to better prepare for the future of mobility (for example: technology, new forms of travel).

- Overall, participants agree with this statement

Key Topics

What other key transportation topics do you think we should cover in the TMP?

Common responses included:

- Improve public transit should be considered as part of the plan, including improved transit times, routes, stop accessibility, and access to routes/stops

- Safety for vulnerable road users should be a key component of the plan, including slowing traffic speeds and separated bike lanes
- The City should prioritize active transportation to make it easy, convenient, and safe for people to walk and cycle to get where they need to go
- The plan should prioritize or consider cars including parking, not taking away space for cars, making sure driving is still an accessible and convenient method of transportation into the future, and improve driving infrastructure over all

Alternative Solutions

Please provide any comments you may have on the Alternative Solutions.

Common responded included:

- The alternative solutions should prioritize or consider cars to ensure driving is still an accessible and convenient method of transportation into the future for those that need it
- The City should prioritize active transportation to make it easy, convenient, and safe for people to walk and cycle to get where they need to go
- Overall there was support for the alternatives that emphasize and advance sustainability
- Alternative 3 was identified as the preferred alternative by participants (mentioned 23 times), Alternative 2 was second (mentioned 15 times), Alternative 4 was third (mentioned 12 times), and Alternative 1 was the least preferred (mentioned 1 time)

Appendix B – Survey Responses Report

Moving Guelph Forward - virtual open house survey

SURVEY RESPONSE REPORT

08 June 2018 - 09 December 2020

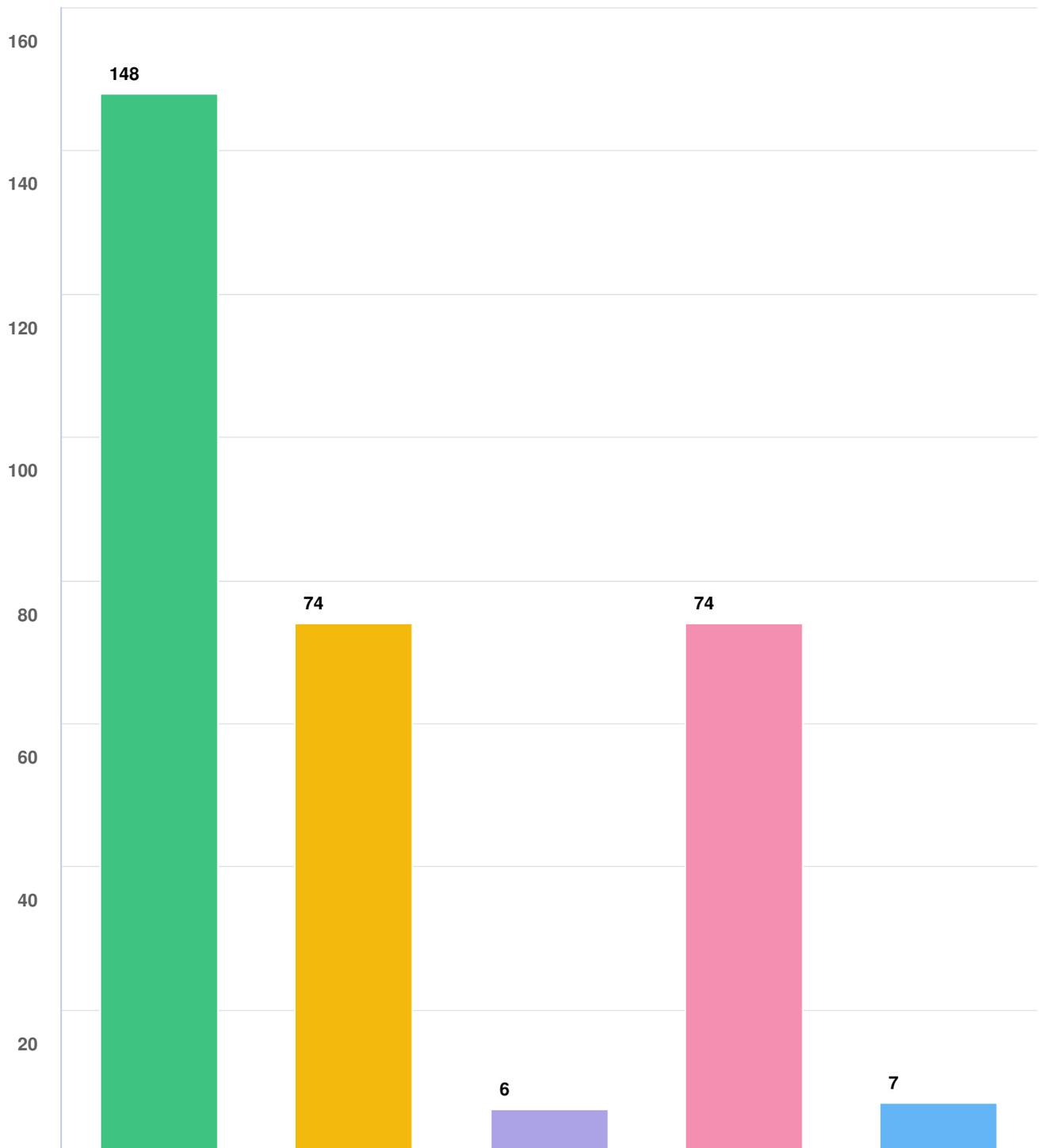
PROJECT NAME:

Moving Guelph Forward



—————
SURVEY QUESTIONS
—————

Q1 Which of the following best describes you:



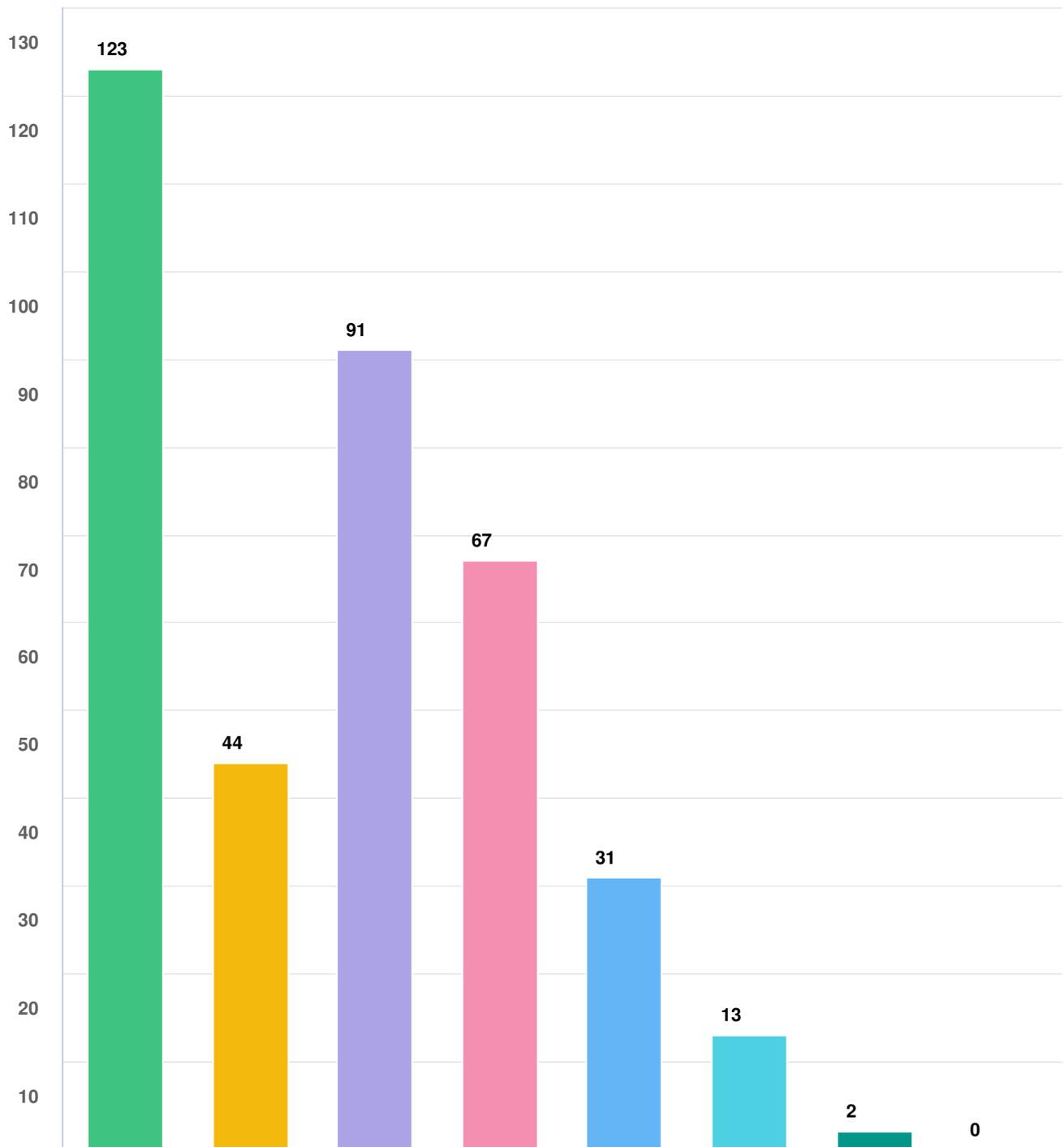
Question options

- I live in Guelph
- I work in Guelph
- I study in Guelph
- I shop in Guelph
- Other (please specify)

Optional question (156 response(s), 0 skipped)

Question type: Checkbox Question

Q2 How do you usually move around Guelph?

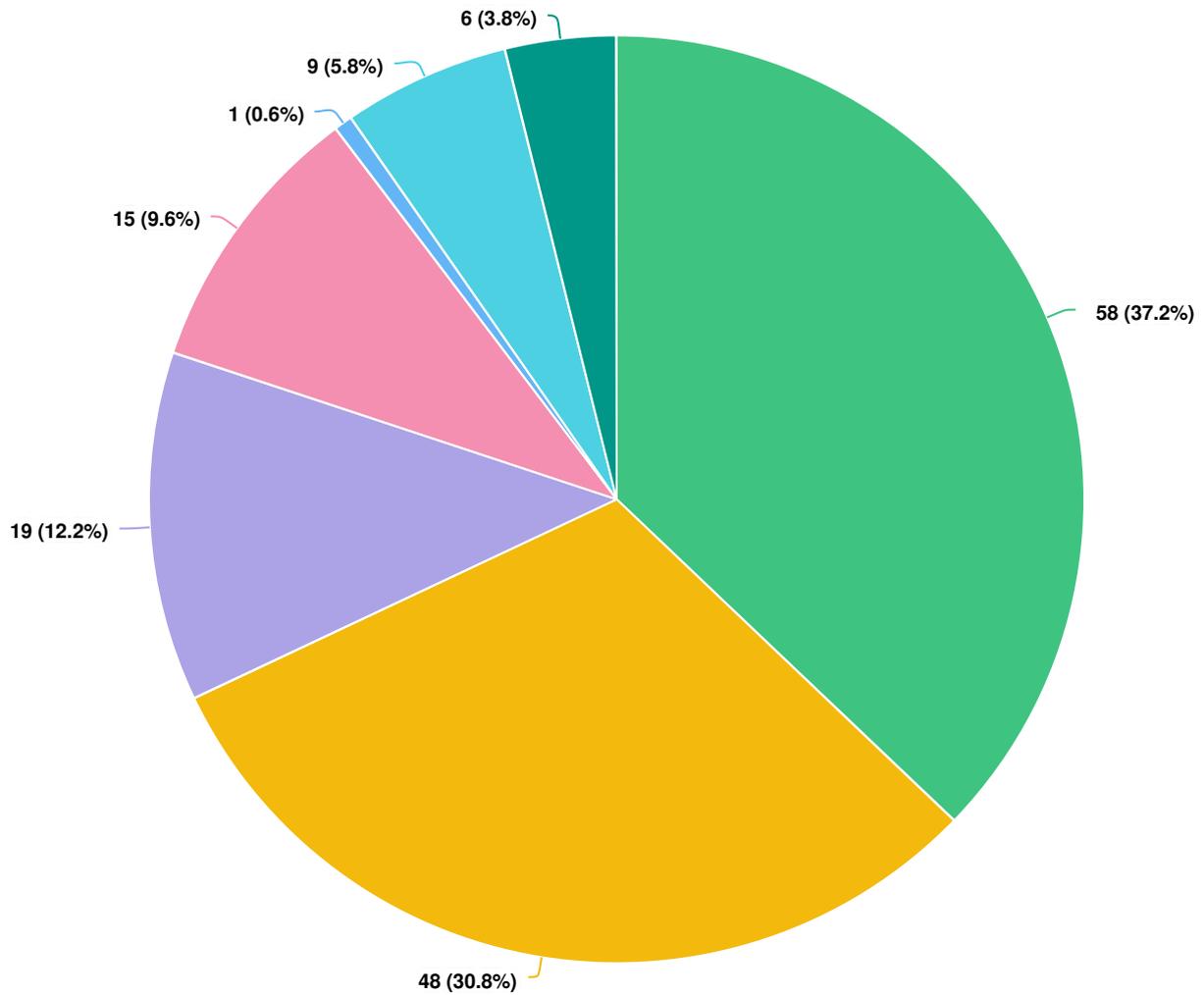


Question options

- I travel by car as the driver
- I travel by car as the passenger
- I walk
- I cycle
- I take local transit
- I take a taxi or a ridesharing service
- Other (please specify)
- I use a mobility device

Optional question (156 response(s), 0 skipped)
Question type: Checkbox Question

Q3 How has your travel changed since the pandemic?

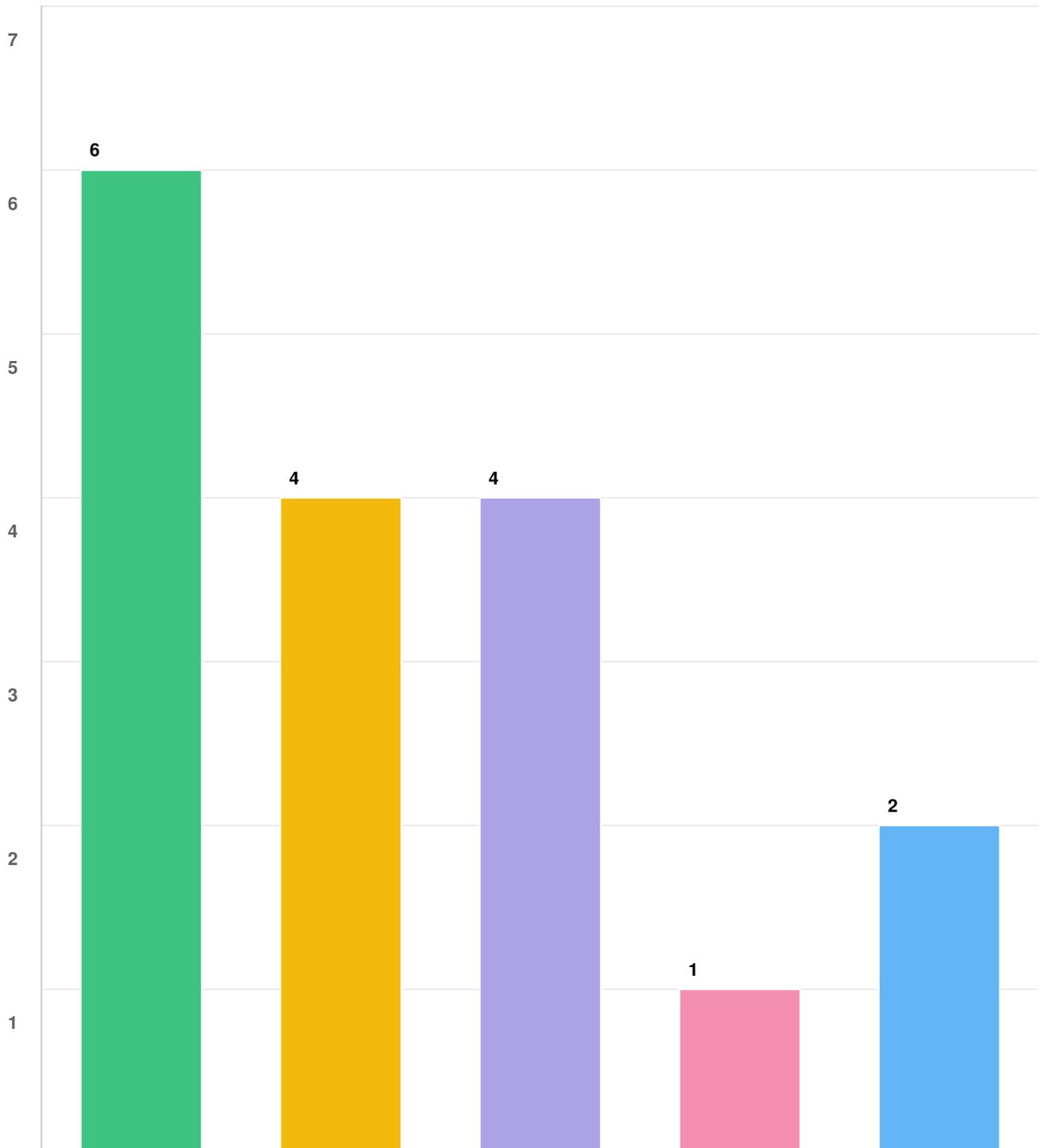


Question options

- No change
- I now work or do my schooling from home so I travel less
- I now use active transportation (walking or cycling) more frequently
- I now drive more frequently
- I now use transit more
- I now use transit less and use other forms of transportation instead
- Other (please specify)

Optional question (156 response(s), 0 skipped)
Question type: Radio Button Question

Q4 What type of transportation do you use instead?



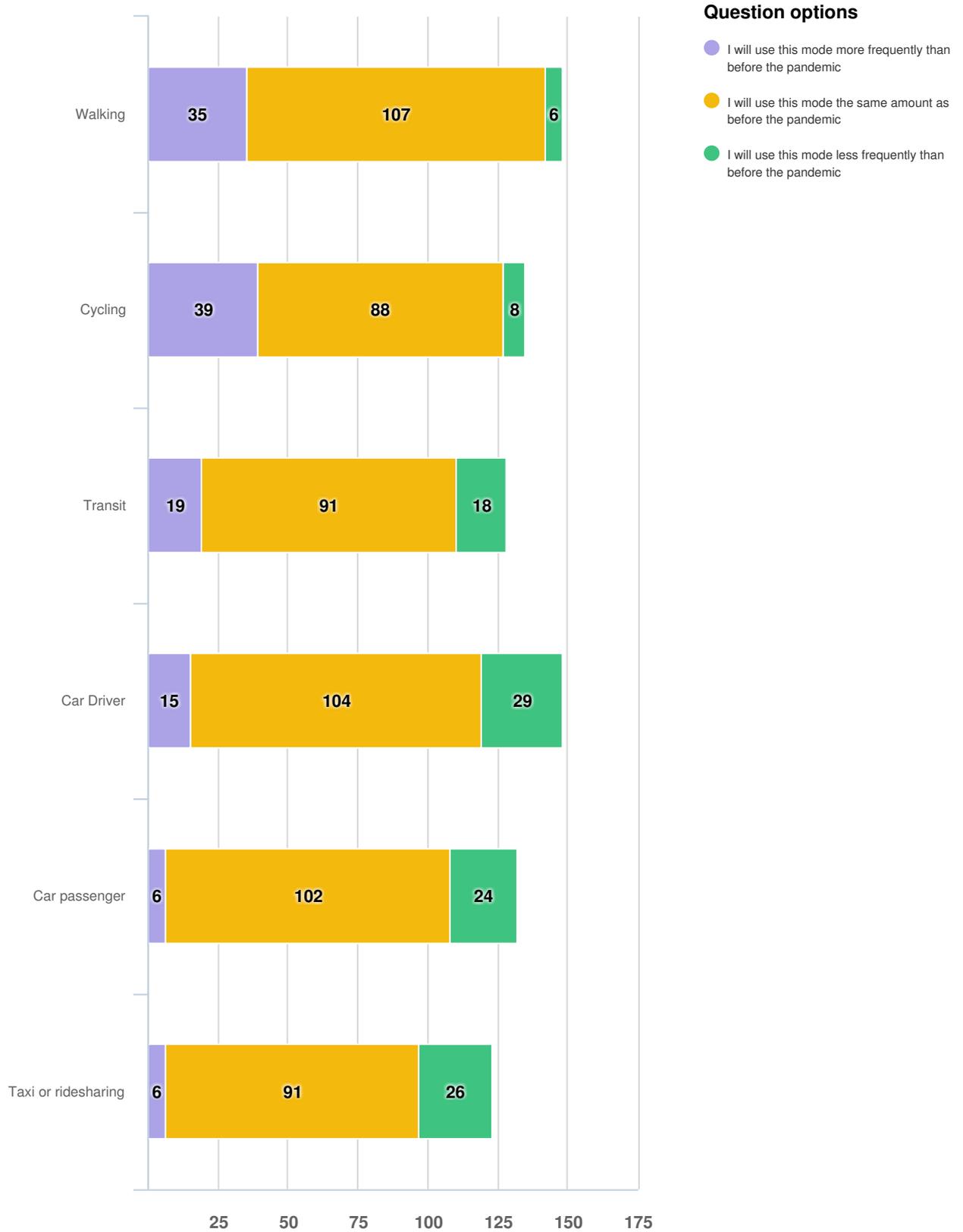
Question options

- Walking
- Cycling
- Driving
- Ridesharing or Taxis
- Other (please specify)

Optional question (9 response(s), 147 skipped)

Question type: Checkbox Question

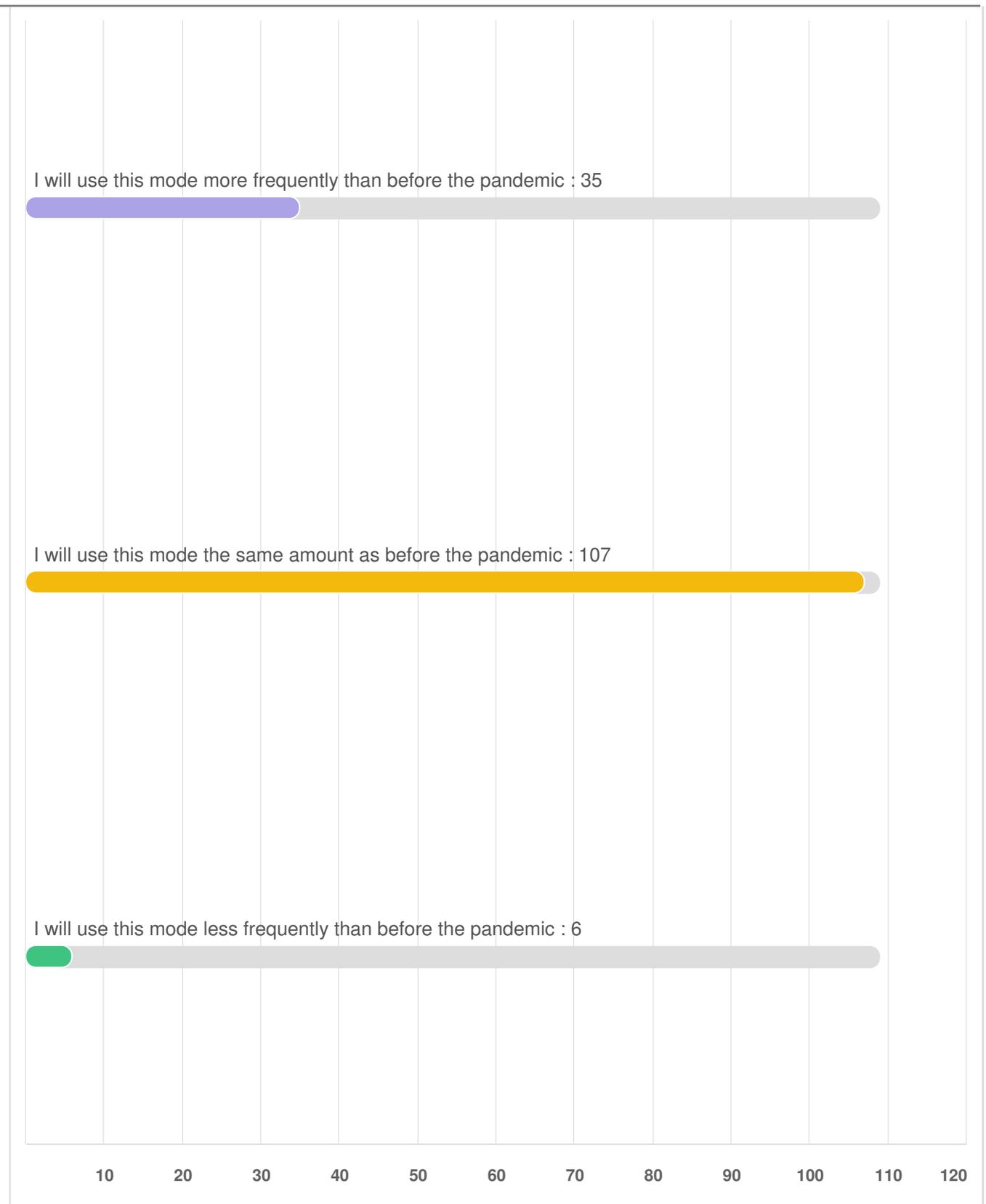
Q5 Once the pandemic is over, how do you think your use of these travel modes will change?



Optional question (155 response(s), 1 skipped)
Question type: Likert Question

Q5 | Once the pandemic is over, how do you think your use of these travel modes will change?

Walking



Cycling

I will use this mode more frequently than before the pandemic : 39



I will use this mode the same amount as before the pandemic : 88



I will use this mode less frequently than before the pandemic : 8



10 20 30 40 50 60 70 80 90 100

Transit

I will use this mode more frequently than before the pandemic : 19



I will use this mode the same amount as before the pandemic : 91



I will use this mode less frequently than before the pandemic : 18



10 20 30 40 50 60 70 80 90 100

Car Driver

I will use this mode more frequently than before the pandemic : 15



I will use this mode the same amount as before the pandemic : 104



I will use this mode less frequently than before the pandemic : 29



10 20 30 40 50 60 70 80 90 100 110

Car passenger

I will use this mode more frequently than before the pandemic : 6



I will use this mode the same amount as before the pandemic : 102



I will use this mode less frequently than before the pandemic : 24



10 20 30 40 50 60 70 80 90 100 110

Taxi or ridesharing

I will use this mode more frequently than before the pandemic : 6



I will use this mode the same amount as before the pandemic : 91

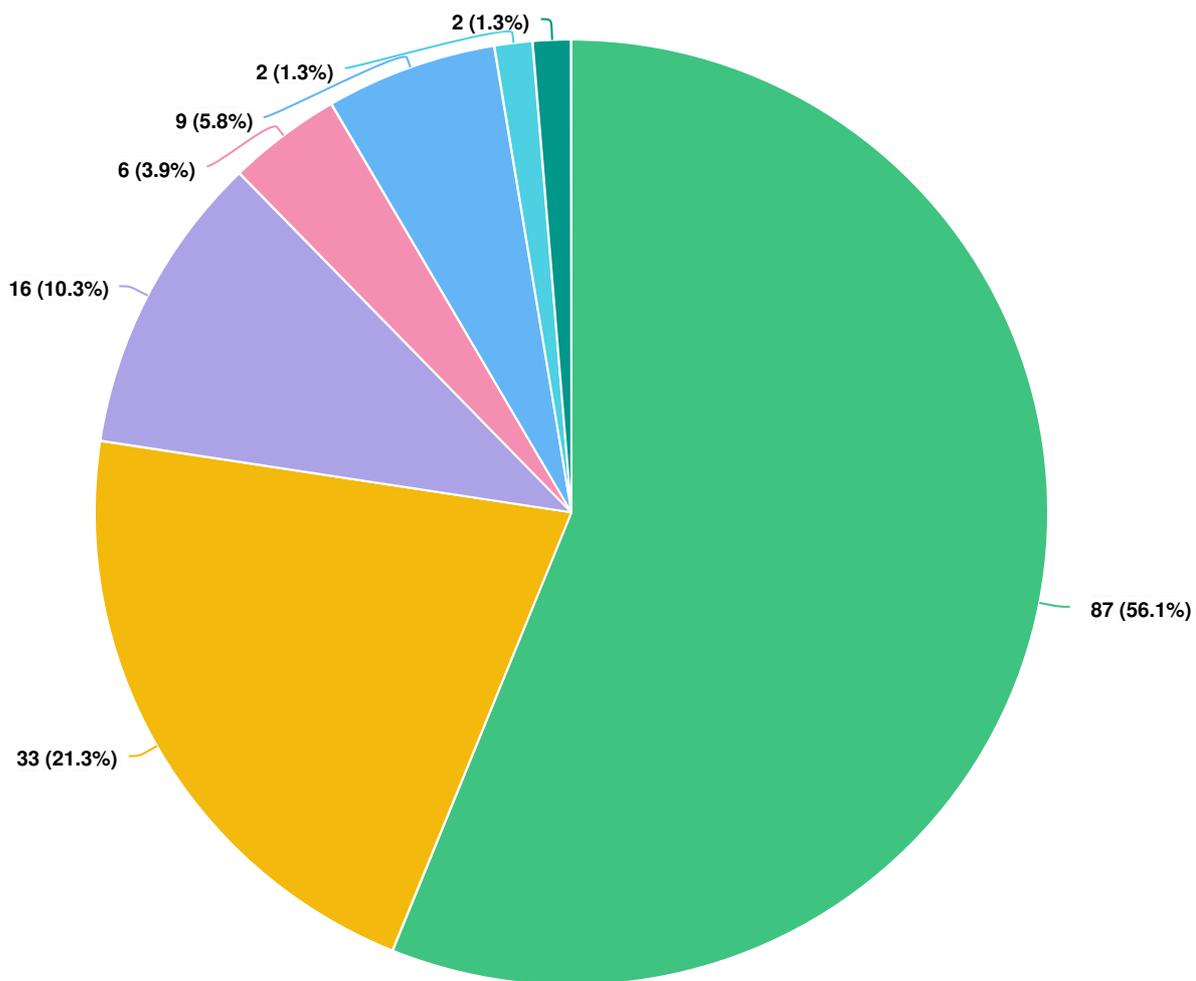


I will use this mode less frequently than before the pandemic : 26



10 20 30 40 50 60 70 80 90 100

Q6 SafeGuelph will provide safe transportation networks for people to walk, wheel and use vehicular transportation through all corners of the city.

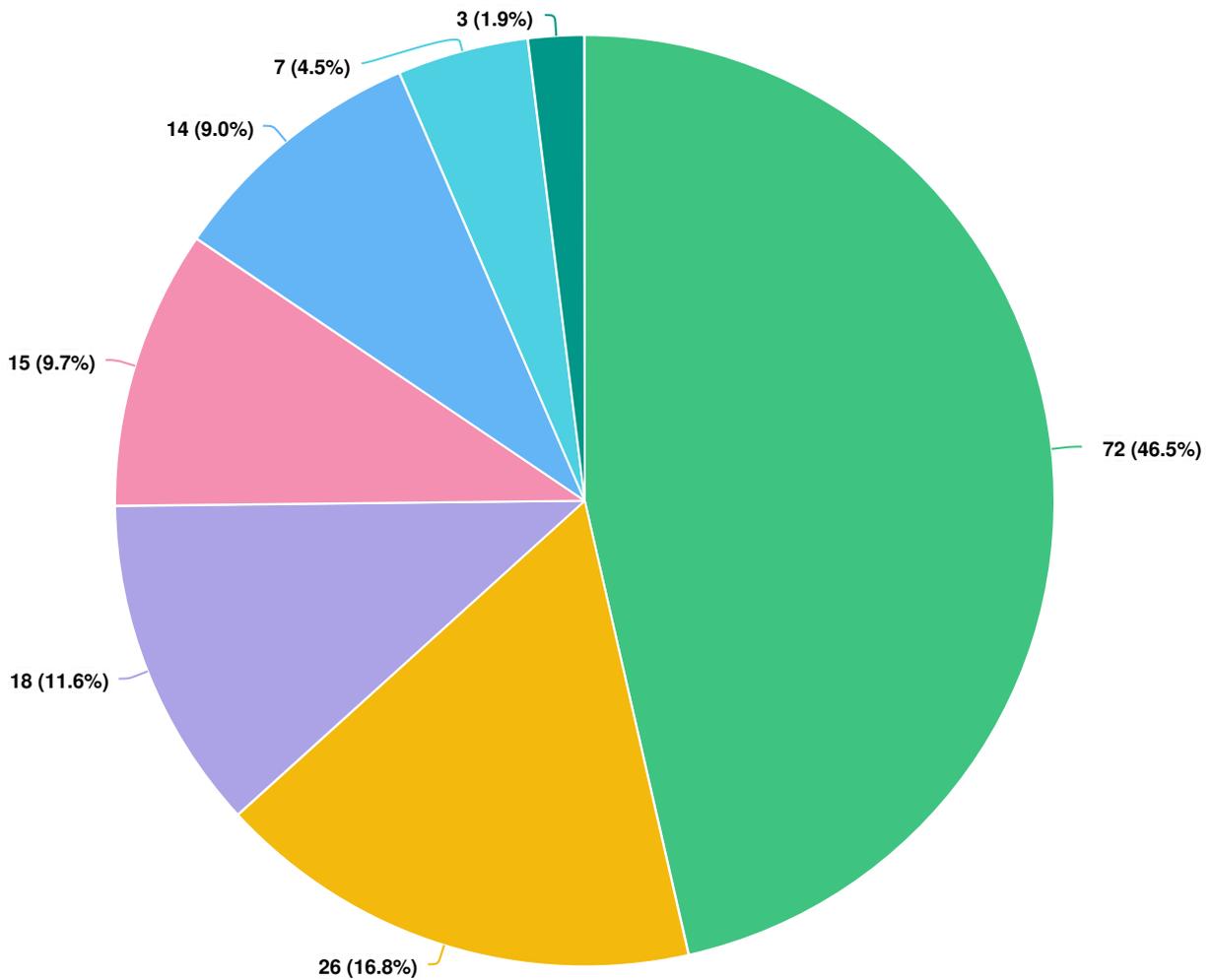


Question options

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Optional question (155 response(s), 1 skipped)
Question type: Radio Button Question

Q7 Equitable Transportation in Guelph will be geographically equitable – people can complete their trips comfortably and in a reasonable time, regardless of if they own a vehicle, which part of Guelph they are coming from, and which part of Guelph they...

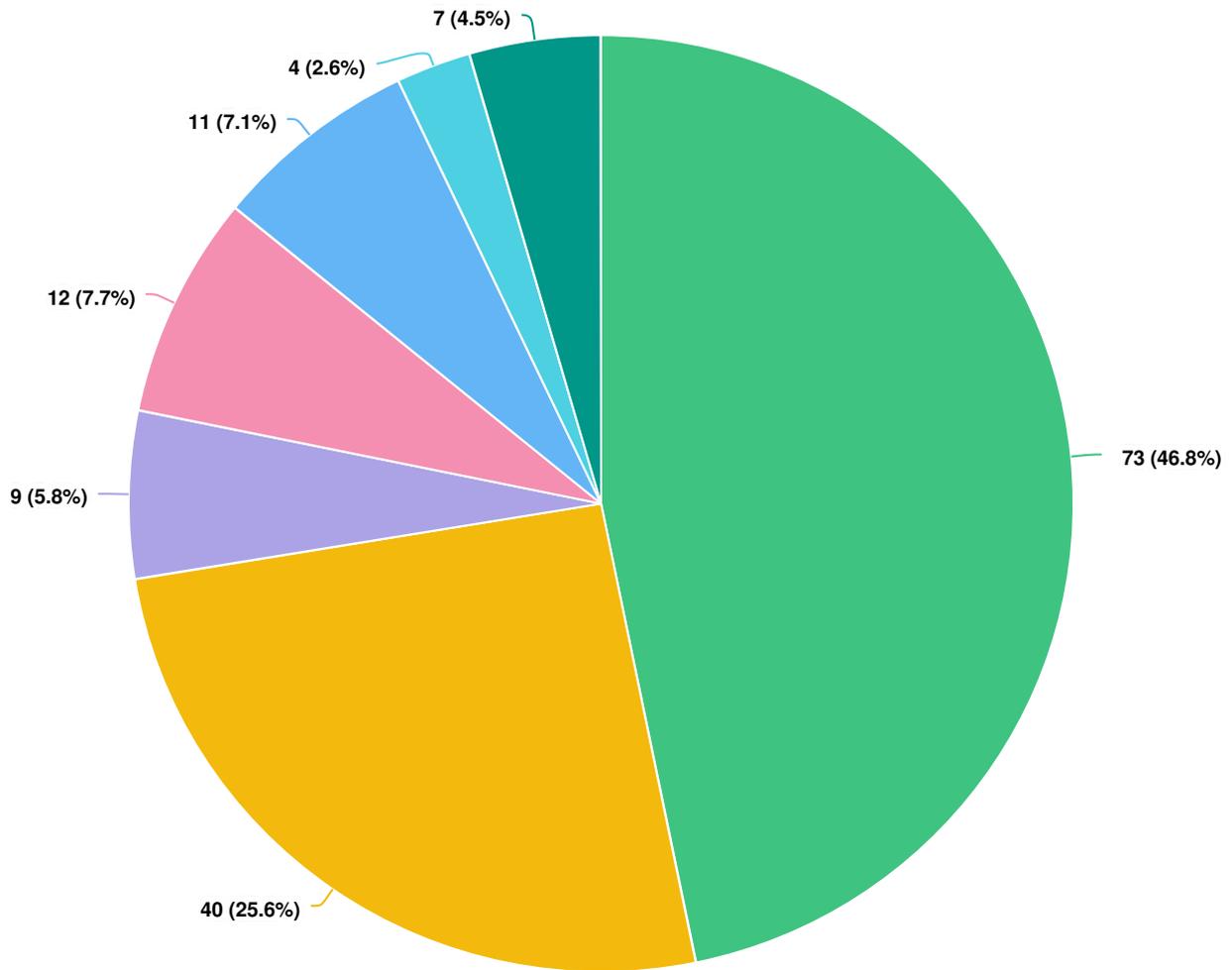


Question options

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Optional question (155 response(s), 1 skipped)
Question type: Radio Button Question

Q8 Sustainable Most people will be able to travel sustainably, minimizing the negative impacts of their trip on the environment.

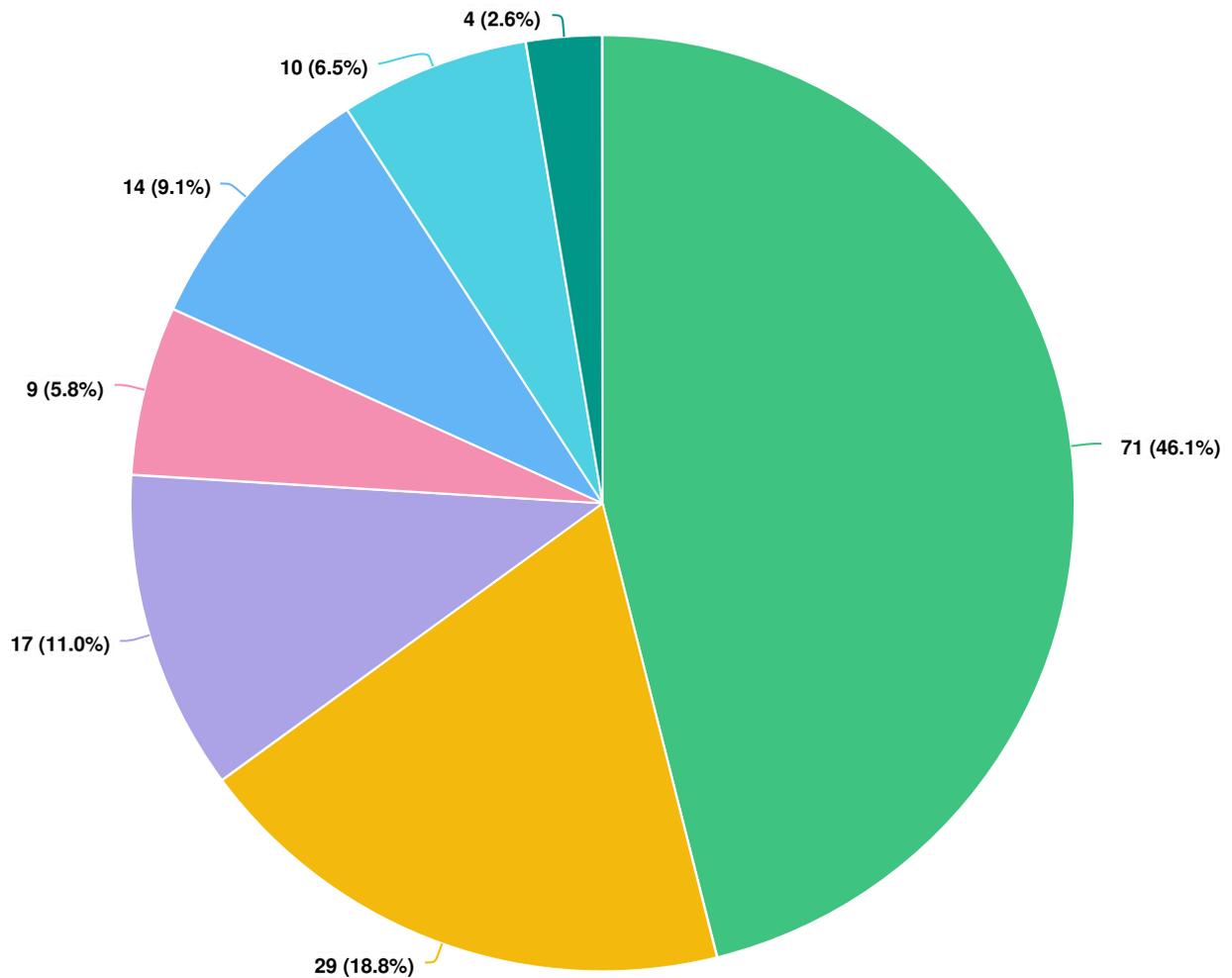


Question options

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Optional question (156 response(s), 0 skipped)
Question type: Radio Button Question

Q9 CompleteThe network for each mode of travel (cycling, walking, driving and transit) will be complete, enabling continuous multimodal travel throughout our city. A complete - or a connected - network is one that treats all modes of travel as equal i...

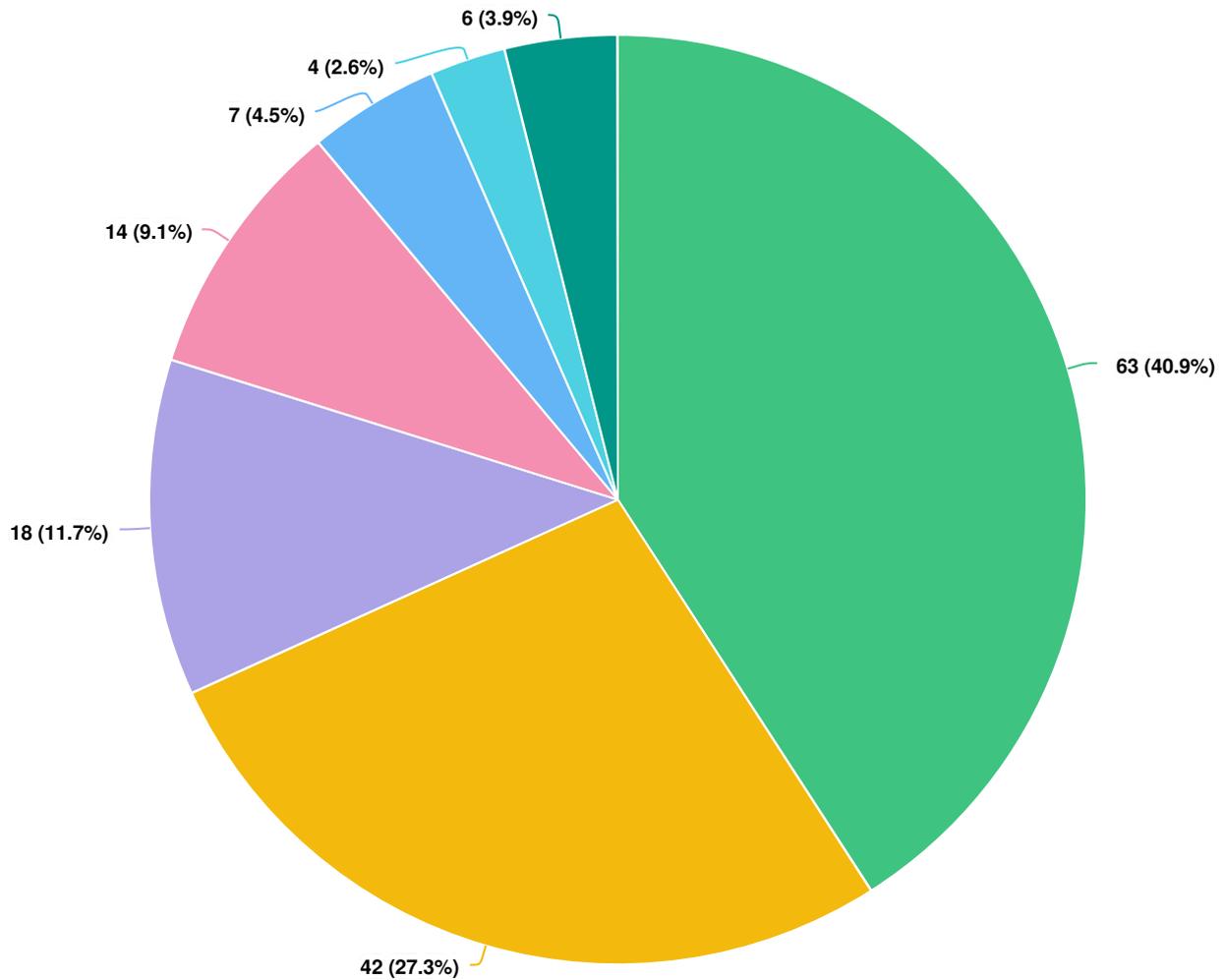


Question options

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Optional question (154 response(s), 2 skipped)
Question type: Radio Button Question

Q10 Affordable We will accomplish the goals of this plan in a way that is affordable for the user and makes the most financially efficient use of our resources and investments.

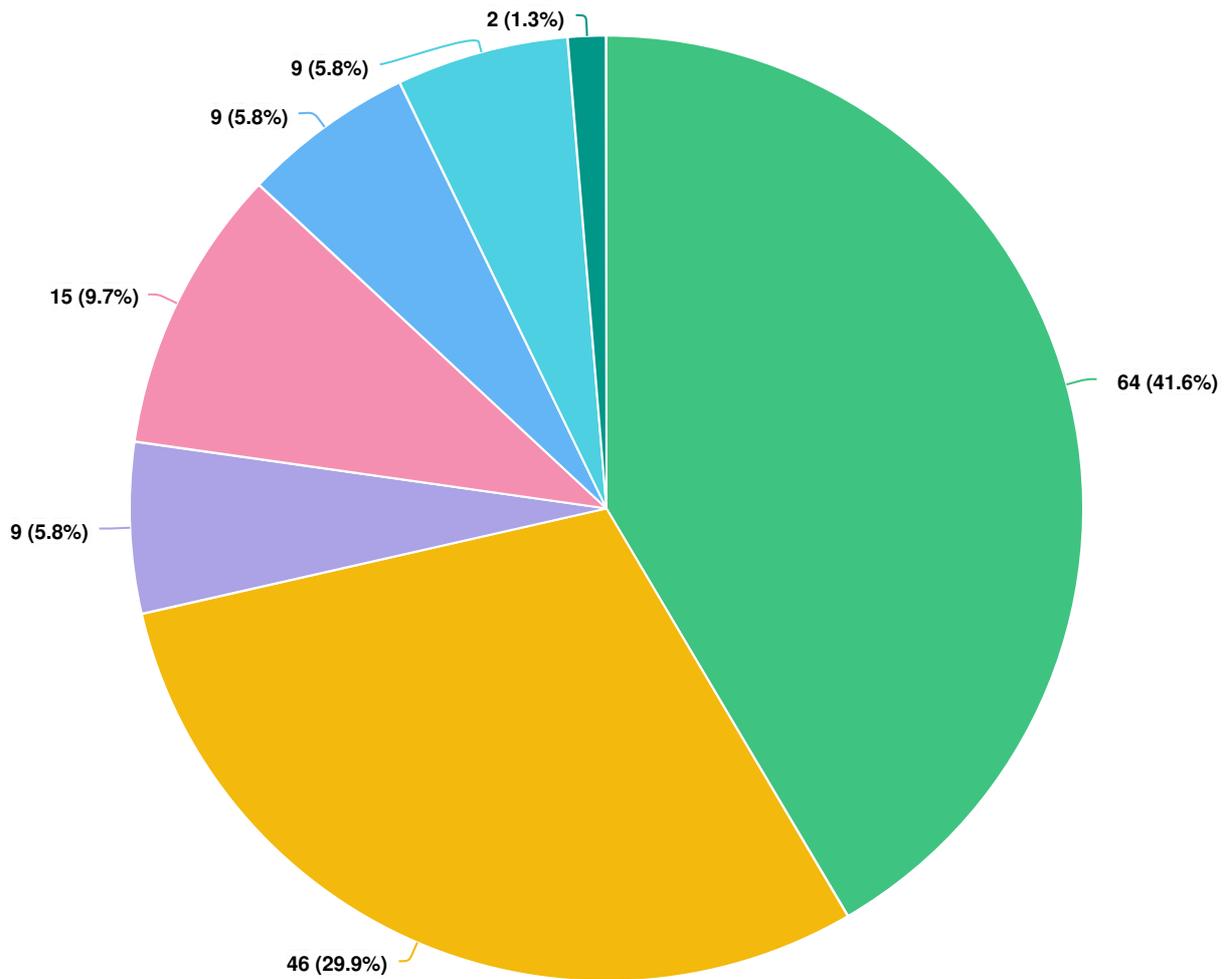


Question options

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Optional question (154 response(s), 2 skipped)
Question type: Radio Button Question

Q11 Supportive of our land usesOur transportation network will continue to be supportive of land use, meaning that we design our streets to be context-sensitive, and enable the development of healthy, high- and medium-density, mixed-use communities.

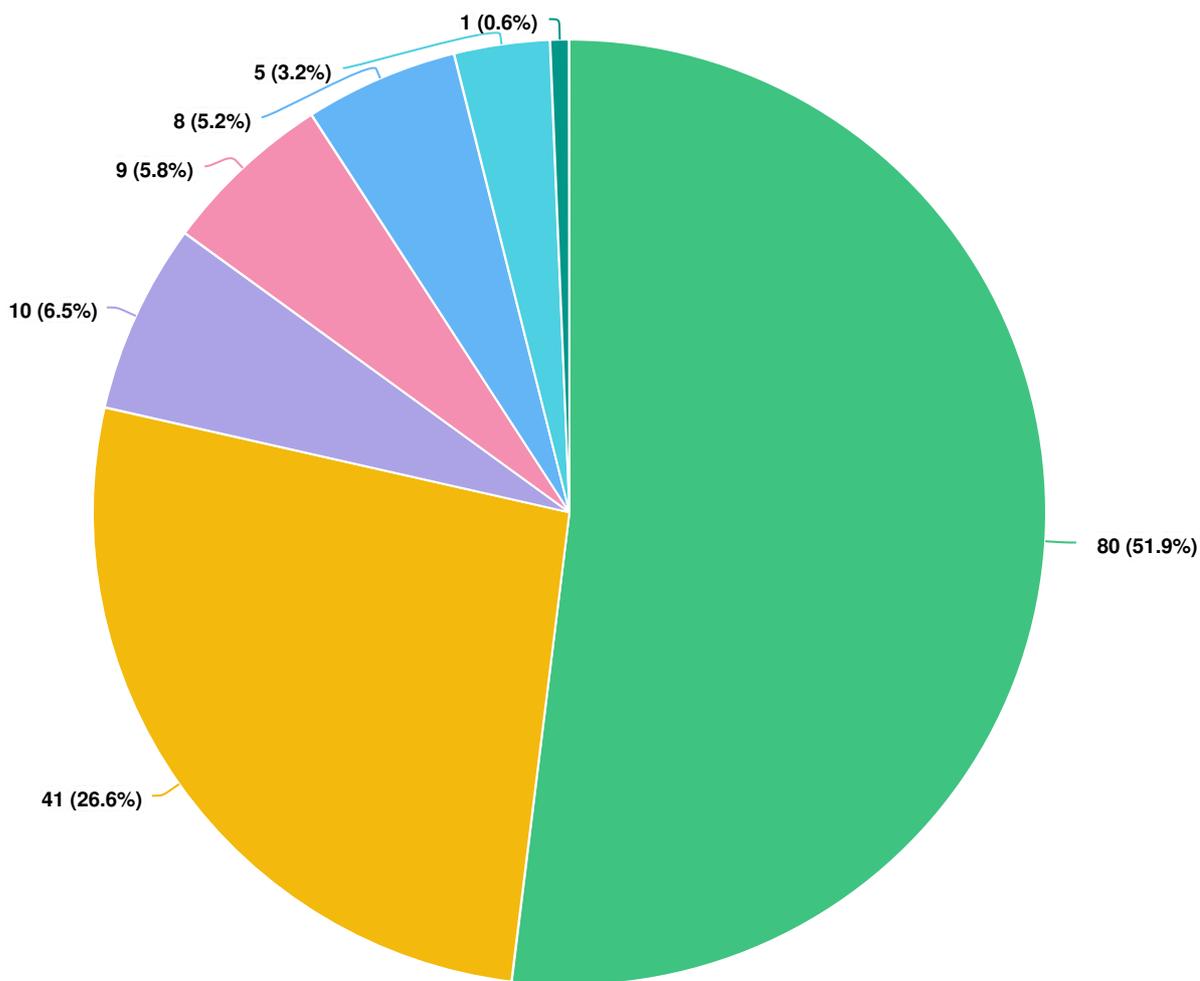


Question options

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Optional question (154 response(s), 2 skipped)
Question type: Radio Button Question

Q12 | Goal 1: People of all ages and physical ability will be able to travel safely using any transportation mode that they choose.

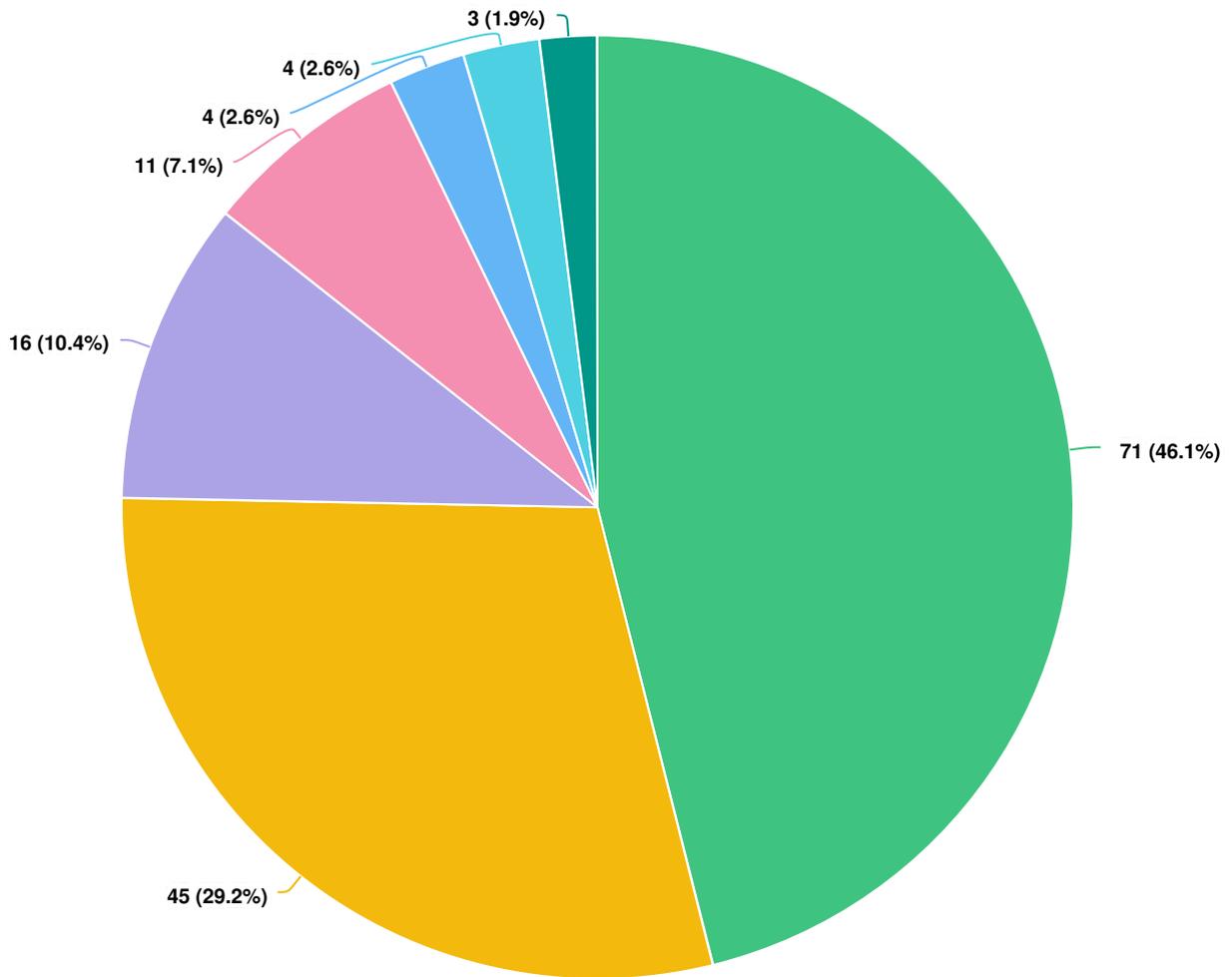


Question options

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Optional question (154 response(s), 2 skipped)
Question type: Radio Button Question

Q13 | Goal 2: Guelph's transportation system will be easy-to-use, reliable and give people and businesses the transportation options they want when they need them.

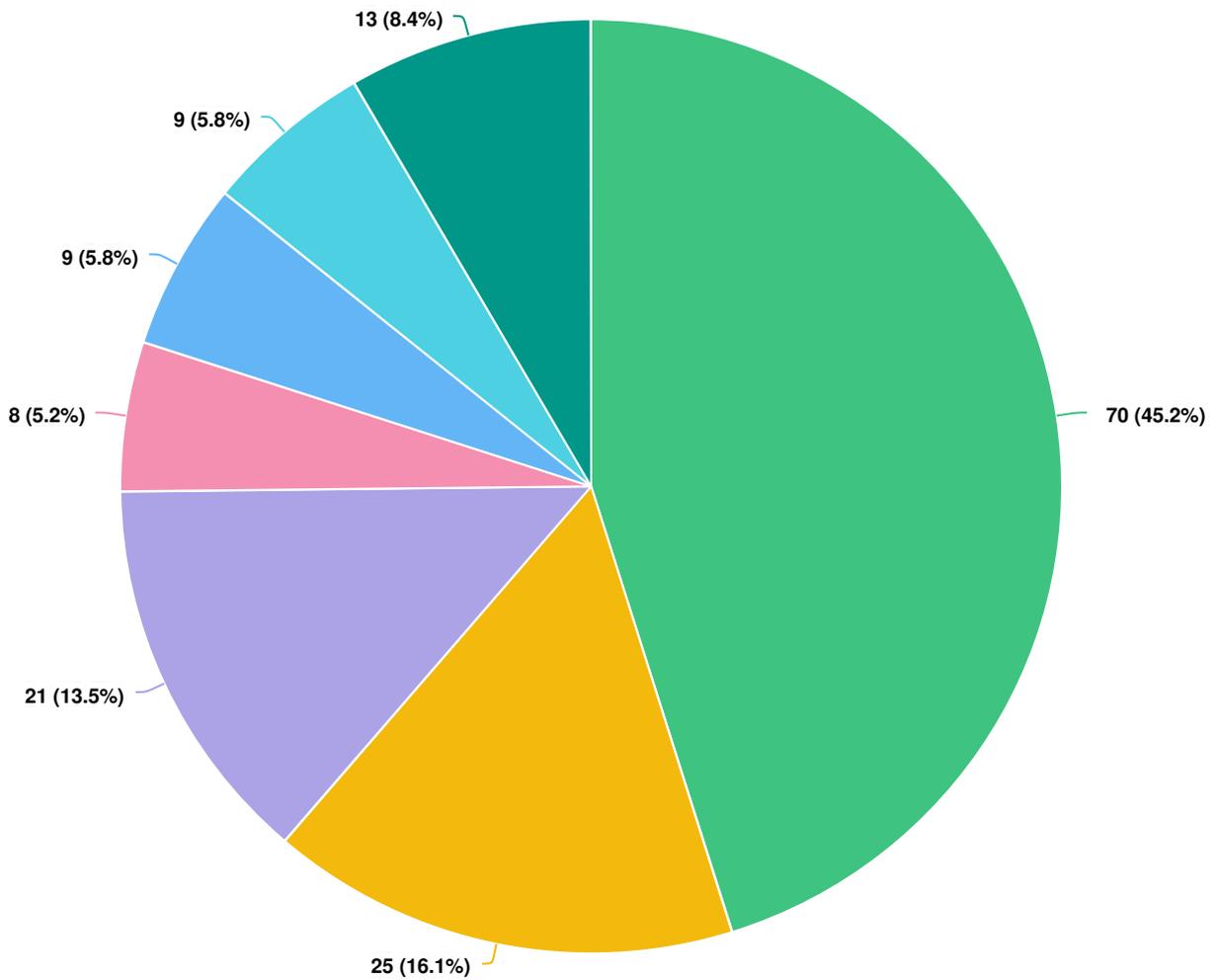


Question options

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Optional question (154 response(s), 2 skipped)
Question type: Radio Button Question

Q14 | Goal 3: Transit service will provide travel times and traveler convenience at levels that are competitive with travel by car.

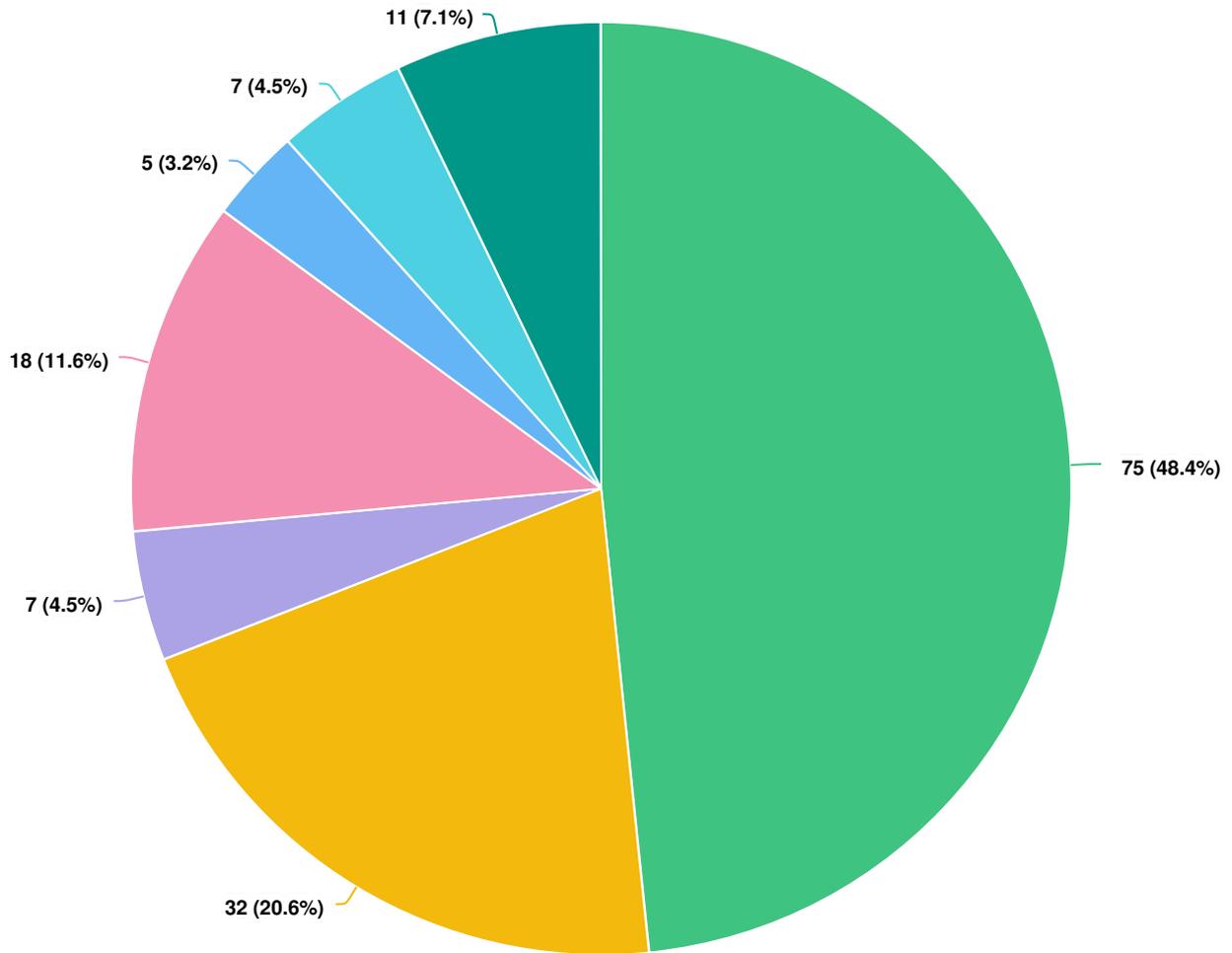


Question options

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Optional question (155 response(s), 1 skipped)
Question type: Radio Button Question

Q15 | Goal 4: The carbon footprint from the transportation sector will aim for net zero by 2050.

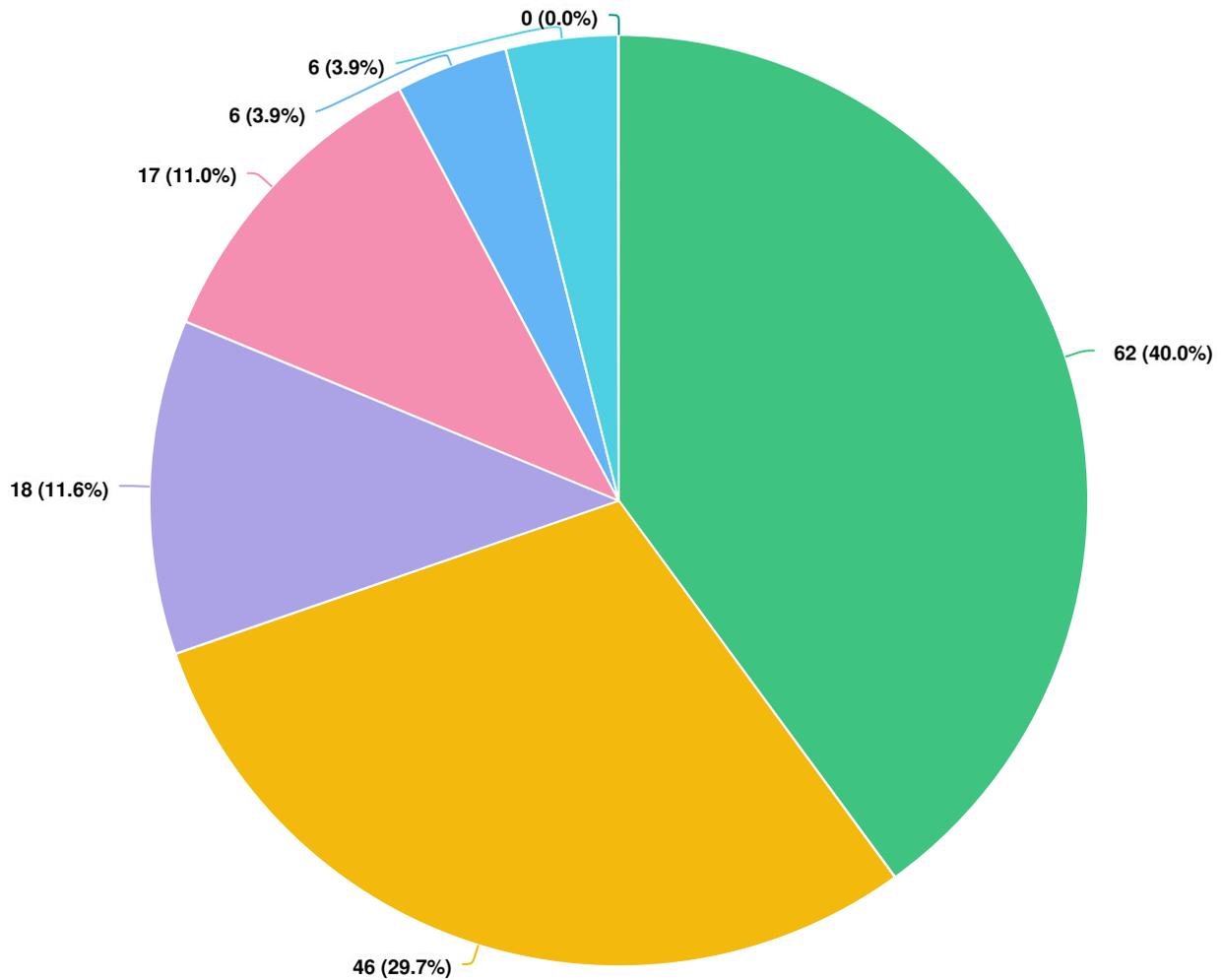


Question options

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Optional question (155 response(s), 1 skipped)
Question type: Radio Button Question

Q16 | Goal 5: Guelph's streets, trails and rail networks will align with the City's land use objectives.

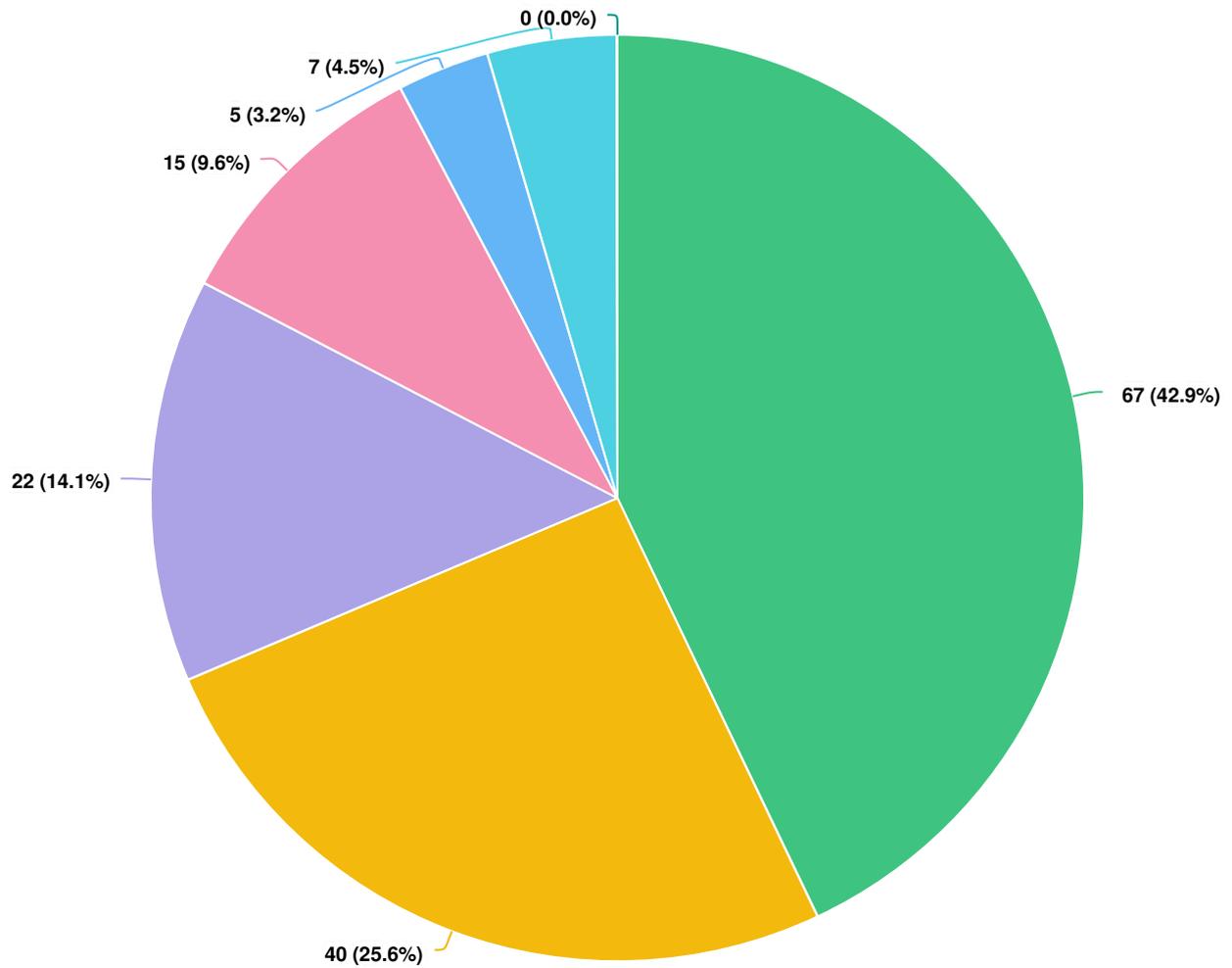


Question options

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Optional question (155 response(s), 1 skipped)
Question type: Radio Button Question

Q17 | Goal 6: Investment decisions will be made considering the asset lifecycle costs, which includes operations and maintenance.

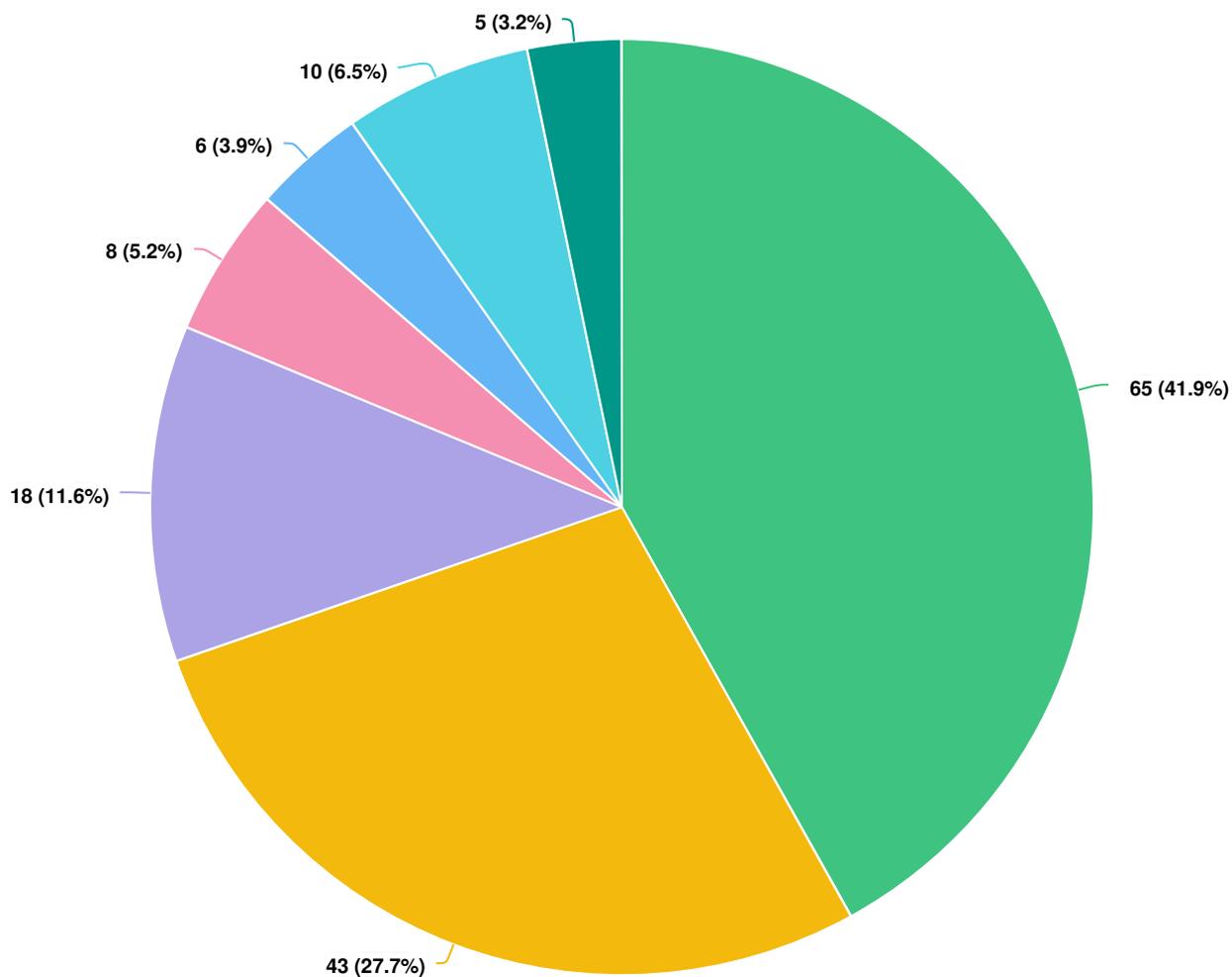


Question options

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Optional question (156 response(s), 0 skipped)
Question type: Radio Button Question

Q18 | Goal 7: Guelph’s transportation system will plan for the changes of tomorrow, while delivering great service today.

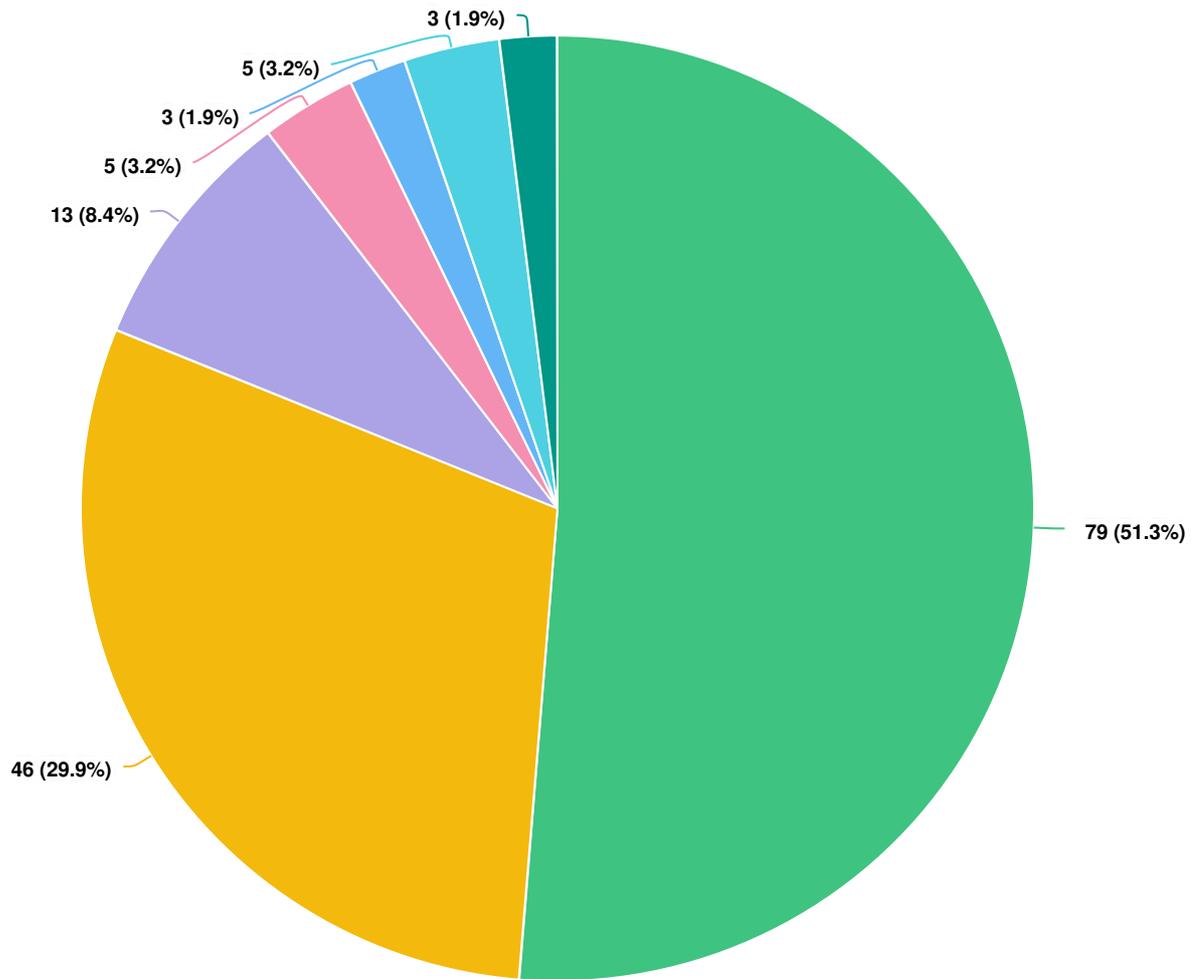


Question options

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Optional question (155 response(s), 1 skipped)
Question type: Radio Button Question

Q19 We need to design our streets to serve the needs of a diverse group of people, of all ages and abilities.

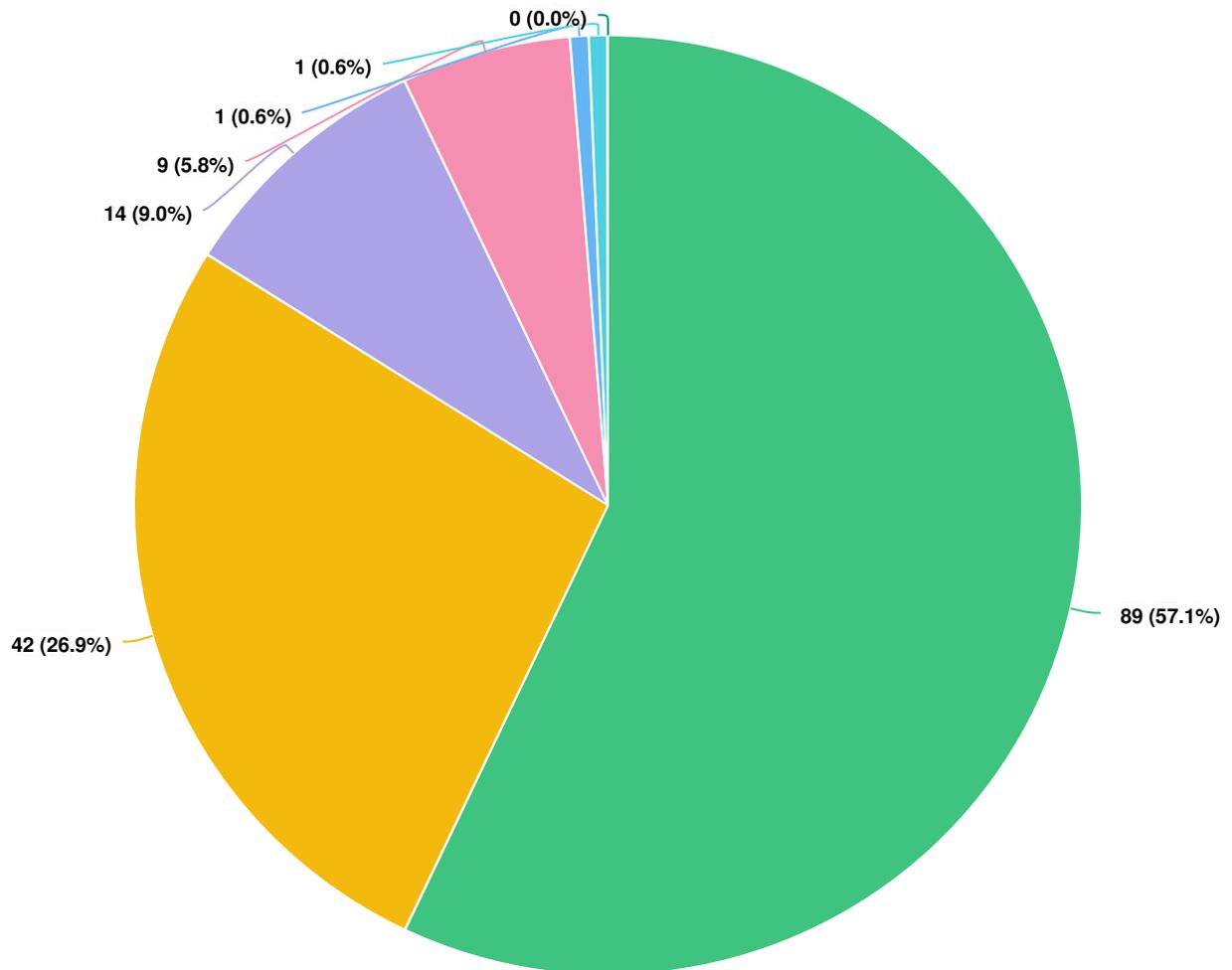


Question options

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Optional question (154 response(s), 2 skipped)
Question type: Radio Button Question

Q20 We need strong (fast and direct) transit connections to existing and future jobs.

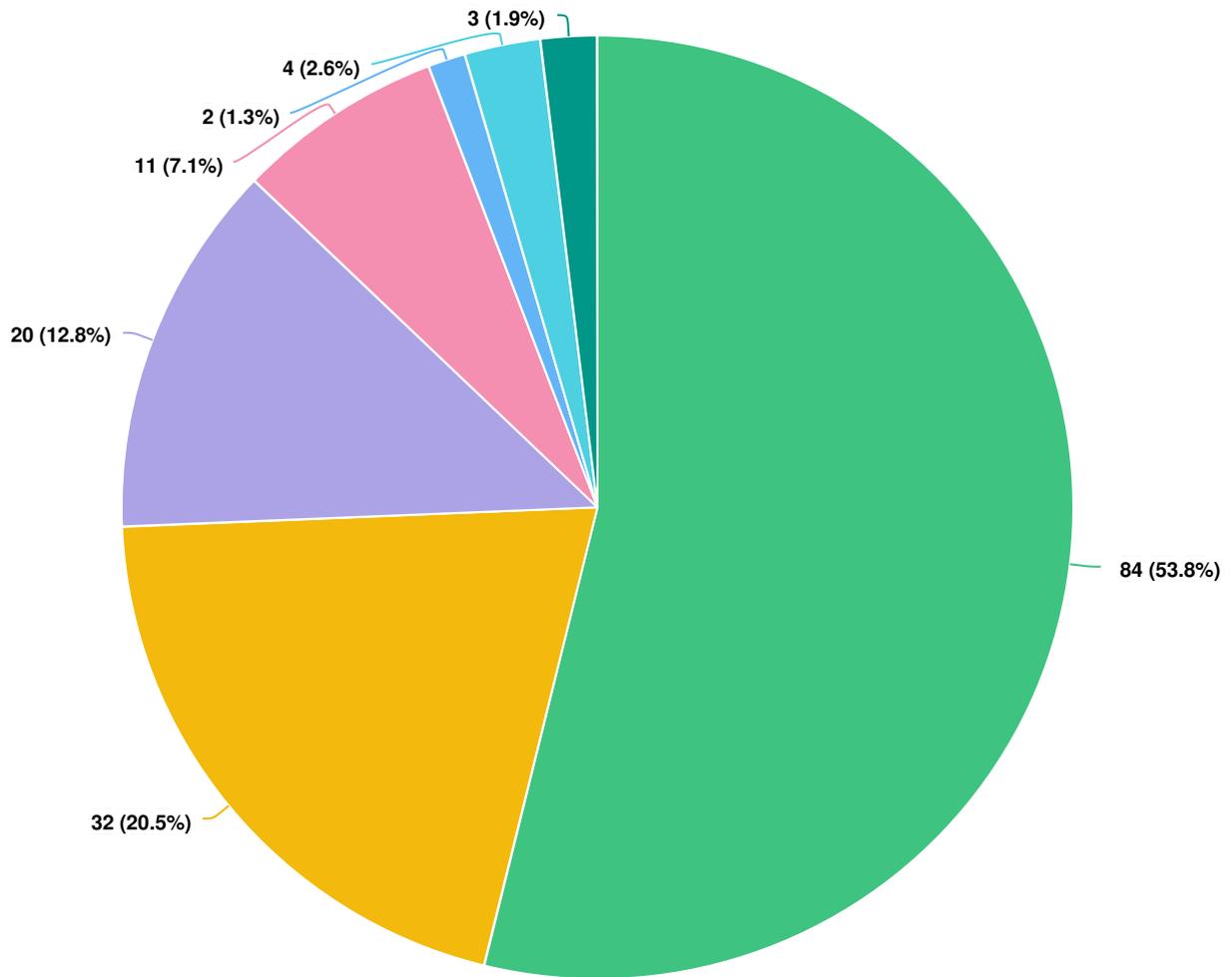


Question options

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Optional question (156 response(s), 0 skipped)
Question type: Radio Button Question

Q21 | We need more safe crossings of the rivers, rail lines and highways for people walking and cycling.

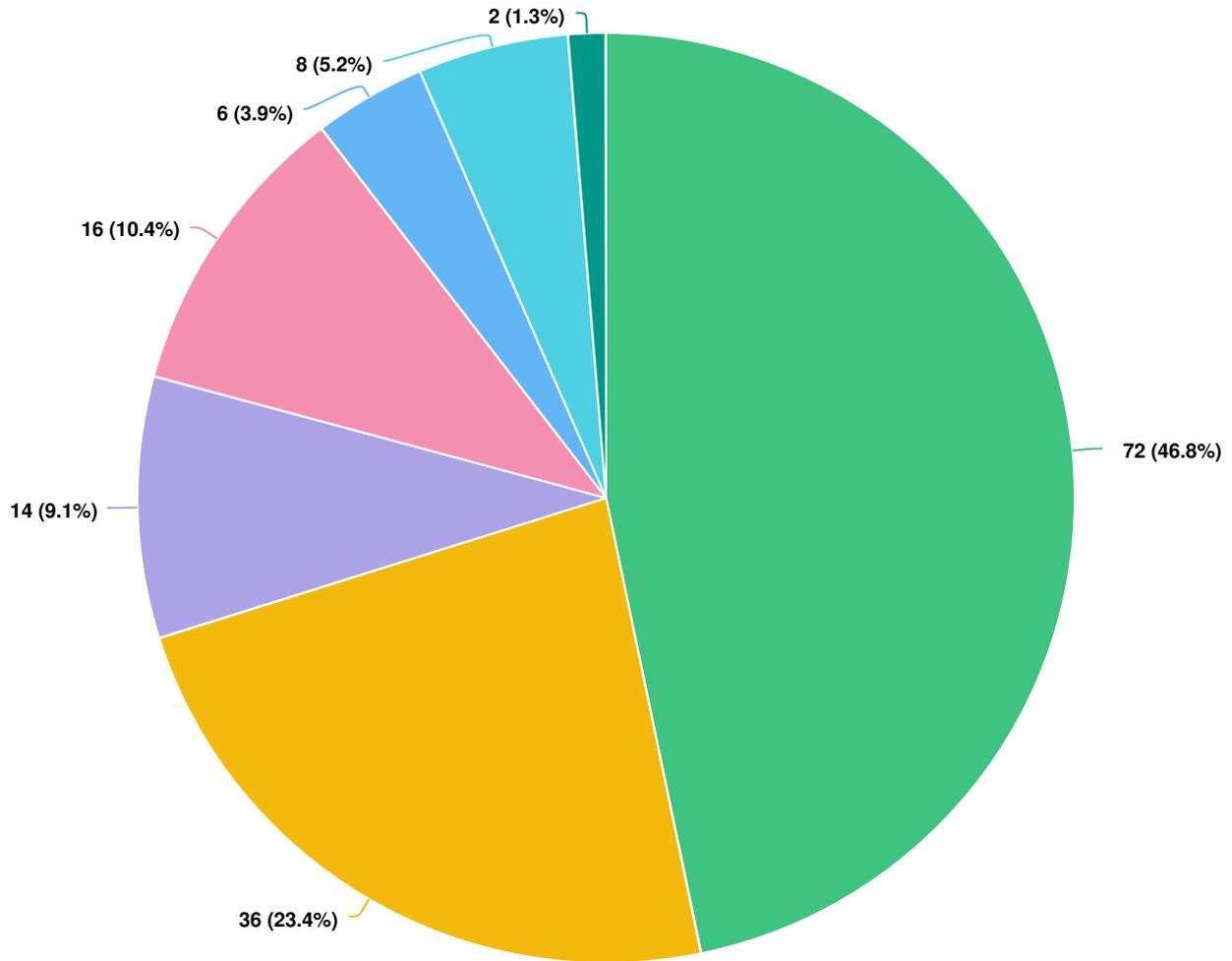


Question options

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Optional question (156 response(s), 0 skipped)
Question type: Radio Button Question

Q22 We need better walking and cycling connections to transit stops and hubs.

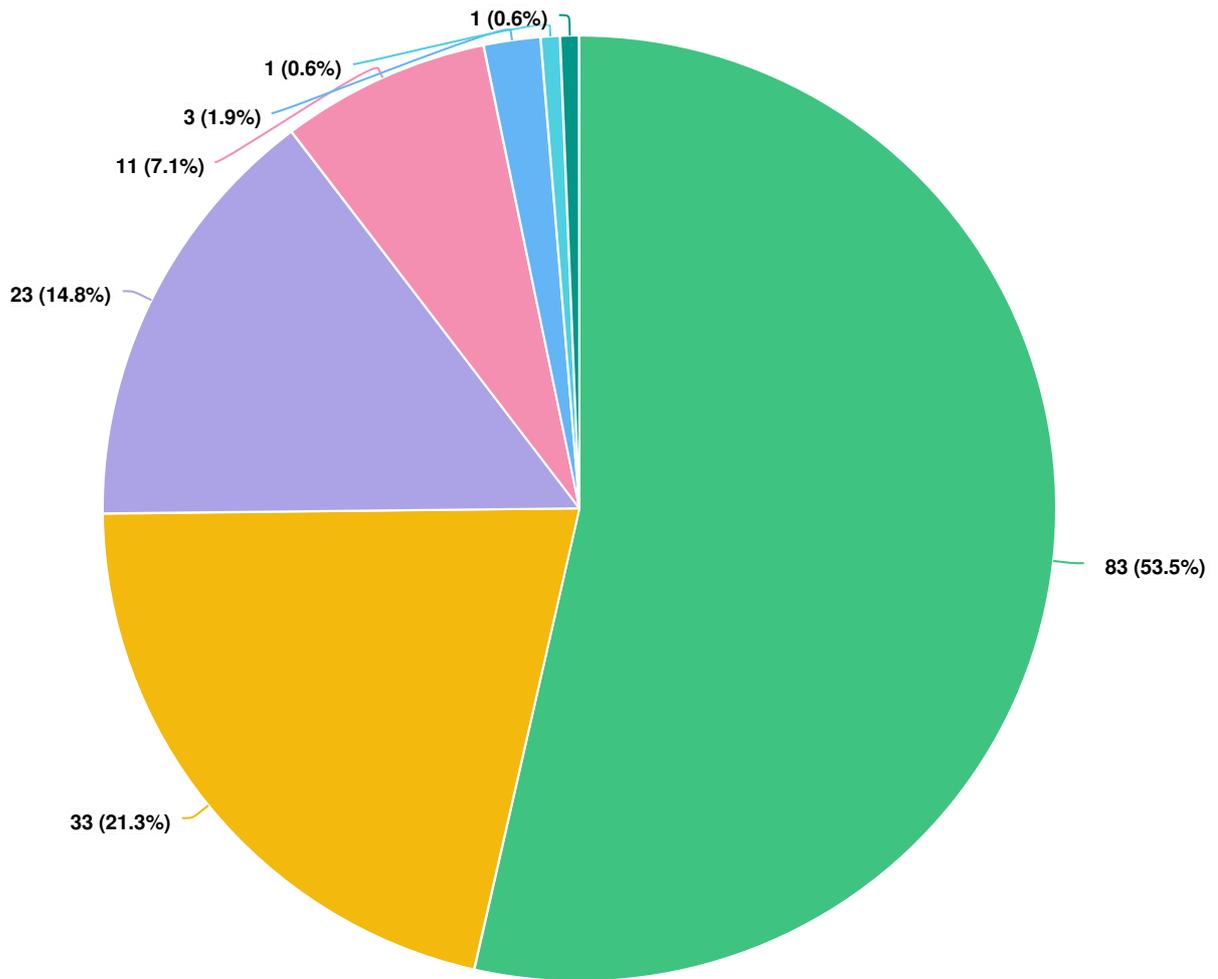


Question options

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Optional question (154 response(s), 2 skipped)
Question type: Radio Button Question

Q23 We need to reduce transit travel times and improve traveler convenience to most destinations, particularly between neighbouring areas of the city.

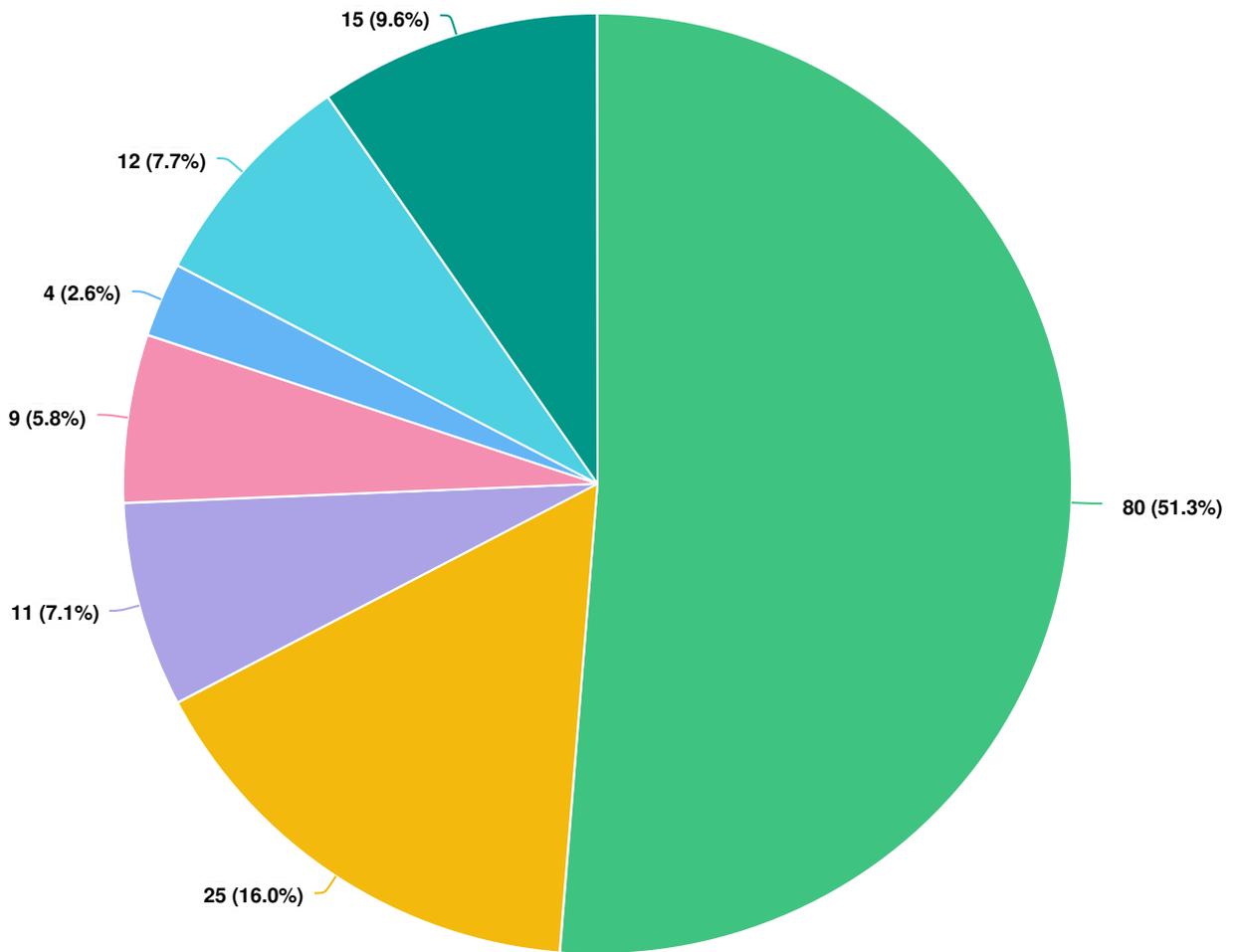


Question options

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Optional question (155 response(s), 1 skipped)
Question type: Radio Button Question

Q24 We need to reduce the percentage of trips made by car.

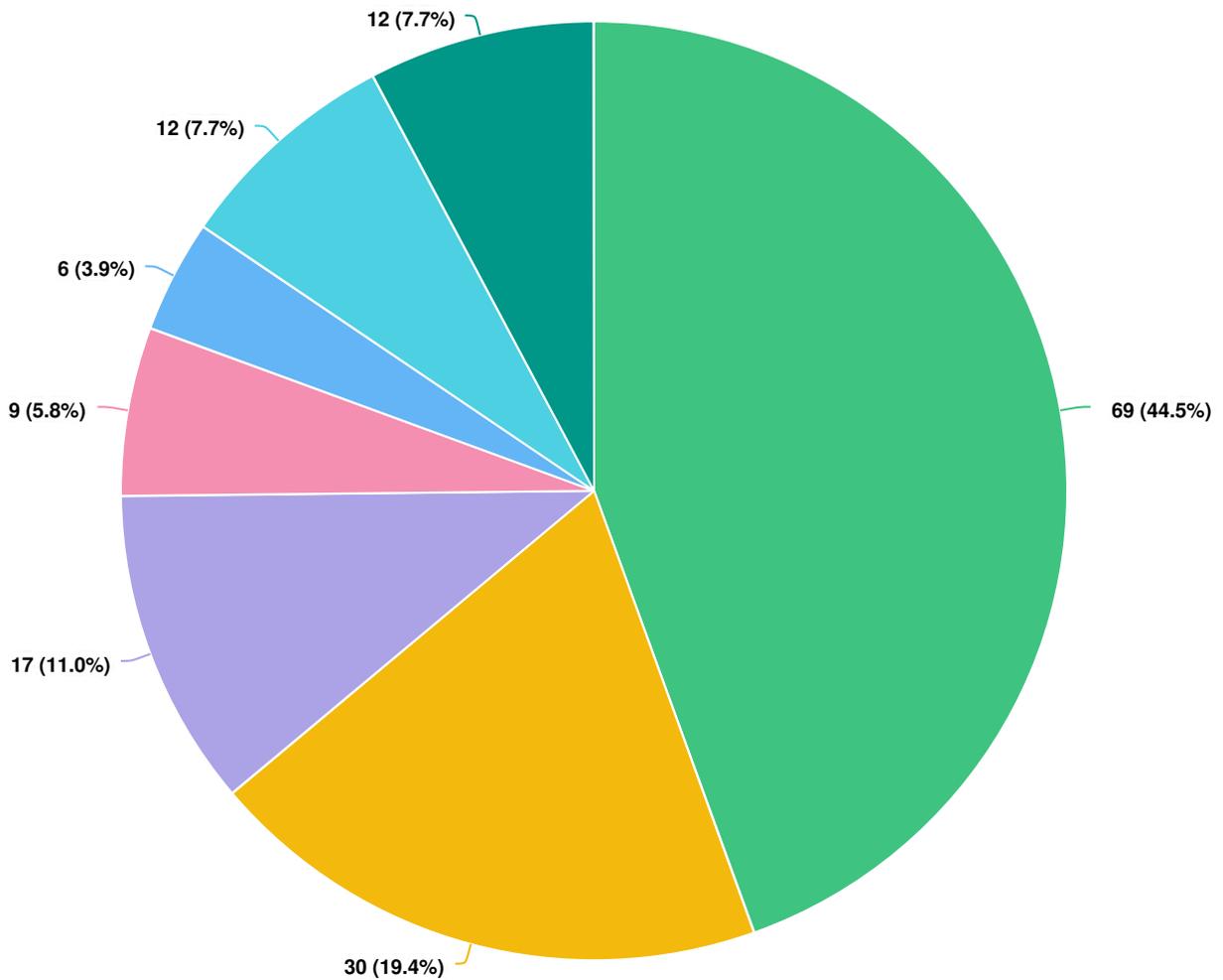


Question options

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Optional question (156 response(s), 0 skipped)
Question type: Radio Button Question

Q25 We need to update the downtown parking strategy to align with the objectives of the TMP to reduce downtown car use.

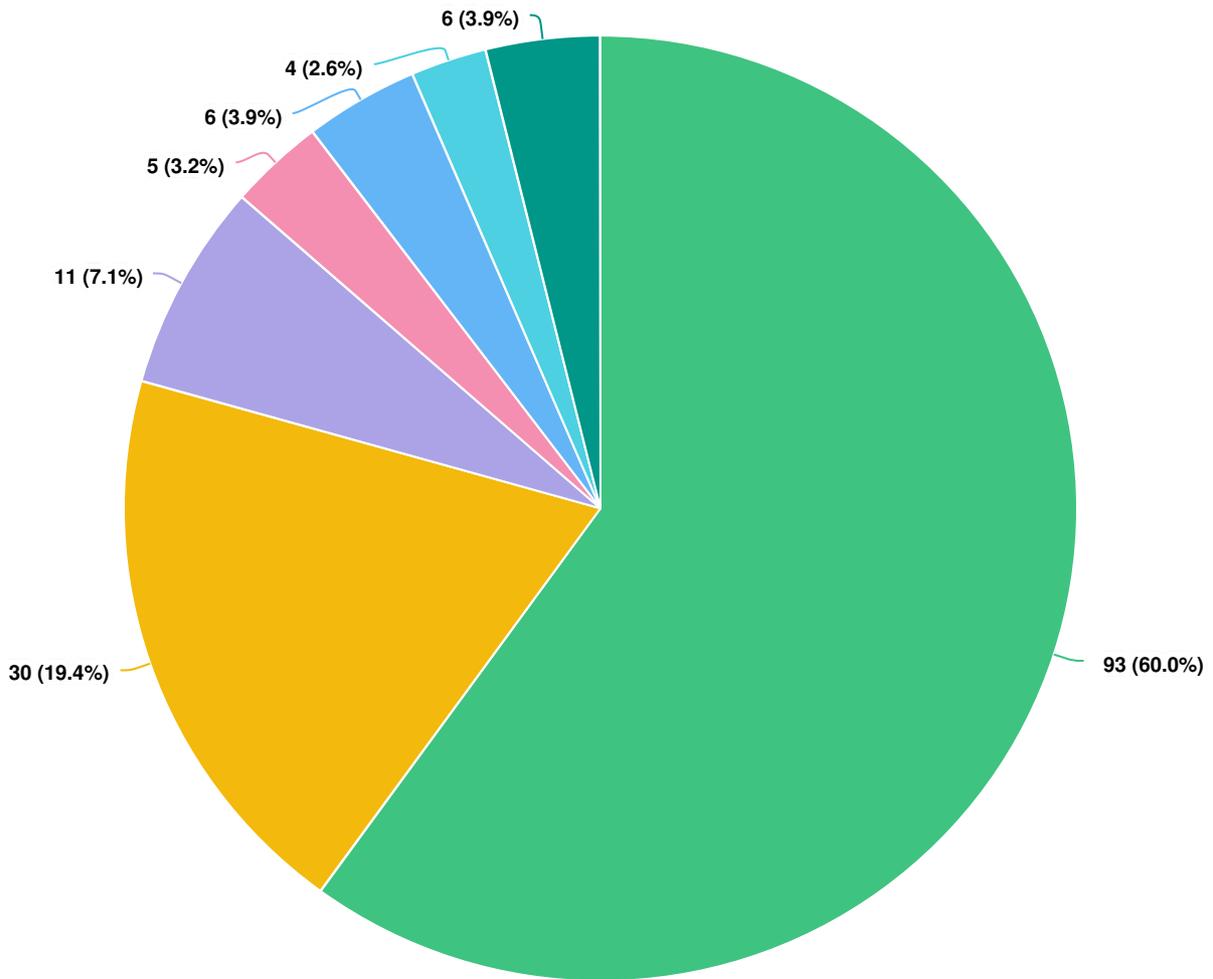


Question options

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Optional question (155 response(s), 1 skipped)
Question type: Radio Button Question

Q26 We need to design our streets to safely serve all modes of transportation, including walking, cycling and transit.

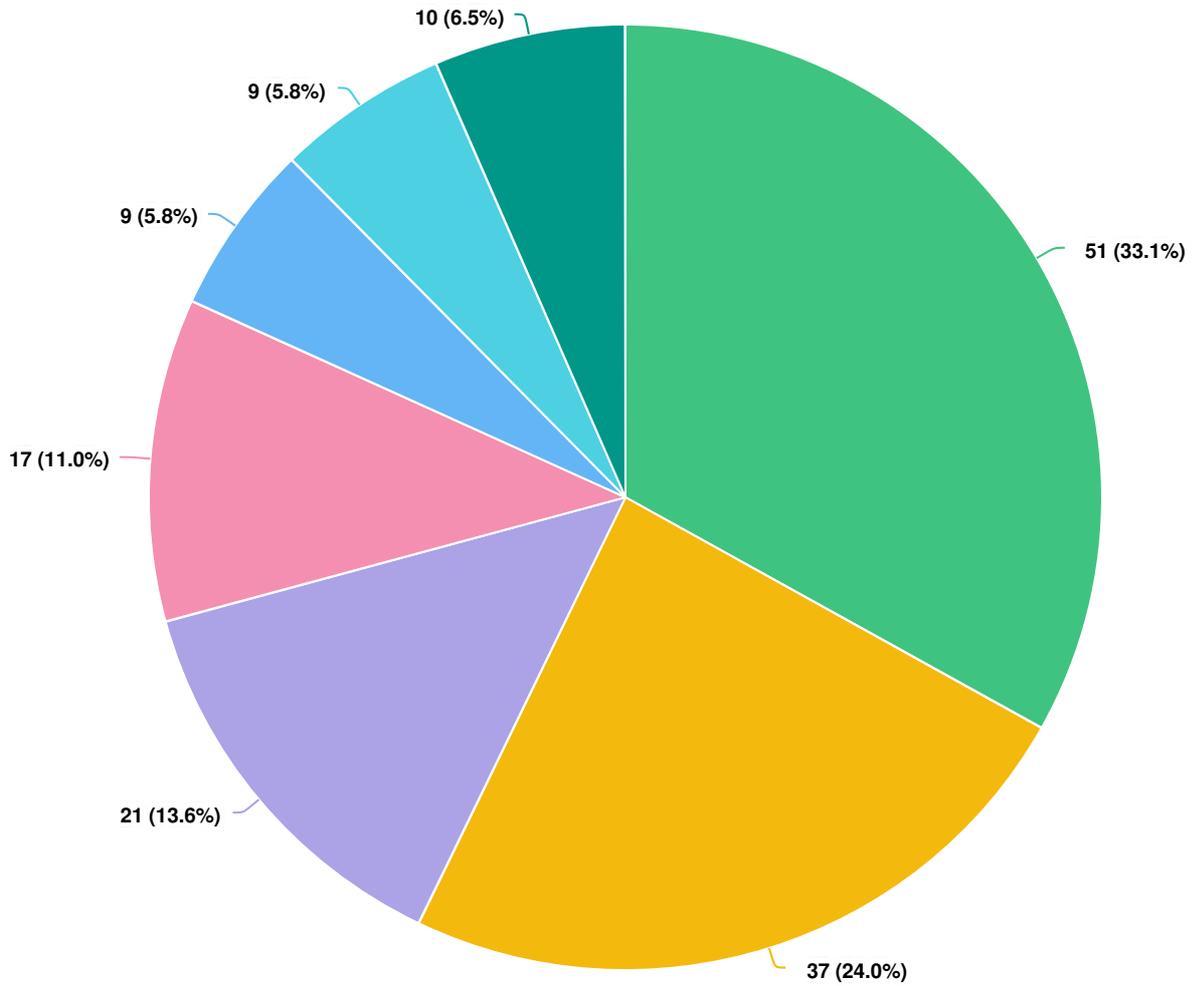


Question options

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Optional question (155 response(s), 1 skipped)
Question type: Radio Button Question

Q27 We need to tap Guelph's unrealized potential for electric vehicles.

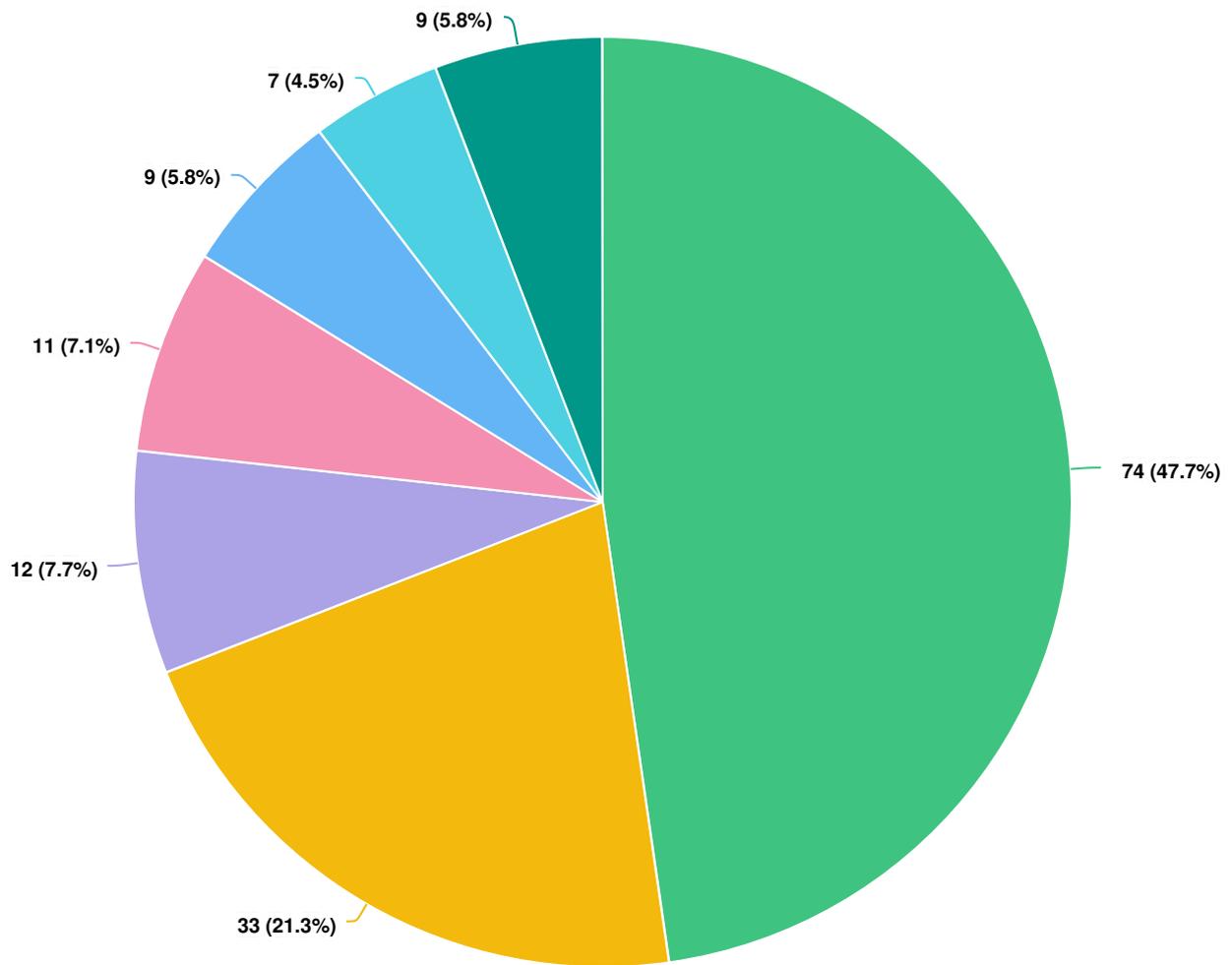


Question options

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Optional question (154 response(s), 2 skipped)
Question type: Radio Button Question

Q28 We need to redesign streets in key growth areas (intensification corridors and mixed-use nodes identified in the Official Plan) to prioritize walking, cycling and transit.

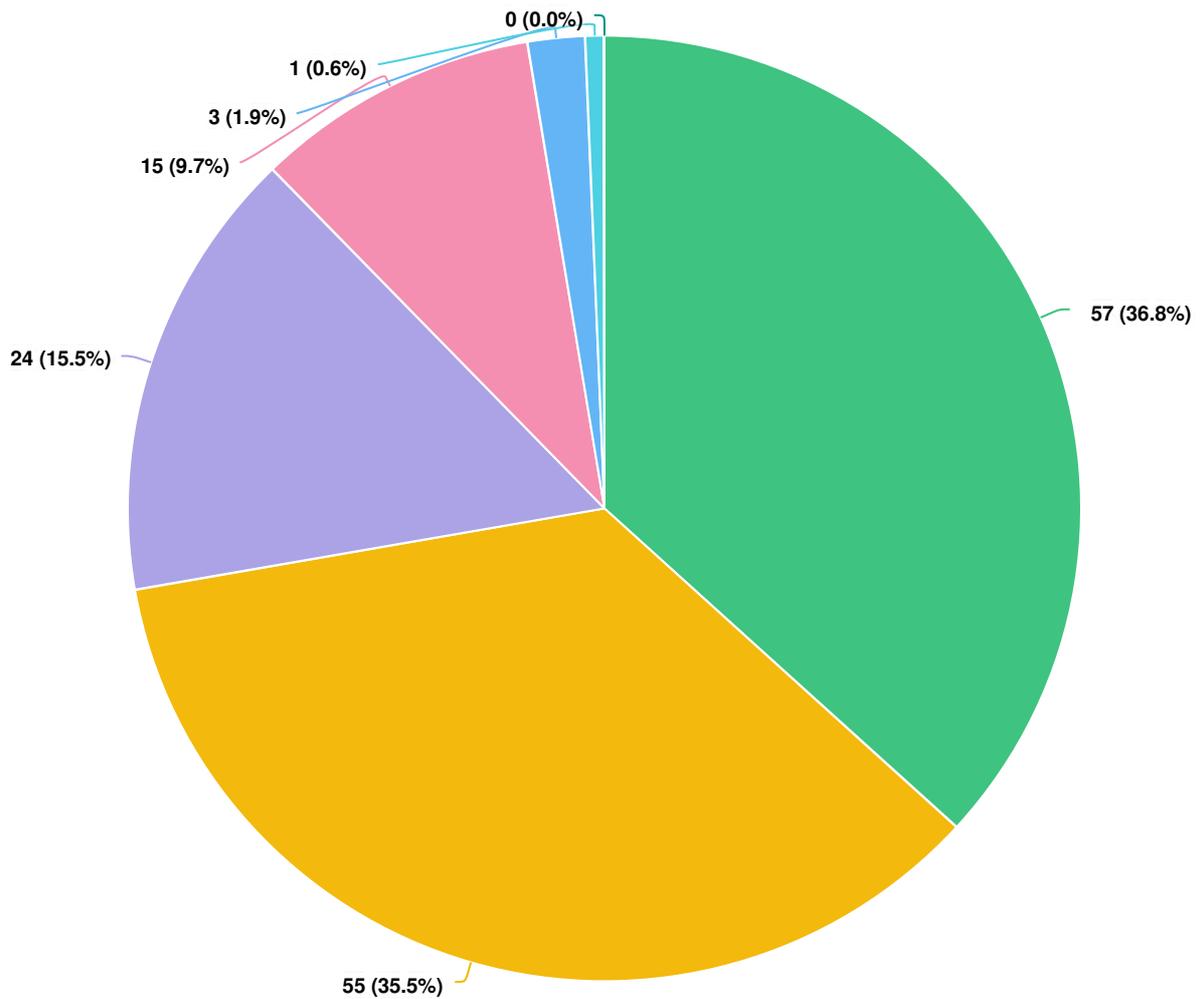


Question options

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Optional question (155 response(s), 1 skipped)
Question type: Radio Button Question

Q29 We need to update our road designs to reflect the unique priorities of different areas (for example: low-density residential neighbourhood, an industrial area or a natural heritage feature).

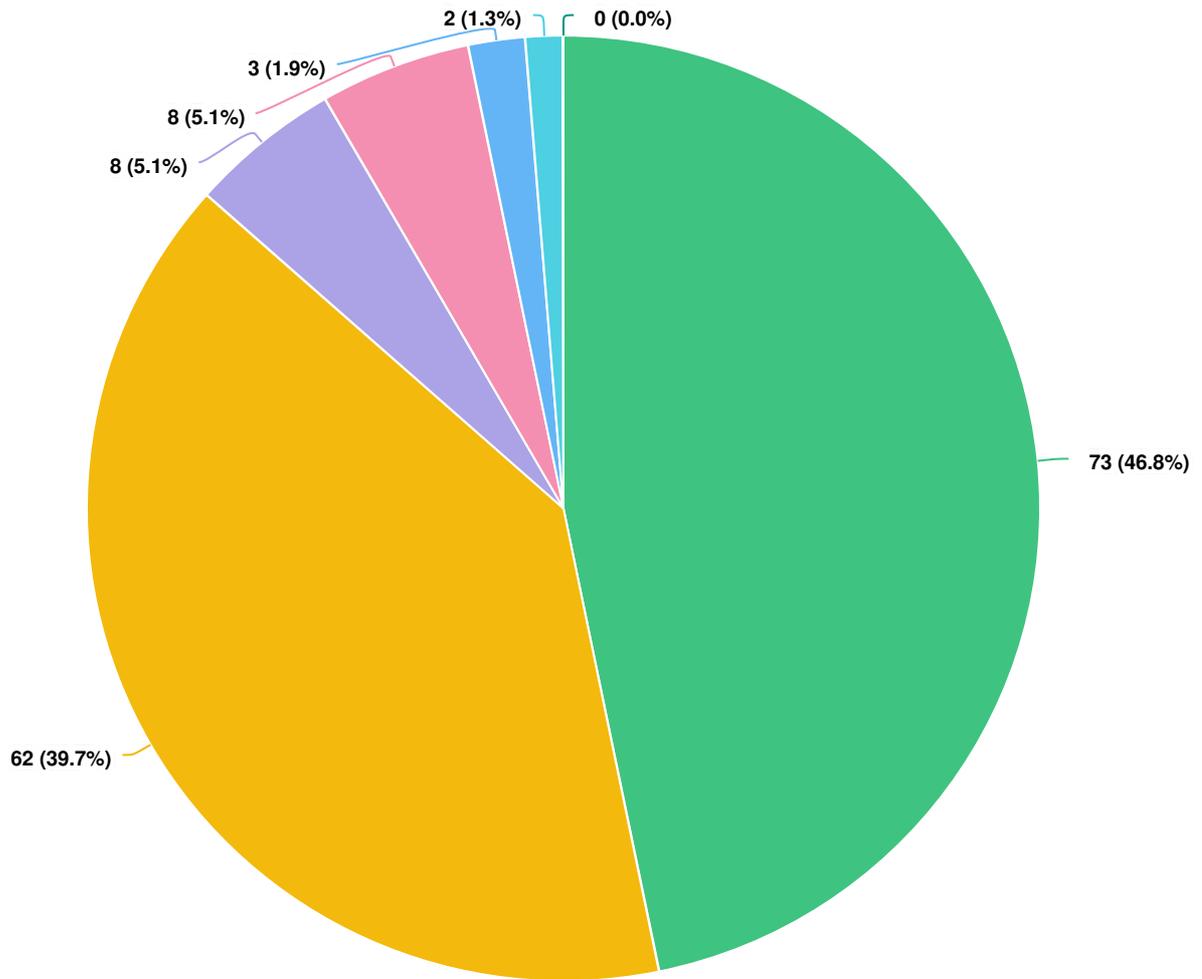


Question options

- Disagree
- Strongly disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Optional question (155 response(s), 1 skipped)
Question type: Radio Button Question

Q30 We need to account for life-cycle costs (upfront capital costs, ongoing maintenance and replacement costs) in financial decisions on transportation projects.

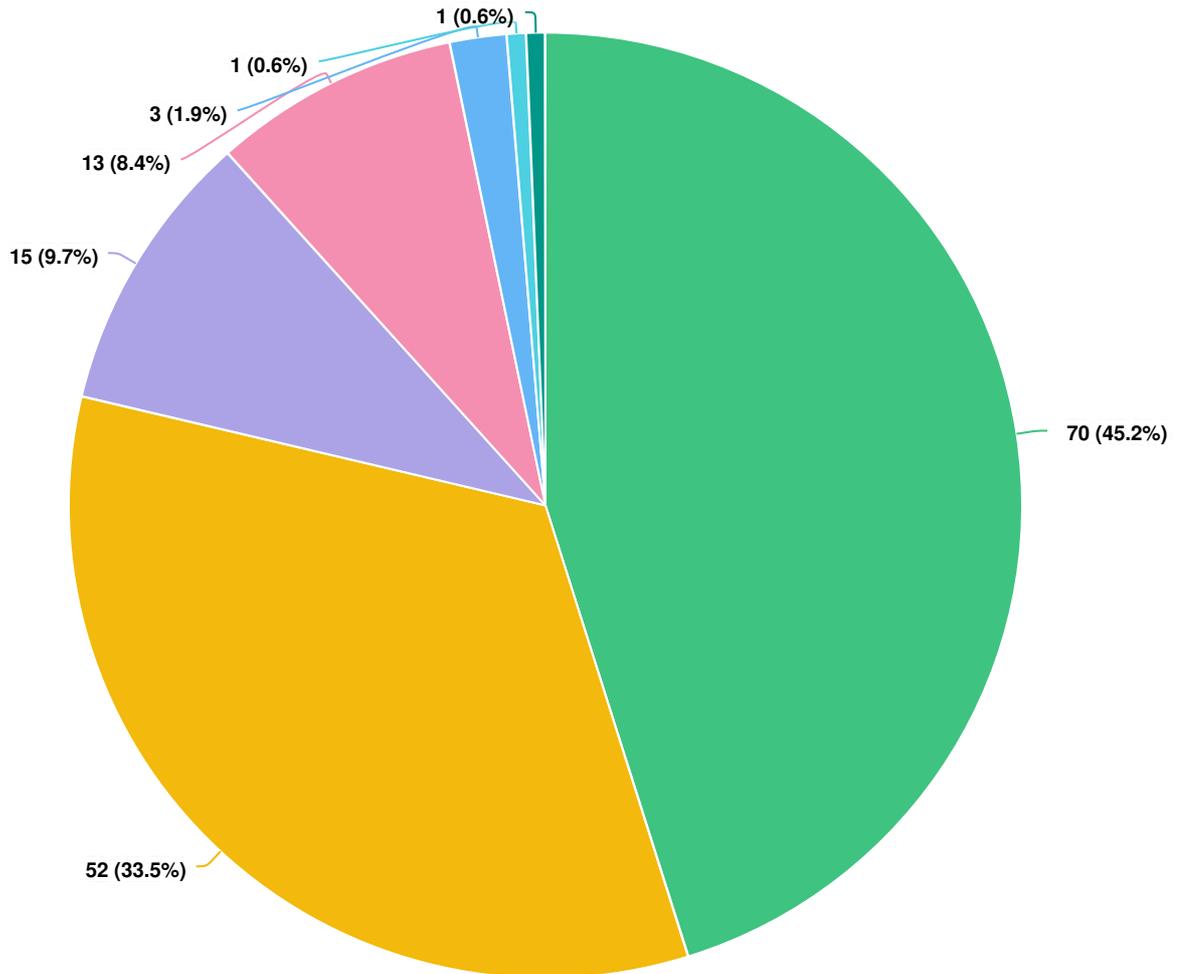


Question options

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Optional question (156 response(s), 0 skipped)
Question type: Radio Button Question

Q31 We need to improve the resiliency of Guelph's transportation system. Resilient systems have diversity (multiple options for travel), redundancy (multiple routes between destinations) and the ability to easily adapt to changing conditions.

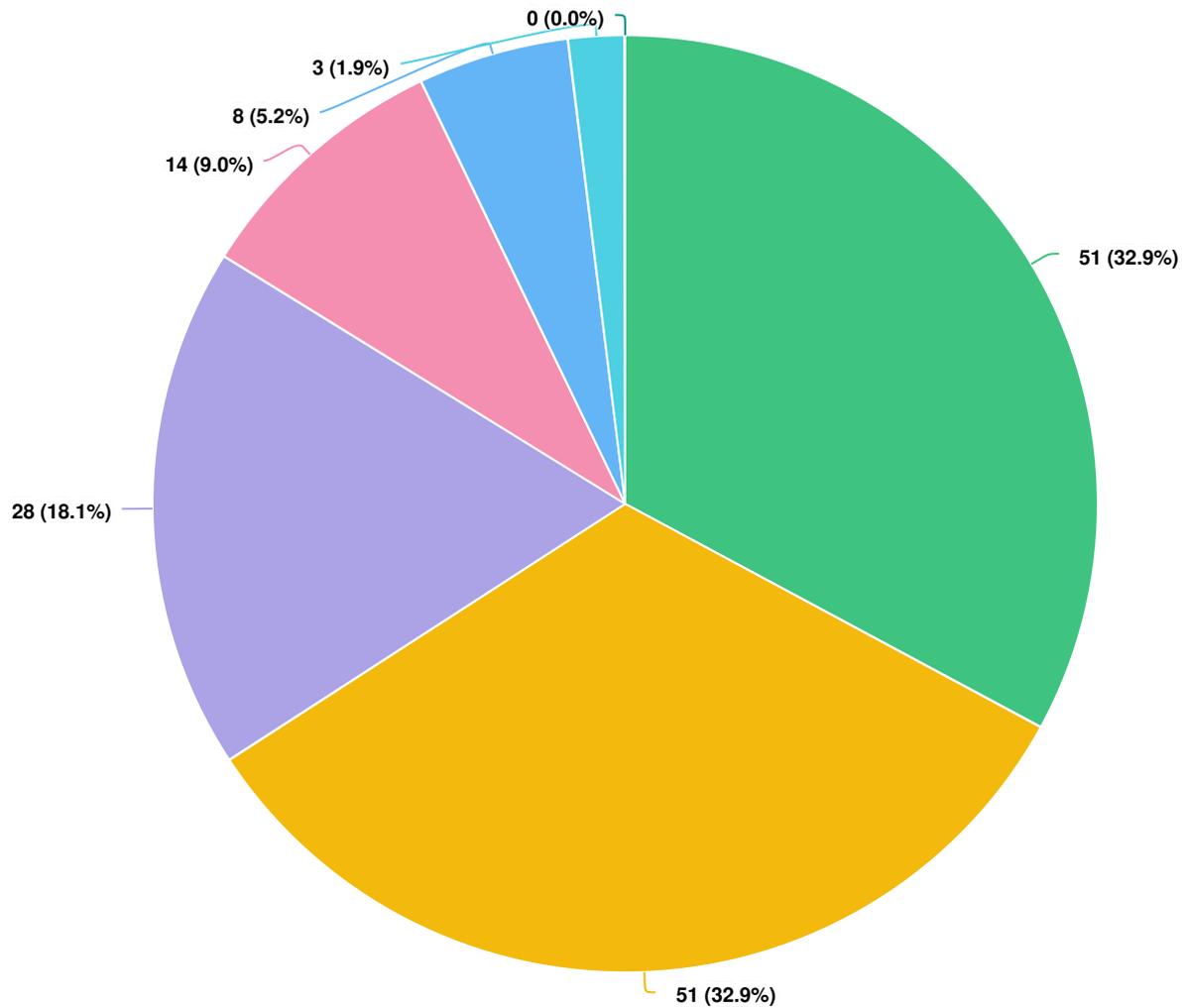


Question options

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Optional question (155 response(s), 1 skipped)
Question type: Radio Button Question

Q32 We need to better prepare for the future of mobility (for example: technology, new forms of travel).



Question options

- Strongly disagree
- Disagree
- Somewhat disagree
- Neither agree nor disagree
- Somewhat agree
- Agree
- Strongly agree

Optional question (155 response(s), 1 skipped)
Question type: Radio Button Question

Q33 | Are there other key issues that we should explore through the Guelph TMP?

Anonymous

11/12/2020 08:37 AM

get better consultants

Anonymous

11/12/2020 09:33 AM

Working with transit to create a frequent transit system with supporting coverage routes should be a top priority.

Anonymous

11/12/2020 10:21 AM

Improving public transit including reducing its negative impact on busy roads such as Gordon Street.

Anonymous

11/12/2020 10:32 AM

Create a TMP that reflects the needs and desires of the Majority of residents, NOT try to change our habits to suit a desired outcome. Guelph is a driver city. I think for many years the Cycling plan and the making Guelph a bike friendly city has not been a priority for the majority of residents. It is the priority of a very small but Loud few who are hard core bike advocates. The city keeps reducing road lanes to add bike lanes. No one rides a bike in the winter. So thousands of drivers are inconvenienced in order to force a bike friendly objective on the residents. There are maybe a hundred hard core cyclists in Guelph. But the hundreds of thousands of us are motorists. You cannot go grocery shopping on a bike. You cannot take your kids to school on bikes. The bike lanes are useless during the winter months, and they Should Not be cleaned during the winter. That is a waste of tax payer money to clean bike lanes in the winter to accommodate only a handful of winter cyclists. Make roads convenient for cars.

Anonymous

11/12/2020 10:43 AM

There will always be cars

Anonymous

11/12/2020 01:28 PM

Plan is too short-sighted (2031?); need to link infrastructure planning with land use planning to 2051 and beyond. How do we move a population of +200,000 people and their jobs by 2051? TMP has narrow terms of reference. What about associated land use matters? e.g., Set maximum parking standards in intensification corridors/mixed use centres (no more than 1 parking space/unit). Implement 2010 Transit Priority Plan recommendations; why are you doing a new plan when you haven't implemented the last one? Who is at fault for not achieving 15% modal split for transit use in the City? Is it time to make transit a fully-funded tax base system (with nominal user fee charge)? Study should look at roadway user fees for all types of vehicles.

Anonymous

11/12/2020 07:47 PM

Parking minimums city wide - while it's great the TMP acknowledges parking downtown as something that drives car usage, it is the same city wide. This is particularly important in intensification corridors/nodes, but parking minimums should be completely removed for the entire city as it is a

regressive policy that drives car usage and makes housing less affordable for all.

Anonymous

11/13/2020 07:01 AM

There are a number of routes through the City where traffic lights double the length of time it takes for vehicles to travel through an area. I imagine this has been done purposefully to slow traffic (which is important for safety) but it also results in vehicles idling for longer (bad for the environment) and adds incentives to drive fast or step on the gas quickly in order to catch a wave of green lights rather than a wave of red lights. It also results in traffic bunching up (less safe) rather than being spread out. The City needs to look at other solutions to manage speeds such as changing street design and using technology to create smart intersections that dynamically manage traffic flow. In addition, there are several intersections that are dangerous for cyclists, pedestrians and drivers because people do not see signs/markings and police do not enforce the unique safety features. Examples include: (a) College and Gordon where vehicles turn right on a red light illegally and are looking for an opening in traffic rather than watching for pedestrians; (b) Wyndham/Eramosa and Woolwich where westbound traffic goes through the intersection from a right-turn-only lane, or attempts to turn left where it is not permitted, and (c) several traffic lights on Gordon where cyclists routinely go through the intersection on a red light (particularly at the pedestrian crossing next to the Speed River.

Anonymous

11/13/2020 12:23 PM

Consider infrastructure design guidelines including use of reduced lane-widths and street hardscaping/landscaping to reduce vehicle speeds in residential neighbourhoods, school zones and downtown areas. Look at reducing speed limits in these zones as well, as this will help to encourage use of active transportation modes (people feel safer where vehicle speeds are lower). Use of physical separations between bike lanes and vehicular traffic lanes has a similar effect. The current TMP vision goals should look at making active transportation and transit more convenient than personal car use. Consider use of disincentives to personal vehicle use within non-arterial roadways - make it less convenient to drive and instead prioritize transit, walking, and cycling through the use of priority traffic signaling and other design methods. The one statement in this survey indicated "Transit service will provide travel times and traveler convenience at levels that are competitive with travel by car" - why not strive to make it more convenient than travel by car? When completing life cycle costing, consider the external subsidies that personal vehicles receive and take this into account. Although not all of these subsidies are under control of municipal government, some, such as minimum parking requirements for new developments are and can have the effect of inducing demand. Likewise for using traffic count data to determine number of lanes and whether to install dedicating cycling infrastructure. High vehicle counts and low bicycle counts may be a symptom of poorly designed road infrastructure.

Anonymous

11/13/2020 03:20 PM

Use of Guelph Junction Railway line for people travel - connect north end of city, riverside park, downtown and Guelph Innovation District. Use of flexible streets that prioritize walking, biking and local car/delivery of goods access to

homes outside of the downtown, for example some small local streets could be impacted by road closures for train service and their local use should be protected. In addition some greenfield areas of the City, e.g. Guelph Innovation District and Clair Maltby should prioritize non-vehicle modes through street design (built in traffic calming upfront, woonerf, new kind of cul-de-sac/dead end that allows limited through traffic).

Anonymous

11/14/2020 04:58 PM

Attention to repairing small aspects like curb cuts to enhance connectivity for cyclists, and individuals using wheelchair/stroller/walkers. Some opportunities to lessen intersection concerns are 'jaywalking' zones where curb cuts and sightlines encourage mid-street crossing where people are already making 'desire line' choices across the street network.

Anonymous

11/15/2020 10:31 AM

Realize that with new residential properties bring more residents. Not everyone uses bikes and transit so the city MUST include cars in its plank g despite its agenda to the contrary.

Anonymous

11/15/2020 12:46 PM

The list above looks great.

Anonymous

11/15/2020 01:39 PM

Travel to and from Hanlon Business Park including the new home of the Co-Operators.

Anonymous

11/16/2020 12:14 PM

Impact of above on budget and property taxes of home owners

Anonymous

11/16/2020 01:22 PM

Moving towards more of a Grid system for Buses. From Speedvale and Stevenson I should not have to take the bus to the downtown hub to go across to Speedvale and Imperial.

Anonymous

11/16/2020 02:06 PM

Too many traffic lights, too close together all over the city. Few drivers and cyclists understand how to properly use the bike lanes on main roads.

Anonymous

11/16/2020 02:31 PM

Improved methods to keep pedestrians and cyclists safe from careless drivers, especially at key intersections and after dark.

Anonymous

11/16/2020 07:28 PM

Accessibility for health services related locations of bus stops and side walks

Anonymous

11/16/2020 09:55 PM

1. Stop light synchronization technology needs to be used to avoid easily avoided carbon emissions and wear and tear on cars (eg cars travelling west on Wellington, light turns green for them at Gordon and they accelerate, but light at Dublin turns red before they reach Dublin. This example of minor intersections not being synchronized with nearby major intersections is common in the City). 2. Bike lane safety needs to be taken seriously by the City and these lanes need to be designed and maintained properly so that cycling is as safe as driving. Bike lanes that disappear before they reach an intersection and then reappear some distance after the intersection are a

clear indication that cycling safety is unimportant to the City. Bike lanes should reach the intersection and intersections should be designed properly for bike lanes. Eg Speedvale and Victoria is poorly designed from this perspective and unsafe as a result. On the maintenance side, bike lane obstructions like road sand buildup, leaves, debris at construction entrances, parked cars, etc., are dangerous and should not be tolerated but they don't appear to be important to the City. Given narrower tires and greater vulnerability of cyclists, bike lanes should have better cleaning than the other lanes

Anonymous

11/17/2020 10:02 AM

Guelph claims to be a "Green" city yet the only way they deal with traffic issues is by installing traffic signals and four-way stops. Neither of these options are good for the environment and in most cases the four-way stops do not even meet warrants for them to be installed. They have been installed on a political basis to appease the residents to slow down traffic (maybe). There is no vision by anyone to create a better way to get around the city. Travel times from the south to the north are upwards of 20 minutes. Completely unacceptable. Also, the Hanlon needs to be converted to a controlled access highway as soon as possible. It always should have been and the City Council of the past that did not make it so did a disservice to the community.

Anonymous

11/17/2020 10:30 AM

Save money, we can't afford a socialist vision. Most people drive and that isn't going to change no matter how much you spend.

Anonymous

11/17/2020 12:49 PM

Transit connections to other cities

Anonymous

11/20/2020 04:58 AM

extending the hours of service, so shift workers can reach their homes and work places on time for shifts. connecting green spaces, for wildlife as well as human use trail networks throughout the city bike routes that are direct and safe traffic calming for neighbourhoods

Anonymous

11/20/2020 07:18 AM

No

Anonymous

11/20/2020 07:23 AM

We need better sidewalks and bike lanes. There's no smooth ground to ride a skateboard or longboard on. I imagine a mobility scooter would suffer just as much.

Anonymous

11/20/2020 08:04 AM

Setbacks for future high density developments: maximize setbacks to provide space for people to encourage walking. The city has been allowing setback reductions without thinking about the impact of buildings so close to the street. It is shortsighted to reduce the space in front that allows people to walk without being right on the busy road.

Anonymous

11/20/2020 08:10 AM

Development of a walking downtown as a tourist destination Protected bike lanes along major corridors

Anonymous

11/20/2020 11:14 AM

Stop making transportation by Car harder. Upgrade over-used roads (Gordon Street) before approving more high-density development

Anonymous

11/21/2020 07:38 AM

City transit. Every year or two the cost goes up and the service goes down. 10 years ago the transit system ran on a 20 minute schedule from 7am-7pm. The cost was 2.50. The schedule was decreased to peak hours only, and the cost was increased to 2.75. That was then decreased to peak hours on specific routes, and the cost was increased to 3.00. I remember a time when it took all of 20 minutes, 30 minutes in bad traffic or weather to get to the Y.M.C.A. The last time I was there on a city bus it took just over an hour from downtown. I've since become a car owner and driver. I will under few to no circumstances touch city transit if my car is readily available. You couldn't pay me to take Guelph transit. Nope, not now, not ever again. To many transfer points that don't connect in a reasonable time frame. Too many service decreases for the general population of the Guelph. You know the little people that struggle to live here day in and day out every season, not just university season. The cost of my vehicle is by far cheaper in the time it saves me. The last time Guelph transit was worth taking and saved me both time and money was ten years ago. So glad to no longer travel in the most inconvenient way, dangerous way out there. Seriously too many bus drivers try to make the orange light only to send your small children flying out of seats at a sudden stop from 60+km an hour in 50 zones. Now if you could have your drivers stop tailgating me and my children that would be amazing as well.

Anonymous

11/21/2020 11:05 AM

Encouraging cycling and walking; improving trail connections for cycling; lowering speed limits; improving intersection design for bike and pedestrian safety

Anonymous

11/22/2020 01:47 PM

Utilizing far more Roundabouts throughout the city should be considered. Many existing intersections should be roundabouts. Roundabouts will help address many of the current transportation problems. Roundabouts will help achieve many of the future goals, including safety, safer pedestrian crossing, affordability, less pollution, less road rage, traffic calming, etc. In all new urban developments/expansion in Guelph, roundabouts should be the default option, NOT traffic lights.

Anonymous

11/22/2020 06:24 PM

Non Synchronization of traffic lights and too many road 'diets' on arterial roads causes Heavey traffic congestion. Dangerous for cars, and cyclists and schedule delays for transit. Also very bad for emmision pollution.

Anonymous

11/23/2020 07:36 PM

Think practical. Not utopian. Don't invest millions into bike infrastructure that only a dozen people use 5 months a year.

Anonymous

11/24/2020 06:01 AM

Availability of electric car charging station

PK

11/24/2020 06:51 AM

Don't forget about people with disabilities (Immunocompromised people) or elders who may not be able to cycle walk or ride public transportation now or

in the future. And lastly electric cars and busses are not as “green” as people think. Do some research.

Anonymous

11/24/2020 10:54 AM

The effect of students on transportation and the length of time it takes to cross down on public transit.

jaydenn

11/24/2020 03:12 PM

Just build some roundabouts already. like seriously. build them now.

Anonymous

11/24/2020 11:10 PM

Fixing broken roads. Removing bike lanes.

Anonymous

11/25/2020 06:38 PM

extend edinburgh rd to clair

RodrigoGoller

11/25/2020 09:43 PM

One concern I think needs to be addressed is sharing roads between bicycles and cars. I strongly support divided bicycle lanes on all main avenues in Guelph (Speedvale, Stone Rd, Edinborough, etc.). I believe this is key to increase bicycle ridership across the City.

Anonymous

11/26/2020 08:13 AM

Safer cycling options

Anonymous

11/26/2020 09:59 AM

It seems that a push for greater use of electric vehicles while at the same time de-prioritizing the use of cars in the city (particularly down town) is somewhat at odds. A future where we all drive electric cars in a city where the streets are purposefully designed to reduce car use seems short-sighted.

Anonymous

11/26/2020 10:26 AM

considerations for autonomous vehicles as part of transportation mix

Anonymous

11/26/2020 11:20 AM

Not closing all North/South or East/West roads at the same time. Separate cycle infrastructure from car roads don't remove car lanes.

Anonymous

11/26/2020 11:21 AM

Explore universal design to benefit everyone

Anonymous

11/26/2020 12:38 PM

Possible LRT integration with Waterloo and Cambridge and Car-free Downtown to support and promote Small businesses, restaurants and Health and Wellness through alternative modes of transport

Anonymous

11/26/2020 12:42 PM

My #1 issue is reducing car trips. I am extremely concerned about climate change and reducing GHG emissions. I wish I could commute by bike, transit, or on foot, but 1) I'm incredibly pressed for time daily and have two children to drop off in two different places, across the city, before going to work - then back again at the end of the day 2) even once my children attend the local school and we could conceivably commute by bike together, I don't feel safe on busy streets with children in tow.

Anonymous

11/26/2020 02:59 PM

reliability. our bus system is a mess. and safety...waiting alone at the bus terminal at night is like taking your life in your hands.

Anonymous

11/26/2020 04:35 PM

Smaller buses or taxi style service in the suburbs

Anonymous

11/26/2020 09:50 PM

I don't know where this relates but the leaves in the bike lanes in the week leading up to yard waste collection is a hazard. Apparently, it's illegal to put them there early but you wouldn't know by looking.

Anonymous

11/27/2020 03:22 PM

GO bus connection to transport infrastructure in western GTA e.g. Pearson airport, Mississauga transitway

cblaser

11/28/2020 11:15 AM

How well are trails connected and how some neighbourhoods have fewer trails and trail connections than others. Connect walkers/cyclists on both sides of the Hanlon without having to use road crossings, which are slow, but also seem dangerous plus full of pollution from car exhaust.

Meckling

11/28/2020 01:58 PM

Replace as many "lights" with roundabouts as possible. Decreases use of electricity and perform well when weather and other situations limit light utility. Overall maintenance costs are substantially less. Consider ways to make mass transit free or very low cost, so that the desire to travel by car is more limited. Personally I would travel exclusively by bus, taxi, train, if it were easier, faster and less expensive. Restricting parking etc in downtown is only feasible and worthwhile if local downtown businesses have longer hours of operation. The very limited ability to "Shop downtown" makes it difficult for people who "work during the day" to use our local businesses.

Anonymous

11/29/2020 09:44 AM

active transportation connections are key: if it is dangerous to cross the road on a bike the whole bike trip will be cancelled. It MUST be friendly for children to use. Thank you.

Anonymous

11/29/2020 10:51 AM

De-prioritizing car traffic at ALL LEVELS. Designing roads for people first, modes of transportation second, cars dead last, nuts to cars!

Anonymous

11/29/2020 02:53 PM

Consider moving bicycles off roads onto divided shared sidewalks. Eg.- Hilton Head South Carolina USA.

Anonymous

11/29/2020 04:27 PM

Prioritizing new roads to be safe and accessible for active transport

Anonymous

11/30/2020 05:26 AM

It is nice to imagine a world where everyone walks or cycles but it isn't reality - especially in Canada in February. We need to stop designing roads for imaginary bicycles. The reality is that people want to drive efficiently across our city and changing the number of lanes or playing with "shared roads" is just preventing everyday traffic from flowing. Please just make the city work for the majority - people who drive. This is reality today and it needs to work.

Anonymous

Designing a city, top-to-bottom, that doesn't incentivize personal automobile

11/30/2020 06:19 AM

use and provides affordable, convenient, and safe alternatives.

Anonymous

11/30/2020 09:13 AM

Connecting all the trails to avoid riding on roads without bike lanes.

Anonymous

11/30/2020 09:17 AM

Recognizing Guelph as a hub for cycle-tourism in the province and creating safe, well marked, continuous trails through the city connecting to the G2G trail and other popular cycling routes.

Anonymous

11/30/2020 09:28 AM

Reduce time on transfer trips. Add more routes to cover non-existing routes on the city. Add early trips for people going early to work. Encourage drivers to meet expecting times on every stop. Avoid canceling bus routes/times.

Anonymous

11/30/2020 09:32 AM

Funding. People who need these services should pay for them. No more tax increases to accommodate everyones wants.

CTrain232

11/30/2020 10:24 AM

Cross departmental cooperation (e.g. snow clearing that prioritizes bus routes, bus stops, sidewalks to bus stops). Snow clear bike lanes with the same priority as car lanes - on streets with bike lanes the car lanes are plowed while the bike lanes are not plowed. Cost of parking (car parking, bike parking, transit (no parking costs). Supportive zoning bylaws (e.g. having entrances of stores and city buildings to the sidewalk vs to the parking lot.

Anonymous

11/30/2020 10:51 AM

-add bike lanes for the remainder of Victoria St (I believe they stop at Victoria & York) -add bike lines on Edinburgh St (from Kortright to Gordon) -change looped buses to single buses going in either direction (e.g., bus #5)

Anonymous

11/30/2020 03:31 PM

Development of multiple road separated, paved, boundary to boundary, N/S, E/W, winter maintained, personal transportation corridors. For use by cyclists, E-cyclists E-boarders, Segways, and other yet-to-be-seen personal modes of E-transport. Centre N/S along Gordon from Maltby Rd to Conservation Rd. South end from Watson to 35 through the new Maltby-Clair development.

TunguskaTwister

11/30/2020 11:58 PM

I think we need to plan for the rise of electric vehicles and self driving cars. For example, will autonomous vehicles for rent impact mass transit, in terms of ridership?

Anonymous

12/01/2020 10:34 AM

cost to taxpayers of all your green dreams !!!

Peternoble96

12/02/2020 07:00 AM

Need to emphasize the item; providing a path for improved transit. Because it will be a stumbling block most likely. Also, need to separate transit from walking and cycling. In the winter walking and cycling are not necessarily a very good or comfortable mode of conveyance and are sometimes unsafe due to weather conditions and resulting road and pathway conditions. An over emphasis on cycling and walking as opposed to transit is a relatively cheap solution that may work well for some individuals but unlikely the majority.

Anonymous

12/02/2020 01:56 PM

I understand that this will be a 10-year plan and that, presumably, it will include specific objectives. It seems to me that resilience is absolutely key to this since there could be hugely transformational disruptions to the transportation system in that time frame (or perhaps none.) Some of these disruptions may obviate objectives defined in the original plan. It would be ludicrous to continue to work on achieving objectives that are out of date, but if the plan is too rigid, and given how plans are used to maintain accountability, that's what would happen. Consequently, it is imperative that the plan be defined in such a way that it undergoes periodic reviews over its 10-year lifespan. These reviews should allow for the the confirmation, modification or abandonment of objectives as is appropriate to the context. I can tell you with quite some certainty what I'm going to try to achieve in the next hour. That certainty decreases the further out I look. Who knows what I will try to achieve a week from now, or a month. I've always viewed planning as a cone. We sit at the narrow vertex of the cone right now, and the future opens up more widely (but not totally) in front of us.

Anonymous

12/03/2020 11:06 AM

additional focus on existing road intersections and upgrades that are required to accommodate new growth

Anonymous

12/04/2020 09:31 AM

bike lanes and walking trails

Anonymous

12/04/2020 09:49 AM

Communications, signage, messaging. Our 'car culture' has decided to be privileged and to assert its privilege over cyclists and pedestrians who also use the infrastructure. Waiting a few seconds for pedestrians to cross the street; slowing down and waiting to safely pass cyclists; recognizing the value of individual lives of all users of our transportation infrastructure. We need road signs to remind motor drivers of their obligations to operate safely and of their responsibilities as citizens of our community. Improve the communication in every way possible. Make it a serious social offence and a public display of social reprimand to operate dangerously, recklessly, or carelessly.

Anonymous

12/04/2020 10:49 AM

Neighbourhood traffic safety. How can local neighbourhoods have better control over the traffic flowing though and around their homes.

Anonymous

12/04/2020 11:20 AM

Alignment of mobility and access The provision of mobility (not just infrastructure) as a community service ... bike share and micromobility, on-demand transit, time-based trip planning Travel demand management in general and in response to post-Covid approaches to working from home and remotely

Anonymous

12/04/2020 12:59 PM

Frequency in transit routes - 10 minute service is needed along main corridors. Frequency equals freedom!! Stop waste of time at downtown hub and university hub - route 99 N and S should not stop there.

Anonymous

12/04/2020 02:06 PM

Separated cycling infrastructure is a must. We cannot continue believing that cyclists and motorists can coexist - they cannot. My own brother was killed

while cycling and I myself had a very close call this past summer while riding in a bicycle lane with bright clothing and flashing lights; I am more aware than most of the futility of trying to have cars and bikes sharing the same space. It simply won't work, and it becomes impossible in the winters due to poor snow clearing on key arterial routes. Until the City actually addresses cycling infrastructure that is demonstrably safe, you simply will not have significant buy-in to cycling as an active transportation modality. On the implementation of a car-free downtown, this is a mistake in my opinion. Guelph's downtown is only vibrant and healthy if people can shop there. I am not a car owner, but a car-free downtown will put negative strain on downtown businesses, leading to a downtown that consists solely of bars and restaurants. This would be a tragedy.

Anonymous

12/04/2020 02:21 PM

Improved protected bike lanes and improved bike lane connectivity

Anonymous

12/04/2020 02:43 PM

Instead of a big bus that has just a couple of people most time, considering using a smaller vehicles during the time & for route that usually do not have many people using it.

TMBG

12/04/2020 09:59 PM

synchronizing lights on some arterial roads car-free downtown in the summer months

LJM

12/06/2020 08:15 AM

Connection links between the U of G and the rest of Guelph. Expand the number of dedicated bike lanes throughout the city (Edinburgh Rd, Stone Rd, Gordon St)

Anonymous

12/07/2020 05:38 AM

Trail connections to the west end... we are TOTALLY cut off from the rest of the city unless you own a car.

Anonymous

12/07/2020 08:09 AM

- Enhancing opportunities for Active School Travel for children - Overpasses and underpasses for AT - we do these for cars all the time at 5 times the cost, we should be making major investments in a continuous AT network.

Optional question (84 response(s), 72 skipped)

Question type: Essay Question

Q34 | Please provide any comments you may have on the options (alternative solutions):

Anonymous

11/12/2020 09:33 AM

I lean on Alternative 2 and a bit on 3 as we need to work to have less cars on the road. It has also been proven making roads wider for cars does nothing to improve transportation.

Anonymous

11/12/2020 10:21 AM

Alternative 4 would be my preference.

Anonymous

Widen streets for cars not bikes. Bikes do not belong on the road. In other

11/12/2020 10:32 AM

municipalities the bike lanes are elevated and found on the boulevard. This is a better option.

Anonymous

Plan for future cars

11/12/2020 10:43 AM

Anonymous

Alternative 3 "Sustainability and resiliency focus" will be a good start. Large-scale changes will be out of reach financially; There will not be enough "political will" for Alternative 4 at this time, but I feel it's time for #3 now.

11/12/2020 11:32 AM

Anonymous

Does a 4 lane road mean 6 lanes at intersections? the arterial/collector road in the south end is discontinuance and causes increased traffic congestion on certain corridors (Gordon St S). Does a 4 lane street corridor mean 6 lanes of pavement, i.e., 2 bike lanes, a 5th centre turning lane, and 4 vehicular traffic travel lanes? Unsure how you can make this a pedestrian friendly crossing street (another type of barrier introduced to the urban fabric) Theory of simplistic street alternatives does not mesh well with built in physical/land use circumstances in the City e.g., 2 lane road cross-section on Gordon through the University campus. Nebulous solutions are too open ended, i.e., congestion and trend need is not a good basis for future road widenings as we have seen in the past (induced traffic demand quickly uses up additional capacity in new 'improved' road corridors).

11/12/2020 01:28 PM

Anonymous

The most important change for the future would be to provide safe and connected cycling options. Currently there are no physical separation for bike lanes in Guelph. Start slowly, move both road cycling lanes to one side of the street (as done in Montreal or Toronto) to provide a greater degree of physical and psychological protection. It also makes the cycling lanes cheaper to maintain (1 barrier needed instead of 2).

11/12/2020 02:31 PM

Anonymous

Option 1 - Completely unacceptable Option 4 - Also unacceptable - it completely ignores induced demand. If roads are congested, every effort should be made to provide alternative modes of transportation, instead of accommodating additional car traffic. I do not support any plan that increases car infrastructure in existing areas of the city. Option 2/3 - Both are acceptable, but the additional emphasis on a AAA cycling network in option 3 is a bonus. No road widening for cars is excellent. I also do not support any road widening near downtown to support transit, but small increases for bike lanes is ok. Gordon between Wellington and College should not be widened either. Outside of downtown a 4 lane network 2 for cars, plus 2 for transit makes sense. Improving transit is essential, but should not be at the expense of our cozy, narrow streets, of which the city has too few.

11/12/2020 07:47 PM

Anonymous

I prefer alternative 4

11/13/2020 07:01 AM

Anonymous

Pursue Alternative One with understanding that improvements will be made as needed. Other alternatives are extreme for basic remedies paid for by taxpayers.

11/13/2020 09:55 AM

Anonymous

11/13/2020 11:08 AM

Prioritize active transportation, slow down automotive transportation

Anonymous

11/13/2020 12:23 PM

Alternative 3 is the only reasonable option. Alternative 4 should not be pursued as using traffic congestion targets as justification for roadway lane expansions is a trap that only leads to induced demand (just look at highway 401). Alternative 1 is inappropriate for a growing city and fails to address the climate crisis. Alternative 2 does not go far enough to ensure active transportation and transit become palatable alternatives to sitting in a car.

Anonymous

11/14/2020 04:58 PM

sometimes car infrastructure is needed to communicate priority of use and keep cars out of slower roads, however fresh pavement will encourage cyclists too. so for every car project, a parallel street with connected cycling paths will help this balance and support all.

Anonymous

11/15/2020 10:31 AM

None of the above. Why do none of these account for increased vehicular traffic. Already too much money has been spent on bike lanes that receive minimal use less than 6 months a year and no use the other 6. As for walking there are sidewalks and trails. Again increasing population brings cars. The city may not like it but it is the reality.

Anonymous

11/15/2020 12:46 PM

Alternative 3 is my preference. I think it's the most balanced of approaches. Status quo (option 1) does not work, and option 4 seems very aggressive. My preference (Options 2 and 3) is to eliminate all street widenings, and only widening if needed to improve conditions for walking, cycling or transit users/subject to environmental policies. We have more than enough pavement devoted to single occupant automobile trips already.

Anonymous

11/15/2020 01:39 PM

I would like to understand the safety implications of each alternative.

Anonymous

11/16/2020 09:21 AM

Alternative three

Anonymous

11/16/2020 10:15 AM

alternative solution 3

Anonymous

11/16/2020 01:22 PM

Alternative 3 is my favorite. We need to create better Cycling options and overhaul the Bus routes to have more direct options on the larger and longer roads. Woodlawn, Speedvale, Victoria, Edinburgh, Paisley, London/Willow combined.

Anonymous

11/16/2020 02:31 PM

Alternative 3 sounds best to me.

Anonymous

11/16/2020 03:02 PM

Option 3

Anonymous

Alternative 2

11/16/2020 04:00 PM

Anonymous

11/16/2020 04:51 PM

Widen the roads have buses pull off for pick up ,left center turn lanes and have bike lane for the odd cyclist to use like other cities do.

Anonymous

11/16/2020 09:55 PM

Guelph does not have bad car traffic congestion problems. Therefore, do not widen any streets for cars until stop light timing is fully optimized and all available technologies are used to ensure the existing roads are maximally utilized. For example, there are major intersections around town where one direction is backed up somewhat and the other has no backup at all at the lights. This appears to be fixable with technology and optimization. As another example, when there is construction, immediately at the start of work make sure the traffic system is optimized taking into account the temporary road closures.

Anonymous

11/17/2020 10:02 AM

If anyone thinks that car travel is going to decrease, they are living in a world of fairies and pixie dust. Our communities have been built around the car. Few people live where they work or within a reasonable distance that a mode of transportation works other than car. Wasting money on building something for 1 percent of the population is just that, a waste.

Anonymous

11/17/2020 10:30 AM

You have already made up your mind based on these options. Improve driving infrastructure.

Anonymous

11/17/2020 12:49 PM

Transit would need to be significantly improved in order for Options 2 and 3 to be realistic. Right now we are nowhere near that.

Anonymous

11/20/2020 07:18 AM

Propose connecting Guelph with Waterloo region with improved rail connectivity, i.e. light rail

Anonymous

11/20/2020 07:23 AM

We should ban cars, and build an intensive public transit system.

Anonymous

11/20/2020 08:04 AM

Favour alternative #2

Anonymous

11/20/2020 08:10 AM

Alternative Two looks ideal with the focus on transit and active transportation to encourage the shift away from car usage

Anonymous

11/20/2020 11:14 AM

Alternative 4 meets the needs of ALL users in the city. Roads need to be widened when capacity is an issue, not 10 years later Efforts should be make to designate some major roads as key transportation corridors & improve there ability to carry cross-town faster & more efficiently (coordinating stop lights would be a huge improvement)

Anonymous

11/21/2020 07:38 AM

Widen sidewalks so I can safely take my children on bike rides. I won't ride on the road with your terrible transit drivers. Those buses would kill me and

	mine.
Anonymous 11/21/2020 11:05 AM	Go with number 3
Anonymous 11/22/2020 01:47 PM	Alternative 4 is best approach. The greatly expanded use of roundabouts throughout the city should be a priority, and should be implemented, both for many of the existing intersections, as well as new intersections.
Anonymous 11/22/2020 02:08 PM	3
Anonymous 11/22/2020 06:24 PM	Proper traffic flow on arterial roads requires more than one lane for traffic. Must be at min 2 at all times. Would like to see less concrete side walks, and more multi use paved paths for increased safety to pedestrians, cyclists and vehicle traffic. Roads are dangerous and cycling not permitted on sidewalks so we gave up cycling in Guelph. Transit is poor and unreliable so car won out.
Anonymous 11/23/2020 10:46 AM	With the goal of adding population to the city, we need to build housing, parking and street size to accommodate the increase use. Fairy tale ideas that if you limit parking and street size reduction means less driving is just that - a fairy tale. Be realistic and build appropriately instead of causing more issues from the get go!
Anonymous 11/23/2020 07:36 PM	Make Hanlon a freeway.
Anonymous 11/23/2020 08:16 PM	Bike lanes should never reduce the number of auto lanes. The trial of this on Gordon Street that reduced a lane from Kortright to Harvard was a disaster!
Anonymous 11/24/2020 06:01 AM	Alternative 4 seems to provide more options for vehicle access. Being that we live in a country the size of the entire continent of Europe, most of the population will drive cars at some point due to the large distances between cities. Organizing our city like a European city with sustainable mass transport and bike trails does not account for this fact
PK 11/24/2020 06:51 AM	It seems like you have a war on cars.
Anonymous 11/24/2020 10:54 AM	Alternative 3 and 4 would be good solutions. Alternative 1 is not helpful and Alternative 2 is only a band-aid solution.
Anonymous 11/24/2020 11:10 PM	Guelph is obviously going to grown in the future. Take this opportunity to widen roads and the uses of roundabouts for smoother traffic. Even if it means giving up bike lanes. Stop adding bike lanes when residential roads haven't been touched in decades.
Anonymous	I don't have a solution but i'd appreciate comments on how cycling

11/25/2020 11:49 AM

infrastructure will work in the winter.

RodrigoGoller

11/25/2020 09:43 PM

It would be helpful to see a table that compares what's included under each category - it's not easy to see the differences in the way the data has been laid out. For example, in Alternative 2 it reads "Develop a core network of high quality links" and in Alternatives 3 & 4 the same bullet says "Create a core network of high quality cycling links... what's the difference between Develop and Create? 2 and and 4 all seems like improvements on what we have, so any would be a viable option depending on costs and what the benefits were from each alternative.

Anonymous

11/26/2020 08:13 AM

Need to have a sustainability focus moving forward and reduce the number of trips taken by car. Want to see accessible and equitable transit, walking, wheeling, cycling options in Guelph

Anonymous

11/26/2020 08:42 AM

Alternative 4. Some streets need to be widened as the population of the city increases

Anonymous

11/26/2020 09:59 AM

Discouraging the use of cars by purposefully deprioritizing car travel in the design of our streets seems more likely to cause congestion (and subsequently impact our immediate environment) than to make our city more sustainable. The volume of cars is going to increase in our city whether we design for them or not. Our transport infrastructure should recognize this and be designed accordingly.

Anonymous

11/26/2020 11:20 AM

Guelph will continue to be a city where people need cars without major changes. Making it harder to get around by car decreases safety for everyone. Is there any chance of an underground option?

Anonymous

11/26/2020 11:21 AM

Bike lanes still not being used in place of sidewalks - need to address that in any new cycling connections

Anonymous

11/26/2020 12:38 PM

As a pedestrian and dogwalker and disabled individual, safety is tantamount for walking and cyclist corridors. Vehicles are constantly driving thru crosswalks while pedestrians are still travelling across the intersection during a green walk signal. Four lane streets are difficult to cross in the allotted time for the elderly, disabled and children. We are ALL citizens of Guelph!

Anonymous

11/26/2020 12:42 PM

I choose whichever option will reduce GHG emisisions and car trips the most. I'm hesitant to widen streets for vehible traffic, but would hate to see increased congestion causing long idling times and therefore increased emissions.

Anonymous

11/26/2020 02:20 PM

As an avid cyclist who commutes to work by bike, alternative 3 seems most appealing. I cross the Hanlon daily by bike, and have had near misses multiple times do to the environmental design and drivers not processing me as they navigate the intersection. Improving active transportation lanes aligns with bigger issues and goals related to climate change, and also supports building capacity to support a stronger community through improved opportunity for mental health and physical health with active physical

	engagement. It also supports social health as I find I connect and chat more with those around me when actively transporting.
Anonymous 11/26/2020 02:59 PM	like option 2
Anonymous 11/26/2020 04:54 PM	I've lived in Guelph for 10 years coming from Brampton and it's mind boggling how horrible the transit system is and it's never gotten better since living here. I truly hope something comes of this once and for all. Perhaps the money going to a completely unnecessary library could have been put towards transit.
Anonymous 11/26/2020 06:33 PM	4
Anonymous 11/26/2020 09:50 PM	I don't like alt 1, I like alts 2 and 3. I'm mixed on alt 4. I like that expansion mentions environmental impact, but I like that alts 2 and 3 only expand existing road for new uses (walking, cycling etc) and not cars.
Anonymous 11/27/2020 03:22 PM	Focus on sustainably and keeping streets approachable for pedestrians.
cblaser 11/28/2020 11:15 AM	A combination of options 2,3 & 4 makes most sense. Do nothing is not an option. I would love to take the bus to work, but from my house, paisley/silvercreek, it takes way too long to get to the University. There are also no direct walking/cycling routes that do not have constant stops to cross streets.
Meckling 11/28/2020 01:58 PM	Alternative 2 appeals to me the most.
Anonymous 11/28/2020 03:35 PM	Prefer sustainability focus
Anonymous 11/29/2020 09:44 AM	The willingness of a large majority of citizens to choose cycling as a viable transportation mode is known to be highly dependent upon its perceived safety. Consequently, and because the current cycling modal share is so low, improving safety for cyclists represents the best opportunity Guelph has for shifting to more sustainable modes. GCAT therefore believes that improving cycling facilities with a view to improving safety, together with a number of other measures to encourage cycling, ought to be among the highest priorities in the TMP.
Anonymous 11/29/2020 10:35 AM	Focus on eliminating car traffic
Anonymous 11/29/2020 02:53 PM	Good Luck!

Anonymous

11/29/2020 04:27 PM

This first half of this survey is quite confusing. are you asking whether you think that Guelph will be able to achieve these goals? Or are you asking whether we agree that the are good goals to try to achieve. Also, the 'moving forward guelph' document is quite large, and the time that it takes to read and fill out is prohibitive to all but those that are already familiar with it.

Anonymous

11/30/2020 05:26 AM

There are hardly any cyclists in Guelph. Even in summer! But especially in winter when it isn't safe or enjoyable to bike. Why would we prioritize bicycles in our city planning? Just make the city work for cars! Stop pretending we are something we are not!

Anonymous

11/30/2020 06:19 AM

I am in support of either alternatives 2 or 3. "Do nothing" is not an option at this point. I understand why it was offered, but it should not be seriously considered. Alternative 4 is not a good choice. We need to stop widening our streets to ameliorate "congestion", as it only leads to induced demand and further congestion in the future. The widest streets in the city are also the most congested. We should be working to reduce the capacity of many of our streets personal automobiles and trucks, leaving only capacity for transit and forms of active transportation like walking and cycling. I would like to see more roads reduced in size and the neighbouring land given over to wider sidewalks, protected bike infrastructure, and dedicated transit corridors. I would also like consideration to be given to the strategic stopping-up or access-control to neighbourhood streets to make them inconvenient for use as shortcuts for impatient motorists.

Anonymous

11/30/2020 06:59 AM

Alternative 3 seems to make the most sense to me. I am strongly in favour of increased infrastructure for active transportation and transit, and I also see a need for well designed arterial and collector streets to provide incentive for drivers to get their cars out of the way of AT and transit user. On the other hand, Alternative 4 seems likely too much building and expropriating!

Anonymous

11/30/2020 09:17 AM

Sustainability and resiliency should be the focus, not an alternative

Anonymous

11/30/2020 09:28 AM

Reduce time on transfer trips. Add more routes to cover non-existing routes on the city. Add early trips for people going early to work. Encourage drivers to meet expecting times on every stop. Avoid canceling bus routes/times. I honestly believe that City of Guelph/ Guelph Transit CAN DO BETTER! It's a GREAT city!!! I depend on the Guelph Transit service and every morning when I go to work (No. 5 - Goodwin) it's distressing to think if my bus will arrive on time to make my transfer at the University (No. 99 N) and if my transfer will be on time to arrive to work (No. 10 - Imperial). Same feeling when I have to return to home (No. 10 Imperial is ALWAYS LATE). In Winter time the option of walk or biking is reduced at almost 0% chance. Probably my opinion it's not very relevant but it's important for me to express it. Thank you.

Anonymous

11/30/2020 09:32 AM

Do not increase any infrastructure to accommodate cyclists. Bikes do not pay to use the roads. Start charging fees for cycling on the roads. Bikes on roads

are unsafe, cause traffic and they dont pay to use the road so they shouldn't be there.

CTrain232

11/30/2020 10:24 AM

Alternatives 1 is no good - what we have now is not good. Alternative 4 has too high a cost. I think we need alternative 2. With density targets set by the province and the climate crisis, I think it's ill-advised to dedicate more space in the city to wide roads.

Anonymous

11/30/2020 10:51 AM

For infrastructure projects on this endeavor (e.g., street widening), consider using sustainable construction/concrete resources (e.g., Amy Marks from Industrialized Construction Strategy and Evangelism, Queen of Prefab, Autodesk; she spoke about sustainable construction/concrete at the National Zero Waste Conference that was held in Canada this past month; she has a plethora of resources and insights in this area)

Anonymous

11/30/2020 03:31 PM

Alternatives 3 and 4 modified so that additional lanes for transit fulfill multiple roles as personal transportation corridors (per abovementioned comments) not just for pedestrians and cyclists, but yet-to-be-seen multimodal forms of transport such as Cross-country ski rollers, E-bikes, E-boards, Segways, E-scooters, E-skates E-wheelchairs..... this is just the tip of EXISTING technologies.... MANY MORE are yet to come.

TunguskaTwister

11/30/2020 11:58 PM

Overall, I like Alternative 3 because it seems like the most flexible, and predicting the future is hard. Also, funding large capital projects is going to be difficult, with all the other ageing infrastructure that we have to deal with. Look how long it took for us to decide to build a new Library (too soon? LOL)

Anonymous

12/01/2020 06:14 AM

Alternatives 2 and 3 are basically the same! Not enough detail on how the City plans to improve public transit, which is already below par compared to other cities.

Anonymous

12/02/2020 04:10 AM

I am drawn to the sustainability model. Don't see much difference between this and the sustainability and resilient focused one. Resiliency = a little more room for more cars?. Car culture has had its chance let's just moved forward with something better.

Peternoble96

12/02/2020 07:00 AM

I think alternative 4 is the only workable long term solution. Cars or e-vehicles will be a requirement for many of the trips where shopping and transporting resulting goods is involved or where there is travel out of the city to locations not on the transit corridor between Kitchener and Toronto. Moving people around comfortably and efficiently will require much infrastructure attention to be able to reduce or in some downtown locations eliminate vehicle traffic. Public restrooms will be required with attendants, like in many European cities, so that people can feel safe using them when they have need. Note that they will have need if they are walking or cycling. Alternative 1 doesn't address the increase in population we are expecting so it will lead to congestion and dangerous situations, so it's a non-starter, literally. Alternatives 2 & 3 are very similar to each other and ignore that there will still be a need for accommodating many cars or e-vehicles with a population expected to grow by 50% in thirty years. So, alternative 4 is the only long term solution to our cities projected growing requirements.

Anonymous

12/02/2020 01:56 PM

I acknowledge the courage of the planners who have conceived these alternatives. All of these are BOLD, although the first one is for unique reasons! Personally, I prefer alternatives 2 and 3 because of their emphasis on sustainability. Assuming the principal sustainable modes are walking and cycling, I fully endorse any solution that shifts modal share toward these and away from the use of personal automobiles, and I say this even as I have my own 2 cars parked in my driveway. We've been hoodwinked for a hundred years, laying down transportation systems that favour cars, not people. It's time to change. But, boy o boy, it's not going to be easy!

Anonymous

12/03/2020 02:18 PM

Alternative 3 - sustainability and resiliency. With an aging population, not all of us will be able to continue to cycle or drive in the future. I imagine I will be walking when I can, taking transit and using taxi services.

Anonymous

12/03/2020 09:28 PM

Where are the maps?

Anonymous

12/04/2020 09:12 AM

3

Anonymous

12/04/2020 09:14 AM

Separated active transport lanes are needed. The research on safety is quite clear

Anonymous

12/04/2020 09:31 AM

Prefer Option 2

Anonymous

12/04/2020 09:49 AM

I think that (even conservative-minded, ie usually opposed to anything socially oriented) motorists are starting to recognize that cycling lanes enable them as motorists to operate unimpeded - and so cyclists are perceived as less of a nuisance than they once were. Priorities for pedestrian crossings, ahead of vehicle turns, should be considered so as to avoid interactions. Stupid laws affecting cyclists - i.e. stopping at 4-way stops when there are no other vehicles or pedestrians in sight; turning in a left turn lane into the right-most lane or cycling lane (crossing lanes during the turn); having a slight (few second) priority to get through busy intersections ahead of motorized vehicles; taking control of lanes where lane width precludes joint use; I could probably go on with some more thought.....

Anonymous

12/04/2020 10:49 AM

Although I realize the costs are higher, personally I favour alternatives 3 and 4. These alternatives will help make Guelph a better city to live in.

Anonymous

12/04/2020 11:20 AM

The sustainability and resiliency focus is likely the best approach to take as it supports both investment in infrastructure and in community services and community benefits. It is vital that the resiliency component focus on providing equity in mobility and access, so that those with the greatest needs and those lacking resources are given the opportunity for successful outcomes rather than being left behind. To adapt the analogy "a rising tide lifts all boats" I would include the caution that "not all boats are the same and

some are in danger of sinking." A highly infrastructure and expansion focused approach (a "rising tide" approach) could potentially see community benefits (especially targeted community equity benefits) sidelined or ignored in favour of growth-focused investment. I trust that staff will consider these points and appreciate your values-driven approach to the vision and planning process.

Anonymous

12/04/2020 12:59 PM

Option 2 is the best

Anonymous

12/04/2020 01:00 PM

Balance will be key - can't afford to do everything without an excessive tax increase. Need to include cycling infrastructure for cycling i.e. covered secure temporary storage/parking for the winter months

Anonymous

12/04/2020 02:06 PM

In whatever option you choose, please abandon the idea of "painted" bicycle lane and bike boxes as being effective tools for cyclist safety. I have nearly been clobbered on numerous occasions while waiting in the bike box at Gordon and Waterloo, and the painted lane and "No cars in bike lane" sign in front of the McDonalds at Gordon and Surrey are utterly ineffective. I have consequently given up cycling on Gordon street between the University (where I work) and downtown (where I live), as I have no desire to become the cyclist that gets killed on that stretch - it is a matter of when, not if.

Anonymous

12/04/2020 02:21 PM

I prefer Alternative 2, and support a focus on active and sustainable transportation options.

TMBG

12/04/2020 09:59 PM

I'm concerned about the future of transit. Throughout this pandemic, I have thanked my lucky stars to be able to walk and bike to nearby destinations and to have the extreme privilege to be able to drive to the grocery store and to work. I suspect that the need for physical distancing is not going away any time soon and so I'm not thinking of taking transit on a regular basis any time soon - my blood pressure can't take it. I AM thinking that the next car I buy will be an electric one. Given what I've written above, I don't think I am in a position to make any valuable comments on the alternative solutions.

Anonymous

12/05/2020 07:34 PM

If we are planning for the future then alt. 4 keeps the options to be most flexible for whatever is needed, however, is it a realistically affordable option

LJM

12/06/2020 08:15 AM

I prefer Alternative 3. There must be improvements in the cycling corridors. Link with the school boards to educate students about walking, cycling or taking the Guelph Transit to school, rather than have parents driving them (ESPECIALLY secondary school students).

Anonymous

12/07/2020 08:09 AM

I like alternative two. We are in a climate crisis. We need to push people to choose different modes - we can't improve walking, cycling and transit, and yet continue to make driving easy and convenient and expect to see people change their behaviours. We need to invest in making transit and cycling comfortable in the winter (ie, high quality winter maintenance program for infrastructure, heated, welcoming bus shelters etc), and divert some of the

monumental budget that is currently spent in vehicular infrastructure towards the other modes.

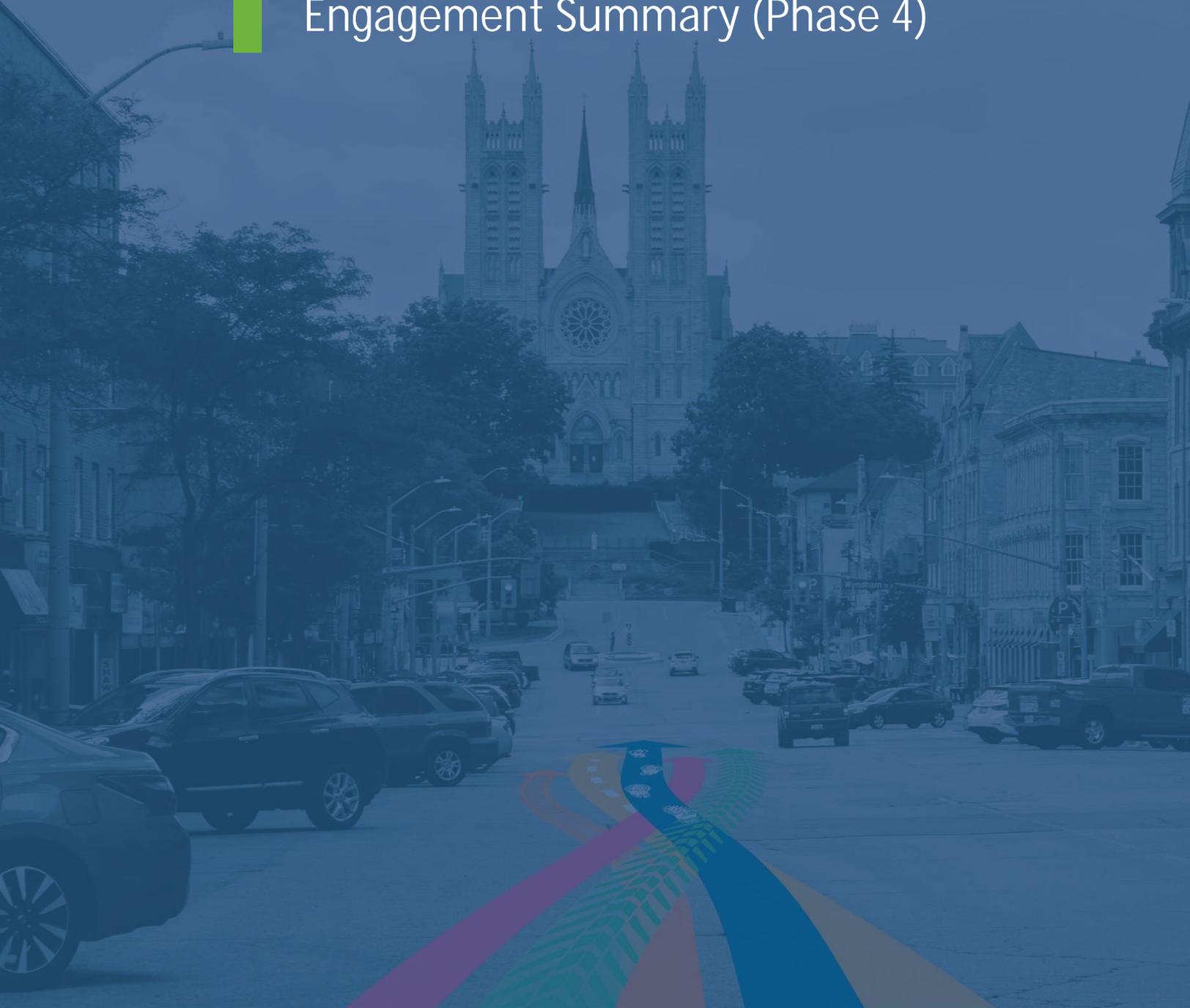
Optional question (96 response(s), 60 skipped)

Question type: Essay Question



APPENDIX A4

Engagement Summary (Phase 4)



Moving Guelph forward

Guelph Transportation Master Plan - Phase 4

Understanding TMP Implementation

Community engagement summary, November 2021

Guelph is growing and how we move around our city is changing. We're exploring transportation options to make our city move better in every way.

In January 2022, we will be going to Council with a report containing the recommendations for the policies and programs and the Implementation Plan that will help make the Preferred Solution come to life over the next few decades.

Phase 4 overview

Phase 4 (summer to fall 2021) is the final phase of the Transportation Master Plan. This phase consisted of developing the draft transportation policies and programs and developing a plan for implementing the projects that will transform Guelph's transportation network toward the Preferred Solution.



During Phase 4, we asked for feedback on the Preferred Solution: Sustainability and Resiliency Option, and what it means for how people will move around Guelph in the future. This provided a final opportunity to influence the draft policies and programs recommended by the TMP. We also asked for input on the project prioritization of the Implementation Plan. What we learned from this process has shaped the policies and programs and the Implementation Plan that will go to Council in January 2022. We have been asking Guelph residents: **What will the Preferred Solution: Sustainability and Resiliency Option mean for you?**

Project at-a-glance

The updated Transportation Master Plan will define how our transportation system will support the community as Guelph continues to grow. The update will look at transportation planning in Guelph to 2051. The main objectives are:

1. to ensure the new plan builds upon current policies, including the Official Plan and other master plans that have been approved since 2005;
2. to recommend new policies and guidelines that reflect our community's vision and that balance mobility, environment and efficiency while prioritizing safety and access for all travellers; and
3. to explore how new and evolving technologies and travel services will shape the future of transportation in Guelph.

To do this, we reached out to the broad public and stakeholders for help. We need to understand how you move about in the community today and what will be important to you in the future.

How we engaged: techniques and results

For this phase of community engagement, we used a variety of techniques to reach a diversity of Guelph community members. Our objective was to work with the community to understand how the Preferred Solution of Sustainability and Resiliency will impact how people move around Guelph in the future, and to gather input on the policies, programs and implementation plan.

Virtual open houses

1 Virtual open house using an interactive multimedia platform called StoryMaps to share information, data, and maps



The Virtual Open House explored the Policies and Programs and Implementation Plan that support the Preferred Solution and looked at the important transportation topics that emerged throughout the engagement process.



Stakeholder meetings with

- Active Transportation groups
- University of Guelph
- Metrolinx
- Ministry of Transportation
- Key staff from adjacent Municipalities (County of Wellington, Puslinch Township, Town of Halton Hills, Region of Waterloo) and
- Members of Guelph's business community

Community Conversations with

- Older adults
- Accessibility advocates
- Anti-poverty advocates and
- General public

To gather feedback on the Preferred Solution, the policies and programs, the Implementation Plan and the capital plan.

How we engaged: techniques and results



Online engagement hub

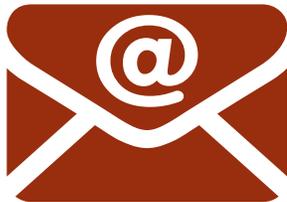
The central place to engage with the project online with

306 visitors &

79 contributors

Project email

transportation@guelph.ca



for direct communication with residents

Notifications published in the Guelph Mercury Tribune



Social media used to spread awareness

#MovingGuelphForward

6 tweets generating 27 likes, 42 retweets and 76 clicks

4 Facebook posts generating 14 likes, 5 comments and 48 clicks

Two email newsletters



Sent to

3,803

recipients



1 online survey

with **77** responses received in total online at HaveYourSay.Guelph.ca to gather feedback along side the Virtual Open Houses

Stakeholder meetings

We conducted stakeholder meetings with Active Transportation groups, the University of Guelph, Upper Grand District School Board, Metrolinx, the Ministry of Transportation, staff from adjacent Municipalities (County of Wellington, Puslinch Township, Town of Halton Hills, Region of Waterloo), and members of Guelph's business community to share project updates, review the Preferred Solution and gather feedback.

What we heard

Preferred Solution

- Provide complete streets that prioritize active transportation connections
- Support inter-regional movement for people and goods
- Consider population growth, demographics and land use planning
- Promote land use development that supports active transportation and transit

Prioritize active transportation

- Enhance active transportation connections by controlling vehicular traffic near campus and schools
- Consider coordination of inter-regional cycling connections for travel and tourism
- Prioritize the construction of the Cycling Spine Network
- Address enhanced safety measures at intersections for pedestrians and cyclists
- Extend the Pedestrian Priority Network along Gordon Street to College Ave and consider whether College Ave should also be included
- Consider increasing 2051 cycling mode share target

Enhanced transit system

- Support for inter-community transit extension and coordination with other modes of transit such as train travel
* commuting University students are projected to increase due to rising housing costs

- Prioritize COVID-19 ridership recovery by redistributing transit routes to essential workplaces and monitoring impacts of "work from home" in the short and medium term

Goods movement

- Ensure there are sufficient loading areas for deliveries in the downtown
- Support for continued coordination with MTO on Hanlon improvements to redirect truck traffic to the Hanlon where possible

Implementation

- Continue collaboration with external stakeholders and improving ongoing 2-way communications
- Continue meaningful engagement during detailed design phase for implementing road projects

Key questions or topics that need to be explored further

- Explore the parking supply and demand arising from the Downtown and University of Guelph campus
- Continue to monitor innovations in big data
- Provide more guidance for planning for emerging technologies like electric bikes, automated vehicles, electric vehicles and electric charging stations
- Consideration for provision of public washrooms

Community conversations

We conducted community conversations with older adults, accessibility advocates, anti-poverty advocates and the general public to share project updates, review the Preferred Solution and gather feedback. Conversations were held with 12 community members from across the city to understand what the Preferred Solution: Sustainability and Resiliency Option will mean for them and others to move around and through Guelph using their preferred modes of transportation.

What we heard

Preferred Solution

- Prioritize transit and active transportation connectivity for low-income communities
- Improve connectivity for active transportation across the city
- Promote land use development that supports active transportation and transit

Prioritize active transportation

- Provide sidewalks and safer walking connections in industrial areas
- Improve lighting on roads/streets for safety
- Explore economically accessible bike share opportunities
- Address signal timing concerns for seniors at intersections
- Prioritize the Cycling Spine Network

Improve transit access

- Consider employment shift times for transit scheduling
- Prioritize transit access for low-income communities
- Provide better transit access to essential services like grocery stores and health services
- Provide first and last mile connectivity in industrial areas

- Provide better transit notifications for those who do not have access to smartphones or mobile devices
- Provide street furniture at every transit stops
- Explore better inter-regional transit connections
- Provide more affordable transit passes and incentives to increase ridership

Key questions or topics that need to be explored further

- Explore a hotline for transportation services, including transit
- Explore locations for electric vehicle charging stations
- Consider the separation of short term and long goals for better planning
- Consider the need for a network of public restrooms along the transit and trail networks
- Explore connection with GRT in Kitchener where existing stops are already very close
- Equitable network planning should consider improved connectivity for Brant, Onward Willow, the Ward and Eastview/East end neighbourhoods
- Support for a transportation advisory committee that is representative of different user groups

Preferred Solution

The Preferred Solution survey ran from October 1st to October 25th and launched alongside Virtual Open House #3 on the project engagement page at Have Your Say Guelph

(<https://www.haveyoursay.guelph.ca/transportation>)

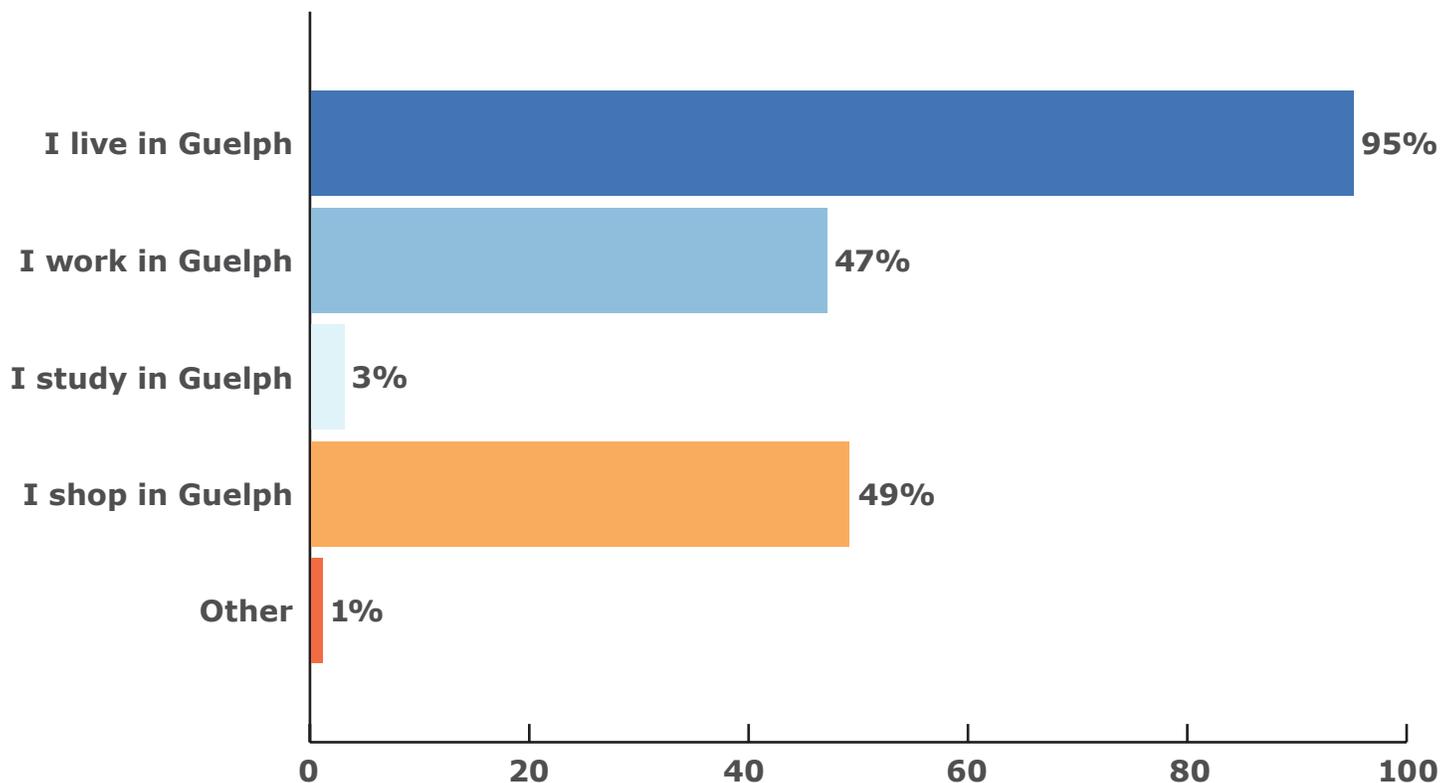
Virtual Open House #3 shared the policies and programs, Implementation Plan and hot topics in transportation issues. Participants were encouraged to complete the survey after reviewing the Virtual Open House. The purpose of the survey was to gather feedback on the policies and programs and the project prioritization for the Implementation Plan.

77 responses were provided to the survey. 81% of survey participants travel by car as the driver, 22% travel by car as the passenger, 58% walk, 44% cycle, 22% take transit and 10% take taxi or ride share to move around Guelph.

What we heard

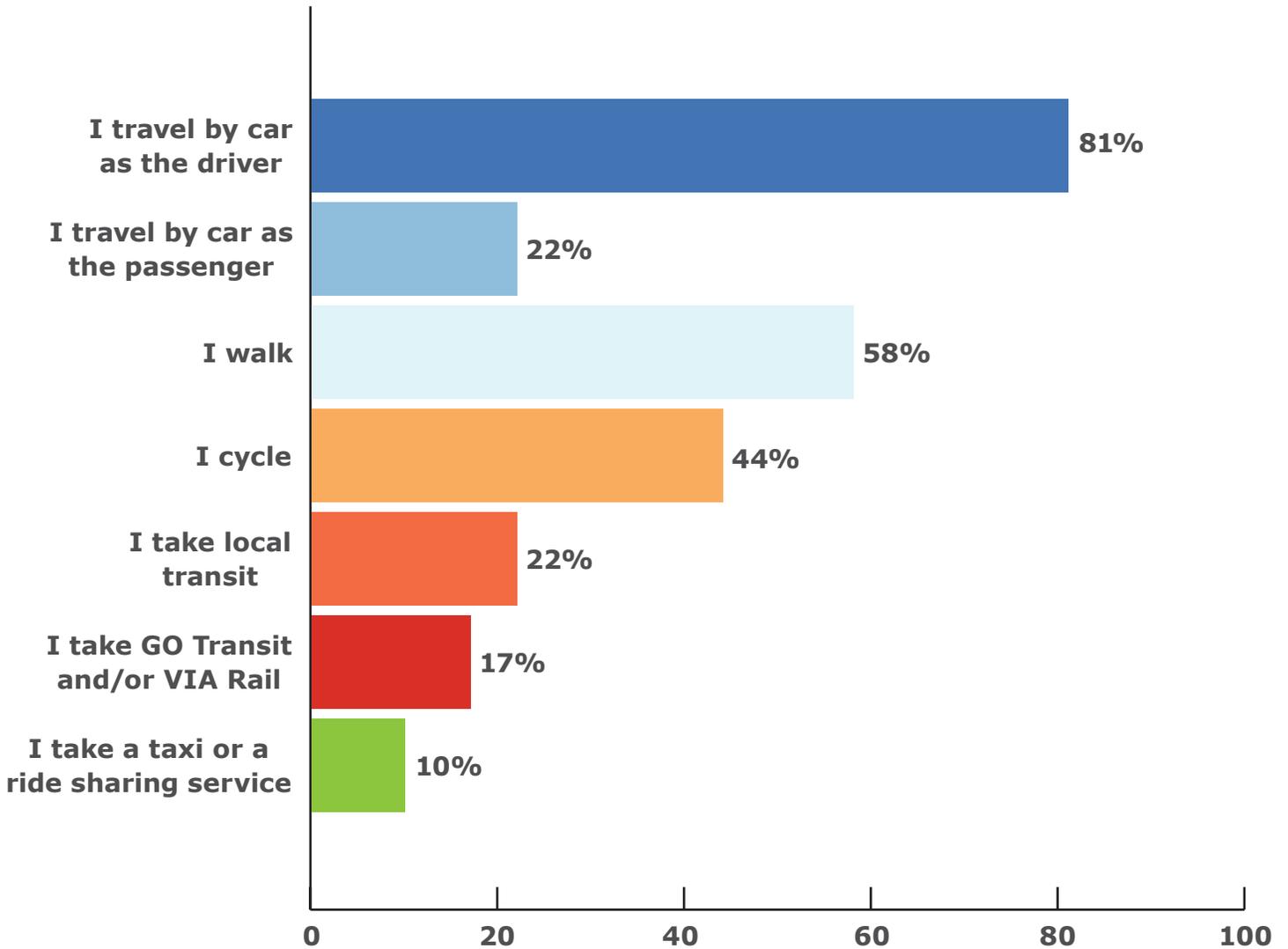
Overall there was strong support for the Resilience network to accommodate active transportation with traffic calming measures, and provide frequent and reliable transit from survey participants. Below is a summary of the survey responses.

Which of the following best describes you (select all that apply)?



Phase 4 Public engagement results

How do you usually move in, out and about Guelph (select all that apply)?

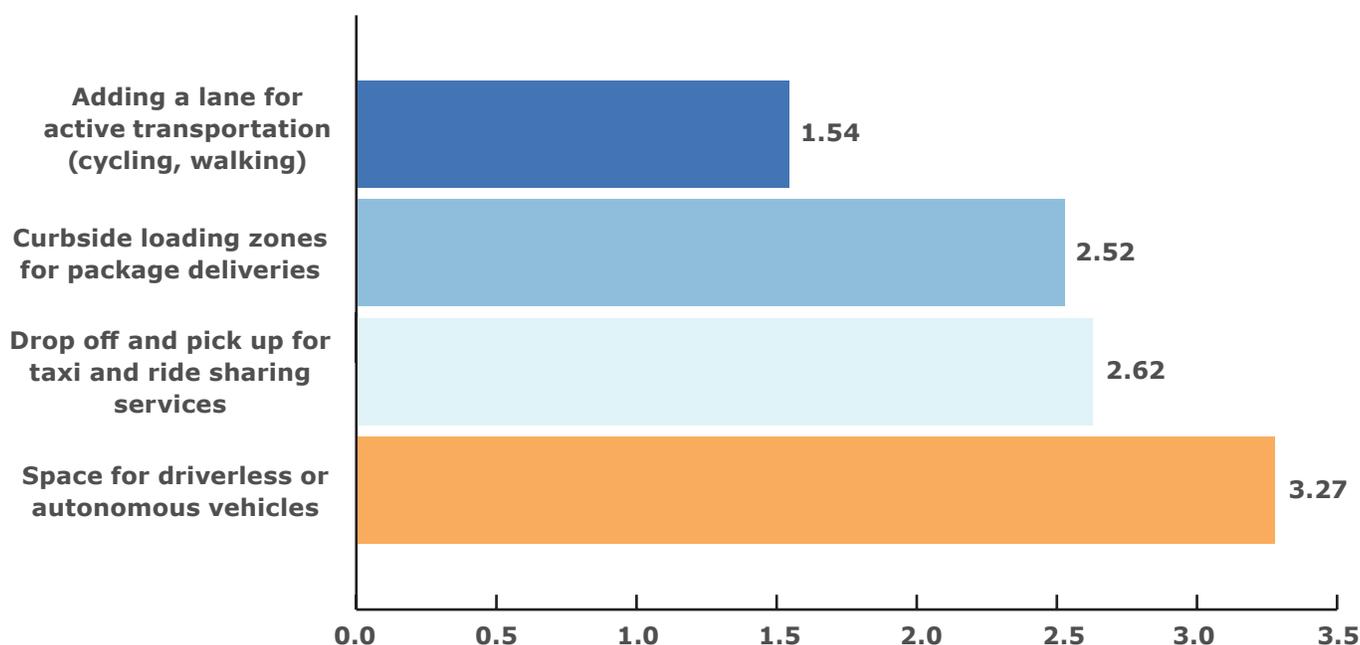


What will the Preferred Solution: Sustainability + Resiliency Option mean for you?

We asked participants to tell us how they think space in the resilience network should be used in the future.

What we heard

Please rank this list from most important to the least important uses of the resilience network (1 is most important, 5 is least important):



Do you have other ideas for how the resilience network might be used?

- Space for transit priority measures such as dedicated bus lanes
- Protected bike infrastructure
- Pedestrian only spaces

Do you have any other comments on the Preferred Solution: Sustainability and Resiliency Focus that you want to share with us?

- Prioritize sustainable modes of transportation
- Pedestrianize the downtown core
- Improve transit
- Improve the overall safety of streets

Policies

We asked participants to tell us if we missed any policies for the Transportation Master Plan.

What we heard

Are there any general road policies you think we missed?

- Implement traffic calming measures
- Discourage driving to encourage other modes of sustainable transportation
- Use traffic demand management to reduce traffic on streets
- Maintain and repair roads
- Improve intersection designs
- Use promotions and education to encourage safe driving

Are there any pedestrian policies you think we missed?

- Create pedestrian only streets
- Implement traffic calming measures to make walking more enjoyable and safe
- Improve the safety of intersection crossings
- Create more trails and make sure they are connected to travel around the city

Are there any cycling policies you think we missed?

- Improve road infrastructure for cyclists to separate them from traffic
- Improve bike parking facilities and include bike parking in commercial and residential areas and at Guelph Central Station and bus stops
- Maintain bike lanes in all seasons to remove things like snow, ice, and leaves

- Integrate the city's trails into the cycling network to provide better connectivity across the city

Are there any transit policies you think we missed?

- Increase transit service and frequency
- Make transit more convenient with and attractive
- Prioritize making transit options affordable to all members of the community
- Improve safety at Guelph Central Station and bus stops
- Use transit to advance climate goals and reduce emissions
- Transit should connect to the GO and neighbouring municipalities

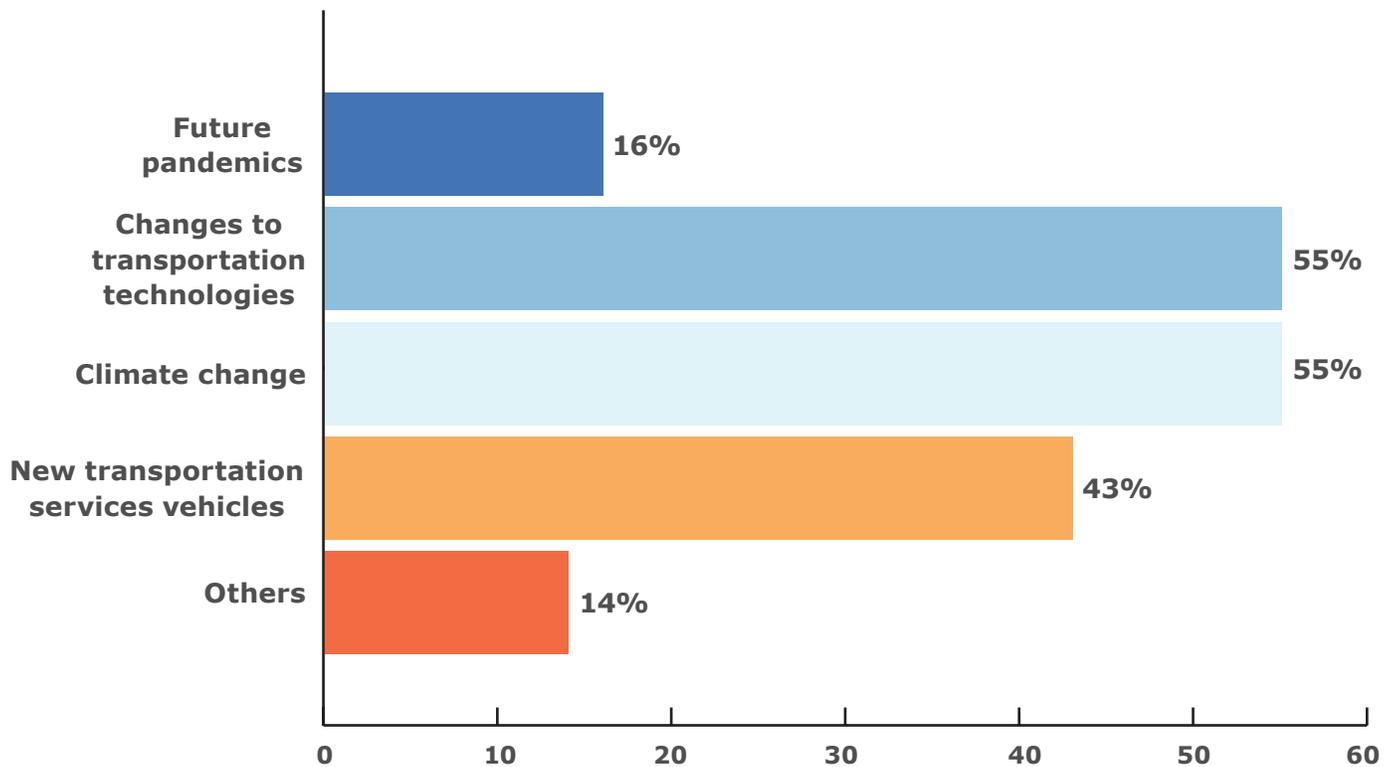
Are there any goods movement policies you think we missed?

- Improve the timing of deliveries and truck movement through the city to avoid disruption to residential and commercial areas
- Balance the needs of trucks with other road users
- Don't allow trucks to block parking spaces during deliveries

Are there any implementation policies you think we missed?

- Review the Implementation Plan on a regular basis to track progress
- Continue to do community engagement and outreach and include other initiatives like pilot projects to demonstrate changes
- Improve enforcement to ensure traffic laws are followed
- Include non-digital forms of communication and engagement for those without smartphones or mobile devices

What future changes to transportation should we consider in the policies (select all that apply)?



Do you have any other comments about the policies that you want to share with us?

- Policy decisions should first examine the climate change impact
- Improve transit options in Guelph and to Kitchener, Waterloo and Toronto
- Connect active transportation routes to neighbouring municipal trails
- Create creative design and street art that support vibrancy and safety
- Allow motorcycles to pass through traffic at red lights
- Improve safe mobility for children and seniors
- Decrease car mode share
- Explore minimum standards for car and bike parking for different land uses
- Improve traffic conditions for drivers

Implementation plan

In order to determine the highest priority projects, we evaluated all of the projects required to transform Guelph's current transportation network into the Preferred Solution using a set of criteria that align with the TMP vision, values and goals, along with available funding and resources within the City of Guelph.

For each value, we asked a standardized question (or a couple of questions) to see how aligned the project was with each value.

We asked participants to tell us if we missed anything for the criteria.

What we heard

Should we ask anything else to check if a project is "safe"?

- What are the traffic conditions?
- What are the health and pollution impacts from vehicles?
- Does the project decrease car dependency to make room for other modes of transportation?
- What are the climate change impacts?
- Does the project consider the needs of all road users?
- Does the project consider the volume of trucks?
- Does the project consider the monitoring of traffic conditions?

Should we ask anything else to check if a project is "equitable"?

- Does the project support all abilities and accessibility?
- Does the project decrease car dependency to make room for other modes of transportation?

- Does the project improve the transit system?
- Does the project Improve the active transportation network?
- Does the project consider the needs of historically underserved communities?
- Does the project consider the impacts of gentrification?

Should we ask anything else to check if a project is "complete"?

- Does the project consider emergency planning?
- Does the project improve inter-regional transit?
- What are the impacts on intersections, safety and visibility conditions?
- What are the climate change impacts?
- Does the project consider the needs of all road users?

Should we ask anything else to check if a project is "sustainable"?

- Does the project decrease car dependency to make room for other modes of transportation?
- Does the project improve the transit system?
- Does the project improve the active transportation network?
- What are the noise and pollution impacts on natural habitats?
- Does the project prioritize maintenance of infrastructure?
- Does the project help reach climate change goals and targets?
- Does the project engage with local communities?

Should we ask anything else to check if a project is “supportive of land uses”?

- Does the project decrease car dependency to make room for other modes of transportation?
- Does the project improve the active transportation network?
- Does the project improve the transit system by increasing access to green spaces and essential services?
- Does the project engage and consult with Indigenous Peoples?
- Does the project help create a road grid network for transportation?

- Prioritize improving the transit system
- Prioritize improving the active transportation network
- Consider the coordination and timing of construction projects
- Prioritize project engage city-wide

Should we ask anything else to check if a project supports the core value of being “Affordable”?

- Does the project support affordable transportation options city-wide?
- Does the project support inclusive affordability for everyone?
- Does the project decrease car dependency to make room for other modes of transportation?
- Were other funding options from different levels of government considered for the project?

Do you have any other comments about the project prioritization that you want to share with us?

- Consider the climate change impacts
- Consider traffic speed impacts
- Prioritize decreasing car dependency to make room for other modes of transportation

What we heard - the key themes

Overall, feedback received from the community and key stakeholders throughout Phase 4 can be categorized into the following overarching themes: **Preferred Solution, prioritize active transportation, improve transit and transit access, goods movement, climate change and sustainability, safer streets, traffic flow, implementation, equity, land use, infrastructure, community engagement process, concerns, key questions and topics.**

These themes will inform the development of the Preferred Solution, which will determine the capital plan for how the TMP is implemented.

The feedback summary below highlights the wide range of diverse opinions that were received during this stage of community engagement.

Preferred Solution

- Improve transit and active transportation connectivity across the city, low-income communities and industrial areas
- Promote land use development that supports active transportation and transit
- Provide complete streets that prioritize active transportation connections
- Support inter-regional movement for people and goods
- Consider population growth, demographics and land use planning

Prioritize active transportation

- Prioritize the construction of the Cycling Spine Network
- Create pedestrian only streets
- Improve safety for active transportation users by providing better lighting and controlling vehicular traffic

- Consider coordination of inter-regional cycling connections for travel and tourism
- Implement traffic calming measures to make walking more enjoyable and safe
- Integrate the city's trails into the cycling network to provide better connectivity across the city
- Address signal timing concerns for seniors at intersections
- Address enhanced safety measures at intersections for pedestrians and cyclists
- Extend the Pedestrian Priority Network along Gordon Street to College Ave and consider whether College Ave should also be included
- Consider increasing 2051 cycling mode share target

Improve transit and transit access

- Explore better inter-regional transit connections
- Improve first and last mile connectivity

- Provide better transit access to essential services like grocery stores and health services
- Provide better transit notifications for those who do not have access to smartphones or mobile devices
- Provide street furniture and improve safety at transit stations and stops
- Provide more affordable transit passes and incentives to increase ridership
- Prioritize COVID-19 ridership recovery by redistributing transit routes to essential workplaces and monitoring impacts of "work from home" in the short and medium term
- Consider increasing the frequency of service to make transit more convenient

Goods movement

- Ensure there are sufficient loading areas for deliveries with blocking parking spaces
- Improve the timing of deliveries and truck movement through the city to avoid disruption to residential and commercial areas
- Balance the needs of trucks with other road users

Climate change and sustainability

- Prioritize sustainable modes of transportation
- Decrease car dependency to encourage sustainable modes of transportation
- Use transit to advance climate goals and reduce emissions
- Policy and project decisions should first examine the climate change impact to help reach climate change goals and target
- Consider noise and pollution impacts on natural habitats from transportation projects

Safer streets

- Pedestrianize the downtown core and improve the overall safety of streets
- Create creative design and street art that support vibrancy and safety
- Improve safe mobility for children and seniors

Traffic flow

- Implement traffic calming measures and traffic demand management to reduce traffic
- Improve enforcement to ensure traffic laws are followed
- Allow motorcycles to pass through traffic at red lights

Implementation

- Review the Implementation Plan on a regular basis to track progress
- Continue collaboration with external stakeholders and improving ongoing 2-way communications
- Continue meaningful engagement during detailed design phase for implementing road projects

Equity

- Ensure transportation projects support all abilities and accessibility
- Ensure transportation projects consider the needs of historically underserved communities
- Ensure transportation projects support inclusive affordability for everyone

Land use

- Explore minimum standards for car and bike parking for different land uses

Infrastructure

- Maintain and repair roads and infrastructure

- Consider the coordination and timing of construction projects
- Improve intersection designs for safety
- Improve road infrastructure for cyclists to separate them from traffic
- Improve bike parking facilities and include bike parking in commercial and residential areas and at Guelph Central Station and bus stops
- Maintain bike lanes in all seasons to remove things like snow, ice, and leaves
- Consider road grid network for transportation

Communications, outreach and engagement

- Use promotions and education to encourage safe driving
- Continue to do community engagement and outreach and include other initiatives like pilot projects to demonstrate changes
- Include non-digital forms of communication and engagement for those without smartphones or mobile devices
- Ensure Indigenous Peoples are consulted

Key questions or topics that need to be explored further

- Explore economically accessible bike share opportunities
- Explore a hotline for transportation services, including transit
- Explore locations for electric vehicle charging stations
- Consider the separation of short term and long goals for better planning
- Explore the parking supply and demand arising from the Downtown and University of Guelph campus
- Provide more guidance for planning for emerging technologies like electric bikes, automated vehicles, electric vehicles and electric charging stations
- Continue to monitor innovations in big data
- Consideration for provision of public washrooms along transit and trail networks
- Explore connection with GRT in Kitchener where existing stops are already very close
- Equitable network planning should consider improved connectivity for Brant, Onward Willow, the Ward and Eastview/East end neighbourhoods
- Support for a transportation advisory committee that is representative of different user groups

How we used your feedback

Feedback from the previous rounds of engagement on the Preferred Alternative Solutions, vision and goals, and issues and opportunities informed the Preferred Solution presented in this Phase for further engagement.

Feedback from this round of engagement helped us to:

- Understand how the Preferred Solution: Sustainability and Resiliency will impact the day-to-day lives of community members
- Finalize the policies and programs
- Understand priorities for the Implementation Plan

Next steps

Feedback from this Phase of engagement alongside further technical analysis will help us finalize the policies, programs, and Implementation Plan that will help make the Preferred Solution come to life over the next few decades. The policies and programs and Implementation Plan will be presented to Council in January 2022. Following that, the Transportation Master Plan document will be available for review and comment before being fully adopted.



APPENDIX A5

Guelph TMP Comment and Response Table

Date	Comment	Response	Action
21-07-09	<p>Yes, I did get the documents. Thank you Seemed to me they were very brief and short on details I'll reread them</p> <p>Response: Sorry, sorry I was wrong I DID read the Transportation Master Plan - Our Preferred Future ... Not short on details, as I wrote earlier. I MUST read it again I would hope, as a pedestrian and environmentalist, that roads would not be widened unless to provide bike lanes or wider sidewalks An improvement I've noticed on Metcalfe is marked sloping sidewalks at intersections, BUT sloping sidewalks at driveways are no help for pedestrians, including those w strollers, partly because the slope is not marked. These were my observations last year. Haven't been out walking in public areas for over a year. Of course, I like making transit and active transportation a priority - p 5 Don't know if it was covered in the Saff Report but signal timing for pedestrians at intersections should be longer. I don't know on what walking speed it is based.</p>	<p>I am following up to see if you received the package we mailed out including the transportation master plan documents you requested. I hope it arrived and you had some happy reading! Please let me know if you have any further questions.</p>	<p>Responded to email.</p>
21-02-27	<p>I just thought I would add this input to the Master Transportation Plan.</p> <p>I have not thought everything out as I do not have access to all the facts. So this proposal is not as thorough as I would like. However from my point of view the Transportation Plan will do the GUELPH citizens a disservice if it does not aggressively get the facts around this proposal.</p> <p>Perpetuating a GJR/City owned rail corridor through the city makes no sense when rail service can be maintained through 2 rail spurs east and west of the city. Might this be more costly to users? Maybe, but what about all the costs and lost opportunities associated with maintaining rail infrastructure and this loop through the city?</p>	<p>I am writing to you as an identified stakeholder with interests in the City of Guelph's Transportation Master Plan ("the TMP") update. I want to share with you the status of the project and next steps.</p> <p>Where we're at The project is moving ahead at full speed. In November, we shared our virtual 'Story Maps' which included our values, goals, problem statements and draft alternative solutions for transportation in Guelph. We also presented four transportation options and asked for feedback in an online survey.</p> <p>The feedback we received from the community and stakeholders like you paired with technical considerations and transportation data have evolved option 4. Alternative 4, previously know as "Large-scale infrastructure expansion" is now known as "Car efficiency focus" and aims to further prioritize future car</p>	<p>Responded to email.</p>

<p>I think there are many vested interests that will resist giving this proposal a real look, but I think any transportation master plan will be incomplete if it has not considered this question</p>	<p>capacity by widening congested streets and adding new infrastructure for cyclists and pedestrians.</p>	
<p>Private citizen. Final version. I do not have access to more information.</p>	<p>Draft preferred solutions Our preliminary evaluation shows that Alternative 2 - Sustainability Focus and Alternative 3 – Sustainability + Resiliency Focus were both comparable as draft preferred solutions in achieving the goals and values of the TMP. Both alternatives encourage walking, cycling and travel by bus by creating walkable streets, developing a core network of cycling links and reducing bus travel times in critical transit corridors, while improving capacity for cars.</p>	
<p>Trails/Active Transportation: My experience is GJR is a very reluctant partner(Possible exception out of city on TCT spur) and there seems to be no authority to compel them to consider options within the city. That is the underlying assumption I believe should be addressed.</p>	<p>Give us your feedback by February 9 Let us know if you support the draft preliminary preferred solution. Learn more by viewing our updated interactive virtual open house (StoryMap) and completing the survey by February 9.</p>	
<p>Goods movement and the TMP Outcome of the Goods Movement Strategy is already baked in.</p>	<p>Next steps We'll use community and stakeholder feedback and further technical analysis to develop a recommended transportation approach for Council consideration later this year. Thank you for your participation in this important project so far.</p>	
<p>Any consideration of alternatives to this plan would be like a house of cards. Change one plan and all the other plans would come falling down.</p>	<p>Thank you for sharing your thoughts. Is this proposal an official position of the GHTC? And can you confirm if this is a 'final version' you wish to have included in our public record of consultation for the TMP?</p>	
<p>Costs The north rail served customers could join CP at Cambridge via CN.</p>	<p>I need to review your proposal more thoroughly, however I can highlight a few key things from the TMP that are guiding our direction as it pertains to rail/goods movement in the City of Guelph.</p>	
<p>Yes maybe some lost revenue. That is where a full blown analysis needs to be done. I suspect the "opportunity costs" that are not achieved because Guelph retains this rail line through the middle of town just to maintain a CP link would far exceed the current revenues that the city receives by maintaining this link.</p>	<p>Trails/Active Transportation: The opportunity for using the GJR for a trail corridor</p>	
<p>I understand this is a fundamental challenge to existing assumptions. I believe the Transportation Plan looks out to 2051.This is a consideration that needs a hard analysis that I doubt there is political will to address. As a minimum we need some stronger statements about how the GJR <u>must</u> be more</p>		

	<p>accommodating to the needs of other transport modes within the city.</p>	<p>is, as you note, currently an active area of study and exploration, and supported by the GJR in consultation with Parks Planning. The TMP may include policy language to support/align with this. The work of those teams is advancing under the assumption of maintaining train traffic along the corridors between PDI and the West industrial areas.</p> <p>Goods movement and the TMP</p> <p>The TMP includes the following problem statement, determined through extensive engagement and from technical reviews and industry best practice reviews: “We need robust strategies, policies and infrastructure to support the efficient movement of goods”. As such, the TMP is going to recommend a Goods Movement Strategy be undertaken, which would include the GJR’s role in our goods movement system. The GJR provides important rail service for goods movement in the City. The GJR also supports achieving the core values of the TMP around:</p> <ul style="list-style-type: none">● safety (removing heavy trucks from our road network),● sustainability (rail goods movement has a much lower GHG emission footprint than diesel trucks) and● Affordability (the GJR provides a revenue source and is self-sustaining with its infrastructure, rather than needing to potentially widen roads to accommodate additional truck volumes in future). <p>The current and ongoing operation of GJR is aligned with the economic and transportation needs of the community and therefore the TMP will continue to support the GJR in its plans for maintaining and expanding local goods movement.</p>	
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		<p>Costs</p> <p>You make a few points about the cost of maintaining and operating the corridor. Pulling up tracks from Victoria west to Woodlawn North is not a consideration as the North rail served customers would not be dual served by CP any longer, and represents considerable lost revenue for GJR/the City.</p> <p>Thank you for taking the time to share this with us. I appreciate the items you have brought up for our consideration.</p>	
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<p>21-02-19</p>	<p>Planning staff at the Upper Grand District School Board have had the opportunity to review the City of Guelph’s updated information for the Guelph Transportation Master Plan (GTMP). Below are some comments from the Board with regard to specific excerpts pulled from the City’s updated information.</p> <p>GTMP Goal 1: People of all ages and physical ability will be able to travel safely using any transportation mode that they choose</p> <p>As a commenting agency on development applications, Board staff request sidewalks in all new plans of subdivision to ensure that students can walk safely to school or to congregated bus pick-up points. The Board is also a partner with the City of Guelph on the Wellington Dufferin Guelph Active and Safe Routes to School (ASRTS) Committee, which promotes and encourages walking, cycling or other active modes of travel for students to and from school. The strategy of the ASRTS Committee that all Wellington, Dufferin and Guelph students participate in active and safe travel as part of their school day aligns with the GTMP Goal 1 and we encourage policy and infrastructure changes that will result in safer and more supportive environments for students to actively travel to school.</p> <p>Road Safety: Protecting Vulnerable Users</p> <p>School aged children fall into the category of vulnerable users of the City’s transportation network, and therefore Board staff is supportive of measures in the GTMP that are aimed at improving road safety using this lens. Infrastructure improvements that incorporate design principles related to road safety will support students who actively travel to school. An example would be designing safer crosswalks with painted markings that emphasize the priority of pedestrians crossing major intersections. In addition to protecting those who walk to school, improvements in cycling infrastructure such as separated bike lanes and multi-use trails on busier roadways will provide students with the option of cycling to school. Bike lanes that are physically separated from the street provide the</p>	<p>Noted.</p>	<p>Responded to email.</p>
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safest option for less experienced cyclists. In the case of on-street facilities, additional roadway markings and rubber bollards can be used to help separate cyclists from vehicular traffic.

Network Planning: Complete Streets and Complete Networks

The primary focus of Board staff with respect to the GTMP is the provision of safe and accessible travel routes to school for students and families. At many schools in Guelph, there are students who can actively travel to school (within the Board's walking distance) and students who are on a bus. School catchment boundaries aim to maximize the number of students within walking distance, however there are students who may be beyond walking distance or encounter other barriers preventing safe active travel to school. Therefore, designing complete streets that not only promote active travel but also provide various safe and accessible options is key. The promotion of multi-functional road corridors will provide better overall accessibility to school sites and travel options for users. Furthermore, trails that are separated from vehicular traffic can provide an additional safety measure for students that are walking or cycling to school.

Priority Networks: Spine Cycling Network and Pedestrian Priority Network

The Board encourages students to actively travel to school where possible, however, depending upon the size of a school's catchment area, some students may be deterred from actively travelling to school. In the case of larger catchment areas, students may feel disconnected from their school and community as a result of overcoming broad distances to reach their school. Consequently, a variety of modal options should be provided to encourage active forms of travel as well as improve overall community connectivity. Both the Spine Cycling and Pedestrian Priority Networks have the ability to positively influence students to actively travel to school through improved transportation infrastructure that prioritizes pedestrians and cyclists.

	In conclusion, we thank you for the opportunity to provide some preliminary comments on the GTMP work. We look forward to reviewing the Draft GTMP when it is complete and ask that you keep us informed of the project status.		
21-02-05	<p>In April 2019, Metrolinx adopted the Transit Oriented Communities (TOC) Program to implement transit infrastructure that leverages the value of Metrolinx’s transit network, service and real estate portfolio. This program involves the partnership between Metrolinx and a third party to deliver new or improved transit infrastructure wherein third parties will fund the design and construction of infrastructure and Metrolinx will operate it.</p> <p>At this time, Metrolinx has no plans for the delivery of new station infrastructure within the City of Guelph and does not have a completed business case for a new station that has been endorsed by the Metrolinx Board of Directors.</p> <p>Metrolinx welcomes proposals for market driven, third-party funded TOC partnerships for new GO Transit stations and is currently investigating one location within the City of Guelph. New transit stations and other significant transit infrastructure projects will follow a business case process and must demonstrate benefits to the network. Third parties interested in working with us can reach out at</p> <p>What is the latest status of Metrolinx’s COVID travel survey? What’s the timeline for releasing the results? Guelph was hoping to have them for the May Council meeting.</p> <p>The fall portion of the travel survey is complete. High-level summary tabulations are being prepared and will be sent in a couple weeks. Full data in excel format can be delivered to Guelph once payment of the invoice is processed – we expect to send this well in advance of the May council meeting.</p>	<p>Comment from Metrolinx in response to the question: Does Metrolinx have any interest in additional station sites in Guelph? The development community has expressed an interest in this subject, particularly in the west end near Imperial and Paisley roads.</p> <p>Response noted.</p>	Responded to email.
21-02-04	My name is X and I am the Consultation Supervisor for the Six Nations of the Grand River Consultation and Accommodation Process (CAP) Team. I feel we need some clarification on whether you were planning on contacting the Six Nations	The City of Guelph is updating the Transportation Master Plan. In following up on our earlier correspondence, it appears we did not have the	Responded to email. Updated contact.

<p>Confederacy Council which is the traditional Council for our territory or the Six Nations of the Grand River Elected Council which are two separate entities.</p> <p>As I am sure you are all aware, the Duty to Consult with Indigenous Nations is now a requirement in the “A Place to Grow Growth Plan – Amendment 1”. In implementing these provincial plans, the Province recognizes the importance of consulting with First Nations and Métis communities on planning matters that may affect their rights and interests. Provincial plans must be implemented in a manner that is consistent with the recognition and affirmation of existing Aboriginal and treaty rights under section 35 of the Constitution Act, 1982.</p> <p>The First Nations and Métis communities within the Great Lakes region have a unique relationship with the land and its resources, which continues to shape the history and economy of the area today. Ontario, including the area covered by the A Place to Grow: The Growth Plan for the Greater Golden Horseshoe, is largely covered by a number of Treaties that provide for treaty rights. In addition, Aboriginal communities may have Aboriginal rights within the Plan area. Ontario recognizes the unique role that Indigenous peoples have had and will continue to have in the growth and development of this region.</p> <p>A Place to Grow Growth Plan has several references regarding Indigenous Nations’ right to be consulted.</p> <p>Section 4.2.7 Cultural Heritage Resources states:</p> <p>2. Municipalities will work with stakeholders, as well as First Nations and Métis communities, in developing and implementing official plan policies and strategies for the</p>	<p>correct contact information for Six Nations Confederacy during our most recent outreach effort.</p> <p>Below is the original email that was sent to stakeholders.</p> <p>Please confirm whether the Six Nations Confederacy would like us to arrange a virtual meeting to discuss any feedback, questions or concerns you have related to the plan.</p> <p>We will be presenting the preliminary Preferred Solution to Council in May for approval before continuing on to develop the implementation strategy. The final Plan will be presented to Council in December of this year.</p>	
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<p>identification, wise use and management of cultural heritage resources.</p> <p>Section 5.2.3 Co-ordination states:</p> <p>4. Municipalities shall engage Indigenous communities in local efforts to implement this Plan, and to provide the necessary information to ensure the informed involvement of these communities.</p> <p>And:</p> <p>7. Planning authorities shall co-ordinate planning matters with Indigenous communities throughout the planning process to ensure that appropriate engagement is undertaken. Municipalities are encouraged to build constructive, cooperative relationships with First Nations and Métis communities and to facilitate knowledge sharing in growth management and land use planning processes.</p> <p>As I am sure you are also aware, Six Nations of the Grand River are signatories to the Haldimand Proclamation Treaty, 1784: A tract of land granted to the Haudenosaunee people, six miles on either side of the Grand River, in Southern Ontario, from its mouth to its source and consisting of roughly 950,000 acres.</p> <p>I am sure that you will agree that sending notice of a project either through email, or regular mail does not constitute engagement carried out respectfully and in good faith.</p> <p>Meaningful and appropriate consultation occurs when we at Six Nations of the Grand River are engaged in the early stages of any given project. All consultations with the people of Six Nations should be carried out in good faith and should be based on the principles of: mutual respect, transparency and</p>		
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	<p>accountability. We encourage all levels of government, developers and their affiliates to act honourably</p> <p>when engaging with the Six Nations of the Grand River and to familiarize yourselves with the culture and history of our people and to do so utilizing appropriate sources of knowledge and information that is respectful and truthful.</p>		
21-01-28	<p>I was reading through the TMP updates before taking the survey and came upon a statement that I can't find the supporting documents for.</p> <p>"We need to update the downtown parking strategy to align with the objectives of the TMP to reduce downtown car use."</p> <p>Can you please send me a link to the background document that supports the objective of removing 'downtown car use'.</p>	<p>Thank you for your inquiry about the TMP.</p> <p>There are a couple of supportive decisions, documents, and data that support this problem statement:</p> <ol style="list-style-type: none"> 1) The Community Energy Initiative recommends car-free districts as one of the measures toward achieving "net zero carbon by 2050" target. These recommendations were approved by council in 2018. 2) The statement reflects community and stakeholder feedback on "issues and opportunities" collected for this plan during the fall of 2019. 3) It reflects best practices that says policies and efforts need to be aligned toward common goals. 	Responded to email.
20-12-14	<p>Below are additional responses to our discussion last week, on behalf of X:</p> <ol style="list-style-type: none"> (1) PDI appreciates that there is no planned revision to the Truck Routes in Guelph. (2) They currently do not experience any issues in either train deliveries or trucking operations. (3) Typical routing is to Highway 401, via Victoria Road to either Laird or Stone to the Hanlon. 	<p>I'm copying our lead consultant to ensure the additional comments are documented.</p> <p>Can you let me know what background report you are requesting? All publically available documents are available online at www.guelph.ca/tmp and at https://storymaps.arcgis.com/stories/0e3cfa5e08ba4f49a139ffbd8eeb2c6</p> <p>We will touch base again in the new year with another round of engagement. We hope you have a wonderful holiday season!</p>	Responded to email.

	<p>(4) Fifteen years ago when PDI first located in Guelph, there was a proposal for a new interchange at Watson. That would have significantly improved PDI's routing, but it highly unlikely to ever be constructed.</p> <p>(5) As well, the rerouting of Highway 6 south of Highway 401 to avoid Morriston would be very beneficial.</p> <p>Trust these comments are helpful. Please send your background report through when available.</p>		
20-12-01	<p>I am not sure you are the correct person, but I have seen the signs around town and figured I would give my 2 cents. If not can you please forward to the correct person Please stop this crazy proliferation of traffic lights everywhere. At one point in downtown we have 11 sets of traffic lights within an approx. 1 km radius? Why? And for the record, traffic circles or roundabouts handle 11 times more traffic in the same period of time, than any other form of control, are far better at traffic calming and virtually eliminate the serious crashes, And further more are almost maintenance free. Additionally they calm traffic without intentionally stopping it, and since Guelph cant figure out how to coordinate traffic lights, our lights arbitrarily stop 100% of the traffic, frequently. If you want a greener city look at keeping vehicles moving efficiently, stopped at traffic lights is just pollution and waste.</p>	Responded and directed the resident to our EHQ page to learn more about the project and complete the survey if he has not already done so.	Phone call.
20-11-29	<p>The Guelph Coalition for Active Transportation (GCAT) is a not for profit organization that seeks to increase the quantity, quality and safety of active transportation in Guelph. For eight years we have acted as the collective advocacy voice for our members and social media followers now numbering in the many hundreds.</p> <p>GCAT wishes to offer the following comments as part of the community engagement process of the Transportation Master Plan (TMP) Update project. Our comments, intended as helpful suggestions and additions, are loosely organized around the</p>	Noted.	Comment logged.

structure of the story map materials. Specifically, we make commentary on the TMP's:

- Values
- Goals
- Background Papers (Road Safety)
- Problems and Opportunities
- Alternative Solutions

Our specific recommendations and comments are highlighted in bold text.

Correspondence between the TMP Vision and Values and GCAT's purpose:

- GCAT's mission and vision statement are as follows:
"GCAT's mission is to increase the quantity, quality and safety of active transportation in Guelph. GCAT envisions a future in which Guelph's citizens can walk or bike around their city in comfort, while contributing positively to public health and happiness, clean air, and a vibrant local economy. Our active transportation network will be designated as essential transportation and it will be inviting, equitable, inclusive, and connected. It will be enjoyable and safe to use in all seasons by people of all ages and abilities."

- Though GCAT's purpose is limited to only active modes of transportation and is expressed in slightly different language, **the degree of correspondence between our foundational statements and the vision and values of the TMP project is remarkable.**

TMP Values: Sustainable:

- **We wholeheartedly support the definition given for the value of "sustainability." Specifically, the phrase, "...Guelph will encourage a shift towards active transportation modes (i.e. cycling and walking)..." aligns perfectly with GCAT's mission and is our *raison d'être*.**

GCAT believes that the benefits of such a modal shift extend far beyond “...*promoting healthy lifestyles and environmental sustainability...*” and include such things as:

- Invigorated local economy
- Physical and mental health, and wellbeing and happiness of participants
- Improved traffic flow due to fewer private automobiles on the roadways
- Reduced infrastructure capital and maintenance costs
- Better and more efficient use of public space
- Reduced energy use
- Alignment with CEI pathway to net zero carbon by 2050
- Less noise and air pollution
- Increased social interactions among citizens
- Independent children

TMP Values: Complete:

- **GCAT also endorses the value of “completeness” due to its focus on creating and highlighting a broader range of transportation mode choices available to diverse citizens of all ages and abilities.**

While it may be true in theory that Guelphites have always had these options, on the ground the reality does not reflect this. For example, the fact that the modal share of cycling is around three percent demonstrates that for the vast majority of citizens, right now cycling is not perceived as a viable option.

We welcome a future system that is built around the value of “completeness.

- **We respectfully disagree with the idea that all transportation modes are “equally important.”**
- Since some modes are clearly more sustainable than others, and since there is urgency to our taking climate

action, doesn't that mean the more sustainable modes are presently more important?

TMP Values: Enjoyment:

- We who walk and cycle believe that oftentimes "getting there is half the fun." Sadly, with respect to commuting and many other trips from home, the enjoyment of travel has been all but forgotten. This is particularly true of cars and public transit. A recent study has shown that lengthening a commute by twenty minutes causes the same unhappiness as a nineteen percent pay cut. ([link](#))

However, anyone who rides a bike knows that there is an inherent joy to cycling. The same is often true of walking. Importantly, this feeling of happiness and wellbeing is just as profound when one is walking or riding purposefully to a destination, i.e., transporting oneself, or is simply seeking recreation. A recent article highlights the health and happiness benefits of an "ideal commute." ([link](#))

- The pandemic has highlighted the importance of social interaction to people's mental and emotional health. We believe that walking and cycling lend themselves to social interaction if public space is allocated to allow for it. We see this in some European cities where it is not uncommon for groups of children to ride their bicycles to school in small groups, or teenagers and seniors pairing up to hold conversations while they ride.
- Consequently, **GCAT recommends that, just as we have done in our own vision statement, the word "enjoyable" should be added to the values underpinning the TMP.**

Background Papers: General Comments

We wish to congratulate Staff on their excellent presentation of issues through the background papers "Transportation Technology and New Mobility Options," "The Changing

Transportation System User,” “Road Safety,” “Network Planning,” and “Transportation Resilience.”

Our specific comments will be with respect to road safety.

Background Papers: Road Safety and Vision Zero

- As is described in the background paper, the willingness of a large majority of citizens to choose cycling as a viable transportation mode is known to be highly dependent upon its perceived safety. Consequently, and because the current cycling modal share is so low, improving safety for cyclists represents the best opportunity Guelph has for shifting to more sustainable modes.

GCAT therefore believes that improving cycling facilities with a view to improving safety, together with a number of other measures to encourage cycling, ought to be among the highest priorities in the TMP.

- Although GCAT has not as yet taken a formal position on it, **we acknowledge the principles and value of Vision Zero as a guiding philosophy in the design and implementation of the transportation system.**
- **However GCAT is concerned that, as has been the case in many other municipalities, a formal adoption of Vision Zero by the City of Guelph, without a true commitment of political will that translates into the necessary short- and long-term investment, would be both undesirable and perhaps even counterproductive.**

Problem and Opportunity Statements

- **GCAT is extremely pleased to see the several clear and explicit problem and opportunity statements calling for modal shift away from cars and toward walking and cycling (and transit.)**
- Defining the transportation future for Guelph in this way is the very reason that our organization exists and we strongly support this

	<ul style="list-style-type: none">● We notice that many of the statements refer to streets only, and we suggest that the City’s trail system also be considered with respect to completeness, safety and connectivity.● There are, for example, several sites within Guelph’s trail system where there are discontinuities that are both annoying to users and are safety liabilities. These should be addressed by the TMP as well as streets.● Although the plan is clear about decreasing the modal share of cars, we wonder if the plan also should consider how to manage the <i>number of cars using the system</i>. It may be that, as ride hailing or transportation-as-a-service evolves and matures, there could be an uncontrolled expansion of the number of vehicles in the system, possibly at the cost of safety to users of other modes. Too many vehicles may also add capital, maintenance and public space costs to the system.● We are intrigued by the possibility of re-classifying streets according to their function instead of by the number of vehicles per hour. With respect to the cycling mode, particularly if its share is dramatically increased, this opens the possibility of creating higher volume cycling infrastructure to serve schools and large employers, for example. We even see the possibility of cycling highways between major centres such as have been built in some European urban districts. <p><u>Alternative Solutions:</u></p> <ul style="list-style-type: none">● As stated previously, citizens need to feel safe in order to consider cycling as a viable transportation mode. Guelph’s modal share distribution is a reflection of people’s perceived safety in different modes, meaning that within the current system people feel safe in cars but not on bicycles. Consequently,● GCAT does not recommend Alternative 1 - Do Nothing. We believe that the current modal shares of walking and cycling are denying the community practically all of the benefits to the City that we have listed previously.		
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- **GCAT supports consideration of Alternative 2 - Sustainability Focus. This alternative, with its intention to increase modal share of walking, cycling and public transit has a high potential for realizing the benefits we have listed previously.**
- **GCAT believes that Alternative 3 - Sustainability and Resiliency Focus, with some qualifications, is equally likely to cause the modal shift necessary for the realizing of the benefits we have listed previously.**

We note that the difference between Alternatives 2 and 3 is the addition of the following attribute:

“Develop a network of streets that could be widened to four lanes in the future to meet a range of transportation needs. Widening of these streets would only occur if the need were proven in future network studies.”

GCAT recognizes the inclusion of this attribute as a means of enhancing resilience in the face of the uncertainty of both the nature and timing of technological change as well as population growth. We agree with the need for flexibility, but we want to express our concern that any additional capacity in the street network must not come at the expense of pedestrian or cycling modal share.

Furthermore, we have faith that new transportation technologies that are designed for the optimization of safety, for sustainability and for efficiency will take *less* space per citizen-kilometer travelled than the current stock of vehicles in the system. (We also recommend that regulatory measures be designed into the system to manage the number of vehicles.) As a result, we do not see an immediate need to expand vehicular roadway space within the next ten years. We would prefer that consideration be given to reallocating this valuable public space in the name of complete streets.

- **GCAT rejects Alternative 4 - Large Scale Infrastructure Expansion Focus because we believe it is a recipe for induced demand, is costly, unsustainable, ultimately inequitable, and as a result, betrays the values established for the TMP.**

Final Comments:

- **GCAT understands that the desire to shift transportation modal share away from cars and toward more sustainable modes in the context of a system in which roughly eighty percent of all trips are by car is bold.**

We anticipate that planning and implementing this shift may lead to a great deal of resistance from some motorists. Given Guelph's current transportation modal shares, the power of this reaction cannot be matched by those in the minority who use active forms of transportation.

To accomplish the desired modal shift will require bold leadership and political will, and since political will derives from the community itself, it will need to be developed.

Although it is premature to get into implementation details, GCAT believes that infrastructure investments alone will not be enough to cause the desired change in the community's transportation choices. These choices will be a matter of behavioural and attitudinal change, a learning experience in other words.

We would like to suggest that this vital aspect of making change ought to be supported by consultants whose expertise is in behavioural and attitudinal change.

- One of the obstacles to shifting to more sustainable transportation modes is the widely-held perception, particularly among many who do not use active transportation, that walking and cycling are recreational activities, not legitimate transportation options in their own right.

	<p>In an effort to establish active transportation modes on an equal basis with more dominant modes within the overall transportation system, GCAT recommends that pedestrian and cycling infrastructure and amenities become officially designated as “essential transportation” in all relevant City plans and documents, including the Official Plan.</p> <p>GCAT wishes to thank Staff for providing this opportunity to comment on the TMP Update and we look forward to further engagement opportunities. Members of our Board would be pleased to meet with you to clarify or elaborate upon any of the comments we have shared.</p>		
20-11-13	<p>I saw your contact info on the "Moving Guelph Forward" webpage as I was looking at the work that has been done to date about the transportation master plan. I couldn't find an appropriate place to offer feedback about two issues that I think are very concerning, so I hope you don't mind that I'm emailing them to you as a member of the Guelph community.</p> <p>In terms of the values statements, the way the word "equitable" is being used is very unsettling. As a member of multiple equity-seeking groups, when I see the word equitable alone such I expect the description to acknowledge people who experience discrimination - black, indigenous, and persons of colour; persons with disabilities; and other equity seeking groups.</p> <p>To click on the description and read that the word equitable is interpreted to mean "geographically equitable" makes me think the City is missing the point and insensitive to the experiences of people who experience discrimination. Particularly after all of the discussions about Black Lives Matter in recent months, the statement about geographically equitable seems out of touch with the lives of people in the community.</p> <p>While it is true that there are certain geographic regions in the City that have a higher density of equity-seeking groups, and</p>	<p>Thank you for your thoughtful feedback. I've responded to your key points below. Your comments will be part of the public record as this is an Environmental Assessment and we document feedback and comments from stakeholders and members of the public. I have copied our consultant for his records.</p> <p>Equitable: I can certainly appreciate how the word “Equitable” has taken on deeper meaning in recent months given the major events of 2020. You raised some good points of this sensitivity that we will take into consideration for the Transportation Master Plan. We have relayed this feedback to the team and will look for opportunities to improve the language.</p> <p>To clarify a few points, we believe “equitable” transportation addresses the various minority/underrepresented/marginalized communities and groups you referenced. In the discussion paper, on page 8 we write, “Additionally, by focusing on transportation equity, the City is seeking to ensure that members of marginalized</p>	Responded to email.

<p>addressing transportation for those communities is a way of addressing equity, there are other important equity considerations for the transportation master plan.</p> <p>The transportation master plan should aim to provide modes of moving around the city that protect the dignity of members of our community - particularly individuals from equity-seeking groups. For example, using public transit should not make people feel like second class citizens. As new initiatives are considered, extra effort needs to be made to ensure that it is not merely the voices of wealthy/privileged people who shape outcomes, but that the perspectives of disadvantaged groups are heard and allowed to influence decisions too. Rather than a lack of transportation being a barrier to accessing services, transportation seen as a critical part of our social safety net.</p> <p>Transportation is often a core issue in situations that reinforce poverty (or help to provide poverty relief). Transportation allows people to get to job interviews or reliably show up for work, it provides access to health care and education, and it allows people to participate in building stronger communities.</p> <p>Briefly, I have two other unrelated concerns:</p> <p>a) I feel like the language around achieving net zero by 2050 is too soft. It does not read like a firm commitment (i.e. "we will do this...") but rather seems a little more vague/aspirational (i.e. "we will strive to do this..."). I think it's important to use language that makes a firm/unequivocal commitment to achieving net zero.</p> <p>b) The Transportation Master Plan does not seem to provide enough guidance to avoid a showdown in the future about closing at-grade rail crossings like the one on Dublin Street. There are no easy solutions to this problem, but if the master plan is designed to guide the long-term work of the City, this issue must be addressed. Closing crossings reduces safety for pedestrians and cyclists by pushing them out to busier roads,</p>	<p>communities have the same access/opportunities in finding and retaining employment.”</p> <p>In setting a goal to improve equitable transportation from a geographic perspective, we are trying to address the travel time inequities that result for those who cannot use a private vehicle for transportation. This goal allows us to address transit travel times, and active improvements to transportation (bike/walk) infrastructure standards to make these modes more dignified, safe and efficient from a travel time perspective.</p> <p>Net Zero by 2050: Thank you for the comment, we will take this into consideration when finalizing materials for the report to Council on the Preferred Alternative in May.</p> <p>At grade Crossings: We are building this Transportation Master Plan on the foundation set by the city's Strategic Plan, in which facilitating All Day Two-Way GO service is a strategic priority (“Improving transportation connectivity and safety within city limits, while advocating for better regional connectivity with public transit and rail service”). The Strategic Plan also prioritizes network connectivity, accessible and affordable transportation options, and sustainability which we hope are evident in the goals we are proposing for the TMP as well. A number of goals will be used in evaluating future projects that affect rail crossings. For example:</p> <p>1. People of all ages and abilities will be able to travel safely using any transportation mode that they choose. Interpretation: we will look to maintain neighbourhood connectivity for pedestrians and</p>	
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	<p>extends travel time for these modes of transportation, and divides communities. Keeping crossings as they are now impedes the important development of regional transportation. There needs to be some kind of a framework that ensures we find solutions that do not pit these objectives against each other.</p> <p>Thanks for reading my rather long winded email!</p>	<p>cyclists, in order to mitigate long detour routes to available crossings.</p> <p>5. Guelph’s streets, trails, and rail networks will align with the City’s land use objectives. Interpretation: we want to maintain business access, development plans and Official Plan goals around transportation and access to and within communities.</p> <p>7. Guelph’s transportation system will plan for the changes of tomorrow while delivering great service today Interpretation: we want to support and facilitate improved regional transportation options without compromising our community’s own transportation connectivity for other modes.</p> <p>Future plans will consider these goals as criteria through which we evaluate decisions and negotiations on the design and network planning decisions.</p> <p>Staff are currently initiating a comprehensive study, separate from the TMP, to explore all the alternatives of rail crossings in Guelph with these goals in mind. The study is anticipated to start in early 2021.</p> <p>I hope this information is helpful. Again, thank you for your thoughtful review and feedback.</p>	
19-10-27	<p>Bus Lanes No!!! Left turn lanes required all along that route from Stone to Clair. Similar to Woodlawn Road Sidewalks widened to create Bike/Sidewalk combo. This would mean major reconstruction, which should have been introduced 10 years ago when places to grow determined the so called intensification of Gordon.</p>	<p>Noted.</p>	<p>Email forwarded to Staff from Councilor O’Rourke. Comment logged.</p>

<p>19-10-25</p>	<p>Good morning to all of you on this brisk Friday morning. Here are some thoughts I have on the recently ended trial bus lane on Gordon Street from Kortright Rd. to essentially the start of the University. I have talked with a person that was dealing with the issue on behalf of the City and he expressed the reasoning and logic of this trial. He did add that a comprehensive study of traffic had not been done in the City since 2004, at least I think that is the year he mentioned to me. He also elaborated on the fact that buses use this route every 5-7 minutes, I am not sure if this is true or not, but suffice it to say that was his statement. Frankly I have no problem with a trial, what I would have a problem with is if we were to make this a permanent situation. It is fair enough to note that even if the buses are coming through as often as has been suggested that still would not alleviate the congestion that would be created for the other vehicles using Gordon Street. I would be willing to bet the number of cars and trucks would be 30 to 50 times more that the buses. With this multitude of vehicles now being crammed into one lane it would simply cause far more traffic congestion that we now have. I will go on to say that it is fair enough to look at other traffic coming devices; however, this one is a very BAD idea, not only in my view but in the view of others I have talked to. Hopefully this trial has now ended and we can get back to normal.</p>	<p>Thank you for sharing your input with us. I am sharing it with the manager for this pilot program for her research.</p> <p>You are also more than welcome to complete the survey https://www.haveyoursay.guelph.ca/transportation and/or to volunteer for a focus group on the topic.</p> <p>As I have mentioned to you before, don't be offended if we don't all respond. We often have one person respond for the group that way we don't ask our staff for different things or forward the same email multiple times. It's just a little more efficient this way, but we all read your email.</p> <p>Thank you again for sharing this feedback.</p>	<p>Responded to email.</p>
<p>19-10-24</p>	<p>Thanks for your response. I would be happy to serve on one of the focus groups; however, I am leaving for Florida on the 4th of November and actually we spend almost all of the winter there, at least until the last week of April.</p> <p>I live in the south end of Guelph so have had an opportunity to experience the dedicated bus lane. I did complete an evaluation on the city website but wanted to add a few more comments.</p> <p>In addition to knowing from experience that a dedicated bus lane simply ensures traffic will become clogged up, I also wanted to note that one impatient bus driver was not happy to be behind a colleague so instead jumped in front of me in the 'other vehicle' lane. If the city should decide to have dedicated bus lanes then bus drivers need to play by the rules too. I noted in my submitted comments, that in the current configuration (not the trial run), buses block traffic and that bus</p>	<p>Thank you very much for your thoughtful comments and feedback. You are right that there are many variations to the bus-only lane and other transit-priority measures that could be explored further to enhance Transit, and your suggestions are great.</p> <p>For the purpose of the temporary bus-only lane, we chose something simple to do on a temporary short-term basis and visible enough to generate discussion, which I can safely say we succeeded at (over 1100 survey responses)!</p>	<p>Responded to email.</p>

	<p>bays/turnouts would make a significant difference to keeping traffic flow going and would not necessitate a dedicated bus lane which takes one lane out of use.</p> <p>My sense is you are looking at "today's reality" which is fine, but you are planning for reality 10 - 20 years down the road. Increased population density will mean significantly more vehicles on the road. How are you factoring this into your thinking? As a citizen, that is the more important to me but I have no sense that this is part of the city's thinking.</p> <p>Look forward to seeing how this all unfolds.</p>	<p>The Transportation Master Plan will be considering ways to enhance transit as an attractive form of transportation in future, and the recommendations would be further studied and refined through a Transit Master Plan.</p> <p>If you would like any further information about either the Transportation Master Plan, the temporary bus-only lane exercise, or the upcoming Transit Master Plan, please do not hesitate to be in touch.</p>	
19-10-23	<p>Took 20 minutes to get from Edinburg to Stone; congestion to College. Hope someone is monitoring and seeing impacts. Not pretty. Thanks.</p> <p>Feedback - oak St., difficult to turn left. Traffic from condos makes it hard and the lane makes it impossible. A lot of seniors in the neighbourhood - force people to Harvard Road. Wouldn't support it for permanently. First impressions are important - do it right, make good impressions.</p> <p>How can you expect that to fly on Gordon which is an extremely busy street?</p> <p>Horrific idea, 4:30 - see 3 busses going through, backlog to Hands dr, what are we doing there?</p> <p>Concern about temp lane closure northbound on Gordon. Intersection at Stone Road - high probability of traffic accident on what witnessed this morning.</p> <ul style="list-style-type: none"> ● Signed up for the focus group ● Use gordon often. ● Finds it's a new thing, but public is used to driving in a certain routine. New arrangement that's different = confusion ● Confusion with people entering in beginning and try to get out of it ● At stone Rd - not sure if they should turn right from centre northbound thru lane or from the right lane. ● Bus-only lane sign is confusing. Maybe right-turn lane permitted is better. 	Noted.	Phone calls. Comments logged.

	<p>People don't know what to do if there's an emergency vehicle</p> <ul style="list-style-type: none"> o Some people might pull over to the right as they typically do into bus lane o Others might think the EMS can use the bus lane <p>If city wants to institute this type of measure, the way to do it is wholeheartedly - if restrict lane to bus-only traffic, has to be means for the public to drive as they usually do so that people don't encounter a unique circumstance that they need to deal with on the fly.</p> <ul style="list-style-type: none"> o Ottawa Bus-Only lanes, HOV in states - if you want to make a right turn, doesn't impair driver to drive normally. <p>Saw accident on Monday or so - south ring road and Gordon street because of confusion Would be like putting in roundabouts without public education ahead of time.</p> <p>Dedicated bus lanes not a bad thing, it's how they're implemented. Want to promote efficient transit and have it run smoothly. There's 10 min interval between transit on Gordon, consider allowing HOV to use the bus lane as well.</p>		
	<p>Complaint on bus lane, traffic lights not synched properly, reducing to one lane, register a complaint that it's appropriate or acceptable and causing a lot of traffic issues. Hoping this isn't something we are looking at permanently. Dangerous situation wth amount of traffic, also inconvenient to travel from one end of gordon to the other.</p>		
19-10-23	<p>Feels the lane is unsafe especially turning into it from Hands Drive. There is not sufficient signage to direct traffic and he worries that a stranger to the City would not know what to do. He also feels the buses using the lane are travelling too fast.</p>	Noted.	<p>Message forwarded to staff from the Operations Department.</p> <p>Comment logged.</p>
19-10-23	<p>This is the most idiotic idea I have ever heard of. The bus lanes will be empty about 95% of the time. It will effect traffic negativity and will hurt business along the route.</p>	<p>On behalf of Mayor Guthrie, thank you for your email. It will be shared with him.</p>	<p>Email forwarded to Staff from the Mayor's office.</p>

		<p>We are copying your email to staff who are overseeing this pilot project and we ask that they reply back to you.</p>	
		<p>Thank you for sharing your feedback with us about the temporary bus-only lanes that were part of the Transportation Master Plan community engagement.</p> <p>The intent of this temporary demonstration was to spark conversation in our community about what some of these concepts – like “complete streets” and “transit priority measures” – could mean for Guelph. We intentionally kept these demonstration projects very short (1 week or less) and very visible. We wanted many Guelph residents to experience and react to these ideas in person as the road user, and the feedback will inform recommendations in the update to the Transportation Master Plan.</p> <p>We had staff on-site throughout the 5 days observing traffic, taking measurements, and collecting feedback from people using the street. We also collected over 1000 responses online through the online survey.</p> <p>In addition to the online survey for the bus-only lane, we will be hosting two focus group sessions November 4 (2-4 pm) and November 6 (6-8 pm). Please let me know if you would like to attend and share further thoughts and ideas about transit priority measures in Guelph.</p> <p>All feedback we collect (emails, phone calls, and survey responses and comments at http://www.haveyoursay.guelph.ca/transportation) is documented as part of the Transportation Master Plan and will be considered when developing the recommendations for Council later next year.</p>	<p>Responded to email.</p>
<p>19-10-22</p>	<p>Separate Bus Lane!! Do any decision makers in the Guelph Traffic Dept. live in the South end of Guelph? Do you have any</p>	<p>Thank you for sharing your feedback with us about the temporary bus-only lanes that were part of the</p>	<p>Responded to email.</p>

	<p>observers monitoring the test area? Due to the extreme vehicular congestion, the traffic is idling at the traffic lights and spewing pollution into the atmosphere. This is not advancing the Green mandate of a clean environment. I always believed that the objective of a Traffic Dept. is to improve traffic flow and not decrease it.</p> <p>Does the Guelph Traffic Dept. meet with the Guelph Planning Dept. and if so, how will Gordon Street accommodate the extra 20,000 vehicles in the future development plans???? Gordon Street needs to be widened not narrowed. This congestion will only create safety issues for every vehicle participating in this proposed change.</p> <p>This project fits well with the Downey Road fiasco and the Gordon Street geese crossing light at the Tea House. When the traffic lights at each end of the Gordon Street Bridge are red, I am sure the bridge can withstand the vehicular weight trapped on it. I am sure that this possibility was considered during construction planning of the bridge and will probably hold up over time.</p> <p>No need to reply to my e-mail, I am pretty sure that I already know the answers.</p>	<p>Transportation Master Plan community engagement. The TMP is led by Engineering and Transportation Services, but includes a staff committee including Planning, Transit, Operations, Climate Office, and many other departments to ensure close alignment and collaboration amongst our various plans.</p> <p>The intent of this temporary demonstration was to spark conversation in our community about what some of these concepts – like “complete streets” and “transit priority measures” – could mean for Guelph. We intentionally kept these demonstration projects very short (1 week or less) and very visible. We wanted many Guelph residents to experience and react to these ideas in person as the road user, and the feedback will inform recommendations in the update to the Transportation Master Plan.</p> <p>We had staff on-site throughout the 5 days observing traffic, taking measurements, and collecting feedback from people using the street. We also collected hundreds of responses online through the online survey, mostly from drivers.</p> <p>In addition to the online survey for the bus-only lane, we will be hosting two focus group sessions November 4 (2-4 pm) and November 6 (6-8 pm). Please let me know if you would like to attend and share further thoughts and ideas about transit priority measures in Guelph.</p> <p>All feedback we collect (emails, phone calls, and survey responses and comments at http://www.haveyoursay.guelph.ca/transportation) is documented as part of the Transportation Master Plan and will be considered when developing the recommendations for Council later next year.</p>	
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<p>19-10-22</p>	<p>Just thought I'd let you know that I don't think the bus lane that goes along Gordon Street towards Stone Road is not a very good idea.</p> <p>I was leaving from a building this evening to head towards Stone Road and it was not easy getting out of the building parking lot and then trying to make a right turn on Stone Road.</p> <p>I wasn't clear if you are to merge to the right turning lane or if you were to turn right from the car lane in front of the bus turning lane and right lane which during busy times would cause a backup of traffic with people crossing the roads.</p>	<p>Noted.</p>	<p>Email forwarded to Staff from Councillor Gibson.</p>
<p>19-10-21</p>	<p>I tried commenting through your "Have your Say" web portal however it is not working and I am unable to connect to make a comment.</p> <p>I'll start by saying I have lived in Guelph for 19 years and although I may not agree with all city initiatives, I have never voiced my opinion in disagreement and I am generally supportive because it is for the greater good of the community. The trial run of the bus lane on Gordon however is in my opinion very short sighted and a wasted effort of staff and financial resources. This section of Gordon is a parking lot at the best of times. Below are my observations from Saturday October 19th.</p> <p>Turning North bound onto Gordon from hands drive is always difficult, however with all traffic in one lane, there is no break in traffic to safely make this turn North bound.</p> <p>At Stone and Gordon, the light had turned green, the traffic advanced but once the advance green to turn west bound was complete, traffic for the west bound turning lane backed up into the Northbound lane and North bound traffic was not able to advance. The North bound signal was still green but no one could advance. This was not the case on the 19th at Harvard, but I'm certain during weekday Rush hour this will happen.</p>	<p>Thank you for sharing your feedback with us about the temporary bus-only lane on Gordon Street. I am sorry to hear the website wasn't working. I will try to get that sorted out!</p> <p>Staff were on-site Saturday to observe how traffic was flowing and made some adjustments over the weekend that help reduce confusion and make right turns easier at Kortright. Staff will look at the other side street locations as well today to see if we can make any further improvements between now and Wednesday night.</p> <p>We know there are delays caused by the bus lane over the next few days and can appreciate the frustration of some road users. This Monday morning's peak rush hour resulted in about a 7 minute delay to drivers between Kortright and Stone Road (8:30 a.m. – 9 a.m.). We are actively monitoring the project to ensure it is working safely and making adjustments as required. The temporary bus-only lane will be removed Wednesday night.</p> <p>The intent of this temporary demonstration is to spark conversation in our community about what</p>	<p>Responded to email.</p>

	<p>At approximately 11:45am traffic was backed up from Stone to Kortright heading North bound, coming south bound the intersection at Hands and Gordon was block and I had to wait for someone to stop and give me the wave to make a left turn onto hands.</p> <p>The City has implemented traffic calming measures at the end of Kortright where it turns into Zaduk, what I witnessed on the 19th is frustrated drivers turning East bound onto Kortright to get to Victoria to avoid this section of Gordon, this completely negates the intent of the traffic calming.</p> <p>Turning North bound off of Oak is next to impossible with two lanes to merge into, if this pilot gets implemented it will not be possible.</p> <p>I try to avoid this section of Gordon as much as possible during prime hours, however sometimes it's simply not possible. This is a really bad idea, simply put. The general populous will not voice their opinion because they don't believe their opinion matters and there is not information posted in the area to explain what is happening or that residents have an opportunity to voice their opinion. Please do not proceed with this initiative.</p>	<p>some of these concepts – like “complete streets” and “transit priority measures” could mean for Guelph. We are intentionally keeping these demonstration projects very short (1 week or less) and very visible. We want many Guelph residents to experience and react to these ideas in person as the road user, and the feedback will inform recommendations in the update to the Transportation Master Plan. It is effective and useful feedback for staff, and the data supplements the more traditional open-house style of sharing information for feedback.</p> <p>In addition to the online survey for the bus-only lane, we will be hosting two focus group sessions November 4 (2-4 pm) and November 6 (6-8 pm). Please let me know if you would like to attend and share further thoughts and ideas about transit priority measures in Guelph.</p> <p>All feedback we collect (emails, phone calls, and survey responses and comments at http://www.haveyoursay.guelph.ca/transportation) is documented as part of the Transportation Master Plan and will be considered when developing the recommendations for Council later next year.</p>	
19-10-21	<p>This is day four of the above mentioned lane reduction. I'm not sure how users of this corridor are expected to respond to this situation as many who use this road are from out of town and would not be able to stop to get the little tabs from your posters, if they can even see your posters. The phone numbers are definitely not readable from the road</p> <p>I have not seen anyone monitoring the situation since the first day, Saturday, Oct 19, so am curious as to how you are determining how "safe and efficient" this exercise has been.</p>	<p>Thank you for sharing your feedback with us about the temporary bus-only lane on Gordon Street.</p> <p>We know there are delays caused by the bus lane over the next few days and can appreciate the frustration of some road users. This Monday morning's peak rush hour resulted in about a 7 minute delay to drivers between Kortright and Stone Road (8:30 a.m. - 9 a.m.). We are actively monitoring the project to ensure it is working safely and making adjustments as required. The temporary bus-only lane will be removed tonight.</p>	Responded to email.

	<p>I would not want to be a bicycle using the bike lanes along with the buses, I've seen the buses as they travel down the closed lane and there is definitely no room for a bike, if the driver is even able to see them.</p> <p>Judging from the volume of traffic flow that has resulted in the lane reduction, I dare say there were many people late for work and appointments. Sometimes the backup traveling north extended all the way to Harts Lane. Given that the City has approved even more intensification on the Gordon Street corridor, this issue will only intensify as well with the increased volume.</p> <p>In a city that wishes to reduce emissions on busy roads, it is ironic that it installs so many mechanisms like even more traffic lights, many close together and now this most recent debacle of a lane reduction which continually backs up traffic to a crawl.</p> <p>I hope you hear lots of feedback, although it will be a challenge for many given the methods you are offering, but maybe that's how you get things done your way in this city.</p>	<p>Staff have been on-site throughout the demonstration project at various times of day both to observe and monitor the lanes, and to collect feedback from road users. We have observed that the lane is 'tight' for allowing cyclists and buses to co-exist comfortably. This is being documented so that if in future we explore this concept more in depth, we would look for design features that support both those modes better. This is just one example of some of the things we are learning from this short demonstration project.</p> <p>The intent of this temporary demonstration is to spark conversation in our community about what some of these concepts - like "complete streets" and "transit priority measures" could mean for Guelph. We are intentionally keeping these demonstration projects very short (1 week or less) and very visible. We want many Guelph residents to experience and react to these ideas in person as the road user, and the feedback will inform recommendations in the update to the Transportation Master Plan. It is effective and useful feedback for staff, and the data supplements the more traditional open-house style of sharing information for feedback.</p> <p>In addition to the online survey for the bus-only lane, we will be hosting two focus group sessions November 4 (2-4 pm) and November 6 (6-8 pm). Please let me know if you would like to attend and share further thoughts and ideas about transit priority measures in Guelph.</p> <p>All feedback we collect (emails, phone calls, and survey responses and comments at http://www.haveyoursay.guelph.ca/transportation) is documented as part of the Transportation Master</p>	
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		Plan and will be considered when developing the recommendations for Council later next year.	
19-10-21	<p>Why is there a northbound HOV/bus lane on Gordon between Kortright and Stone Rd? I didn't see any signage indicating if this is permanent or temporary.</p> <p>Gordon is one of the few main north-south roads and it has a high traffic volume. Turning it into a one lane road causes significant traffic delays. I sincerely hope this is not permanent.</p>	<p>Thank you for sharing your feedback with us about the temporary bus-only lane on Gordon Street.</p> <p>The bus-only lane is temporary – today is the last day. The intent of this temporary demonstration is to spark conversation in our community about what some of these concepts – like “complete streets” and “transit priority measures” could mean for Guelph. We are intentionally keeping these demonstration projects very short (1 week or less) and very visible. We want many Guelph residents to experience and react to these ideas in person as the road user, and the feedback will inform recommendations in the update to the Transportation Master Plan. It is effective and useful feedback for staff, and the data supplements the more traditional open-house style of sharing information for feedback.</p> <p>We know there are delays caused by the bus lane over the next few days and can appreciate the frustration of some road users. This Monday morning’s peak rush hour resulted in about a 7 minute delay to drivers between Kortright and Stone Road (8:30 a.m. – 9 a.m.). We are actively monitoring the project to ensure it is working safely and making adjustments as required. The temporary bus-only lane will be removed Wednesday night.</p> <p>In addition to the online survey for the bus-only lane, we will be hosting two focus group sessions November 4 (2-4 pm) and November 6 (6-8 pm). Please let me know if you would like to attend and share further thoughts and ideas about transit priority measures in Guelph.</p>	Email forwarded to Staff from the Mayor’s office.

		All feedback we collect (emails, phone calls, and survey responses and comments at http://www.haveyoursay.guelph.ca/transportation) is documented as part of the Transportation Master Plan and will be considered when developing the recommendations for Council later next year.	
19-10-21	Not sure who's idea this was but as a citizen who drives down Gordon daily I strongly object to the idea of a bus lane. Gordon St both north and south must be one of the busiest streets in the city.	On behalf of XXX, thank you for your email. It will be shared with him. We are copying your email to staff who are overseeing this file for their information.	
	Have you driven North on Gordon at 5:00pm. It's already congested, this would cause a traffic nightmare. Can't believe this is even being considered.	Thank you for sharing your feedback with us about the temporary bus-only lane on Gordon Street. We know there are delays caused by the bus lane over the next few days and can appreciate the frustration of some road users. This Monday morning's peak rush hour resulted in about a 7 minute delay to drivers between Kortright and Stone Road (8:30 a.m. – 9 a.m.). We are actively monitoring the project to ensure it is working safely and making adjustments as required. The temporary bus-only lane will be removed Wednesday night. The intent of this temporary demonstration is to spark conversation in our community about what some of these concepts – like “complete streets” and “transit priority measures” – could mean for Guelph. We are intentionally keeping these demonstration projects very short (1 week or less) and very visible. We want many Guelph residents to experience and react to these ideas in person as the road user, and the feedback will inform recommendations in the update to the Transportation Master Plan. It is effective and useful feedback for staff, and the data	Responded to email.

		<p>supplements the more traditional open-house style of sharing information for feedback.</p> <p>In addition to the online survey for the bus-only lane, we will be hosting two focus group sessions November 4 (2-4 pm) and November 6 (6-8 pm). Please let me know if you would like to attend and share further thoughts and ideas about transit priority measures in Guelph.</p> <p>All feedback we collect (emails, phone calls, and survey responses and comments at http://www.haveyoursay.guelph.ca/transportation) is documented as part of the Transportation Master Plan and will be considered when developing the recommendations for Council later next year.</p>	
19-10-19	<p>One lane for busses on Gordon St!!!!!!!!!!!!!! really!!!!!! What a very STUPID IDEA WHY is the city of GUELPH cratering to the UofG students????? Why?????</p> <p>Thank you</p>	<p>On behalf of Mayor Guthrie, thank you for your email. It will be shared with him.</p> <p>We are copying your email to staff who are overseeing this initiative for their information.</p>	
19-10-19	<p>I am writing to express my strong concern over the Temporary Bus-Only Lane experiment that started today on Gordon Street in Ward 6, and which will be continuing through Wednesday. Even with the relatively light north-bound traffic of a Saturday, today has already been very difficult for north-bound commuters and I personally witnessed one near-miss at Gordon and Stone this afternoon, with a car trying to turn right onto Stone Rd from the only north-bound lane it was allowed to travel in, namely the center lane. I urge the City to open the north-bound curb lane to vehicle traffic at least during the morning and evening commute times Monday through Wednesday of this week.</p> <p>Gordon is a primary North/South artery with particularly extensive north-bound traffic weekday mornings as commuters try to get to destinations north of Kortright Road (e.g. the University). This alone makes it an unwise choice for a</p>	<p>Thank you for sharing your feedback with us about the temporary bus-only lane on Gordon Street.</p> <p>We know there are delays caused by the bus lane over the next few days and can appreciate the frustration of some road users. This Monday morning's peak rush hour resulted in about a 7 minute delay to drivers between Kortright and Stone Road (8:30 a.m. – 9 a.m.). We are actively monitoring the project to ensure it is working safely and making adjustments as required. The temporary bus-only lane will be removed Wednesday night.</p> <p>The intent of this temporary demonstration is to spark conversation in our community about what some of these concepts – like “complete streets” and “transit priority measures” could mean for Guelph.</p>	Responded to email.

	<p>demonstration/experiment. As witnessed several times already today, all it takes is either (a) one north-bound car travelling on Gordon, trying to turn left in the study area north of Kortright, to create traffic chaos and driver frustration as cars pile up behind it, or (b) one north-bound car trying to turn right from Gordon onto Stone Rd and creating a serious accident, to create havoc for the morning or evening north-bound commute.</p> <p>Reducing our major North/South artery (Gordon Street) to one lane to "<i>demonstrate one possible solution</i>" is already resulting in hazardous traffic conditions (refer to social media for various irate commentaries and expressions of real concern). Leaving the situation in place for the Monday through Wednesday heavy traffic times is unwise in the extreme. I urge you to, at the very least, re-open the curb lane to all northbound traffic during the busy commute periods Monday through Wednesday, before serious accidents occur and/or commuter frustration gets so extreme as to lose support for future investigations and initiatives.</p> <p>I look forward to your response and the support of my Ward 6 Councillors on this issue.</p>	<p>We are intentionally keeping these demonstration projects very short (1 week or less) and very visible. We want many Guelph residents to experience and react to these ideas in person as the road user, and the feedback will inform recommendations in the update to the Transportation Master Plan. It is effective and useful feedback for staff, and the data supplements the more traditional open-house style of sharing information for feedback.</p> <p>In addition to the online survey for the bus-only lane, we will be hosting two focus group sessions November 4 (2-4 pm) and November 6 (6-8 pm). Please let me know if you would like to attend and share further thoughts and ideas about transit priority measures in Guelph.</p> <p>All feedback we collect (emails, phone calls, and survey responses and comments at http://www.haveyoursay.guelph.ca/transportation) is documented as part of the Transportation Master Plan and will be considered when developing the recommendations for Council later next year.</p>	
19-10-01	<p>Thank you for looking at innovative ways to introduce a protected bike lane. I appreciate any change that makes biking safer for me and my teenage kids.</p> <p>We moved downtown five years ago with the express idea of going down to one car and it's been great.</p> <p>Unfortunately, I did not have the opportunity to use the bike lane, it did not travel in any direction that I use.</p> <p>Please continue to allocate resources to making biking safer. I and my family will use them!</p>	<p>Thank you for your message!</p> <p>I am sorry you didn't have the opportunity to try the bike lanes in person; there's an opportunity to "experience" it virtually on your phone by viewing this 360-degree YouTube video our consultant created. (On a smartphone or tablet, you can swipe left and right to get a full 360-degree view as the cyclist travels down the bike lane).</p> <p>Here is the link to the video: https://www.youtube.com/watch?v=Mc-IZYVqZq8</p> <p>Thank you for sharing your encouragement. More information on the project is available at</p>	Responded to email.

		www.guelph.ca/tmp and you can look for other opportunities to share your feedback on the project at www.haveyoursay.guelph.ca/transportation	
19-09-18	<p>Received handout at Guelph Storm game on Friday Sept 13. Doesn't like that City uses tax dollars to create bike lanes when cyclists use sidewalks anyway – need more enforcement. Traffic light for pedestrians added at John F Ross school on Eramosa-should have closed the school on Eramosa and have students use the Meyer's Drive entrance. Crossing needed at Brant Ave and Victoria but none was put in there. Need to synchronise lights – example of Wellington at the Hanlon at 5 a.m. and you have to wait even if no one is coming.</p>	Noted.	Phone call.
19-08-20	<p>I live south of the Speed River and commute by bike to my studio on Woolwich near Wyndham.</p> <p>Bravo for the pop-up bike lane! I'll try it out, and will give you my feedback.</p> <p>I hope it ends up being more than "pop-up" if it works.</p>	Noted.	Responded to email.
19-08-08	<p>My Dear Friends of Guelph Public Transportation.</p> <p>Implementing more hours of services on Sundays and Holidays it becomes a great way to move an step forward to serve people of Guelph and courrages gesture to keep their cars home and use GPT.</p> <p>Thanks for your attention to this matter</p>	Noted.	Responded to email.



APPENDIX B

Vision, Values, and Goals Paper



Setting Direction

Guelph's Transportation Vision, Values, and Goals

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Guelph Transportation Master Plan

Moving Guelph Forward

Guelph is growing and how we move around our city is changing. As a result, we are exploring transportation options to make our city move better in every way. Through the Transportation Master Plan (TMP) update, we will review all of the ways we move: walking, cycling, riding transit, driving, trucking, and using trains. Our goal is to ensure that we offer diverse travel options, have appropriate transportation capacity, and maintain a high quality of life for both existing and future residents and workers.

The updated TMP will look at transportation planning in Guelph beyond 2031. The main objectives of this update are:

- To ensure that the new plan builds upon current policies, including the Official Plan and other master plans that have been approved since 2005;
- To recommend new policies and guidelines that reflect the vision for our community and balance mobility, environment, and efficiency, while prioritizing safety and access for all travellers; and
- To explore how new, evolving technologies and travel services will shape the future of transportation in Guelph.

The first step on the path to a successful TMP is to establish a vision for future mobility in Guelph. Therefore, this paper identifies the vision, corresponding values, and goals for Guelph's desired transportation future. These three pieces – the vision, values, and goals – will form the foundation of the updated TMP.

To find out how you can get involved with subsequent stages of the TMP update and to see the latest project progress, visit guelph.ca/tmp.



The Language of Policy

In common speech, action planning terms like “goals,” “objectives,” or “policies” are often used interchangeably. This results in confusion during discussions and creation of documents that refer to similar ideas by completely different terms. It also results in guidelines and policy documents that support very different goals or that have very different purposes being considered equivalent to each other (when they may not be).

To avoid this confusion and misunderstanding, this section defines the terminology used to refer to five distinct key components of policy. These components, which make up a comprehensive policy framework, are defined and discussed in the following sections.

What is a Comprehensive Policy Framework?

A policy framework is a compilation of agreed-upon directions, positions, procedures, and documents that guide the operation and management of an organization, a process, or a system. In this case, the policy framework in question is the one that will guide transportation in Guelph.

In transportation, it is important to have a comprehensive policy framework, which allows municipalities to integrate all desired key elements and to advance a full, aligned toolbox of policies and guidelines. Misaligned or missing elements of the framework force municipal staff to make day-to-day decisions based on project-specific information, often resulting in missed chances to advance towards a more complete transportation network.

Figure 1 is a visual representation showing the components of a comprehensive policy framework for municipalities.

From left to right, the components become less overarching and encompassing and more focused and detailed. Additionally, the components increase in quantity from left to right - a municipality will have only one transportation vision but multiple guidelines. However, the graphic does not suggest a hierarchy - all components are equally important to having a full, aligned toolbox that enables a municipality to advance its desired vision of the future. In other words, a lack of strong policies

stemming from a series of objectives is no better than a series of goals that are misaligned with a set vision.

Each of the components of a comprehensive policy framework is defined below. Note that though it is just one possible list of dictionary terms for a policy framework, it is an effective example of every tool that is typically needed for success, including higher level directions (the vision and goals), measurable objectives, and specific policies and guidelines.

Vision

A vision is a clear, comprehensive picture of the desired future. Effective strategic policy documents (such as Official Plans, Transportation Master Plans, etc.) have a clearly stated vision statement at the start of the document.

Goals

Goals are paths to be taken to achieve the vision. Though there is only one overarching vision, there will be several goals to support it. Goals are higher-level and less detailed than objectives.

Objectives

Objectives are the more “drilled down” actions and targets of a particular goal. Objectives allow municipalities to track progress towards those targets and know when they are met.



Figure 1: Components of a Comprehensive Policy Framework for Municipalities

Policies

Policies are the actions the municipality will take to achieve its objectives.

Guidelines

As the name suggests, guidelines guide decision making to be consistent with both policies and the parameters. Guidelines serve two major functions – they provide direction on how to make decisions in a way that is consistent with policies (the methods) and they set the parameters for making decisions (the tools).

What is the Role of Transportation Values?

Powerful vision statements directly reflect the community's values - the top priorities and core beliefs. The desired future may be one where all of these values are realized, allowing for the vision for the future and community's core values to be intertwined.

An effective set of vision, goals, and objectives is clear, well linked, and brief. A powerful approach is to ensure that the desired future – or vision - is one that reflects several core values. These core values will also act as the major themes that reoccur in all following components of the comprehensive policy framework. Each core value will correspond to a single goal, which in turn will generate several objectives.

The recurrence of the same core values as themes in all components of the policy framework ensures connectivity and consistency throughout, which makes the policy document easier to follow and comprehend. Taking this approach also ensures that every action that is completed or performance target that is achieved is clear progress towards one or more of the goals and directly moves the transportation system towards the vision





Vision and Values for the TMP

Guelph has recently updated visions and values for transportation from the Community Plan and an existing vision from the Official Plan, as presented in Section 3. In the case of the Community Plan, the vision and values are a result of a detailed year-long community engagement process. Therefore, there is no desire to completely start from scratch. Instead, TMP's policy framework will build upon these existing policies and update these policy components rather than re-write them.

This section recommends the vision and the six values for transportation in Guelph. The vision will be the foundation of the

TMP, the desired future which all of the TMP's policies seek to make progress towards while the six values will be recurring themes of the TMP that all TMP policies are aligned with. The vision and values are based on the existing direction in the Community Plan and Official Plan.

Guelph TMP Vision

"Transportation in Guelph will be safe, equitable, sustainable, complete, affordable, and supportive of land use."

This vision means that Guelph provides safe transportation networks for people to walk, wheel, and use vehicular transportation through all corners of the city. Transportation is geographically equitable – people can complete their trips comfortably and in a reasonable time, regardless of if they own a vehicle, which part of Guelph they are coming from, and which part of Guelph they are going to. Most people travel sustainably, minimizing the negative impacts of their trip on the environment. This is possible because the network for each mode of travel is complete, enabling continuous multimodal travel throughout our city. We accomplish these things in a way that is affordable for the user and makes the most financially efficient use of our investments. Finally, our transportation network is supportive of land use, meaning that we design our streets to be context-sensitive to support the growth of our community.

Transportation Values

The following transportation values for Guelph combine principles of the community values of the 2019 Guelph Community Plan with the values identified in the transportation vision of

Guelph’s 2018 Official Plan. The recommended values include:

- **Safe**
- **Equitable**
- **Complete**
- **Sustainable**
- **Affordable**
- **Supportive of Land Use**

As previously discussed in Section 2, the six values for transportation in Guelph are directly tied to the recommended transportation vision on the prevision section.

Note that the values above are not numbered. These core values all must be considered when evaluating investments and policy decisions within the TMP and upon implementing it over the next 20 years. The order of each value may differ depending on personal values, type of project being considered, context of the decision making, and political sensitivity. Therefore, in keeping with the Municipal Class Environmental Assessment approach of unranked, objective evaluation, these core values are not numerically weighted or ranked.

The following are the definitions of each value.

Safe

Safe means a transportation network where users of all modes can expect to travel hazard-free and complete trips without fatal or serious injury.

In making decisions regarding safety, the most vulnerable users will be prioritized first. Decisions affecting the transportation network must first and foremost ensure the safety of pedestrians and cyclists, as these are the users who are at the greatest risk. Next, the safety of the transit mode, a vehicular mode which carries many users and is sometimes treated with animosity by other vehicular modes, and then other vehicular modes.

Equitable

Equitable transportation speaks to a network that provides people with the ability to complete trips comfortably, safely, with dignity, and in a reasonable time, whether or not they own a vehicle. This applies throughout Guelph’s geography, to all origins and destinations within the city. Additionally, by focusing on transportation equity, the City is seeking to ensure that members of marginalized communities have the same access/opportunities in finding and retaining employment.

Equity is closely linked to making streets in Guelph complete so that people are free to move regardless of their financial means, accessibility requirements, or other needs.

Complete

A complete - or a connected - network is one that treats all modes of travel as equal in importance. In essence, a multimodal network allows anyone to viably complete their trip by any mode of their choice. A complete network also ensures connectivity within and between networks for all modes. This means smooth continuous travel is possible without network gaps for users of any mode and that the transportation system is interconnected and reflects modern forms of mobility, allowing users to seamlessly transfer between modes for various portions of their trip. And in a complete transportation network, all parts of the city are connected via the various modal networks. This enables Guelph to feel as one community rather than separate pieces.

Sustainable

A sustainable transportation network is one that promotes healthy lifestyles and environmental stewardship. To promote healthy lifestyles and environmental sustainability, Guelph will encourage a shift towards active transportation modes (i.e. cycling and walking) and transit. The transportation system will reflect these modal priorities.

Affordable

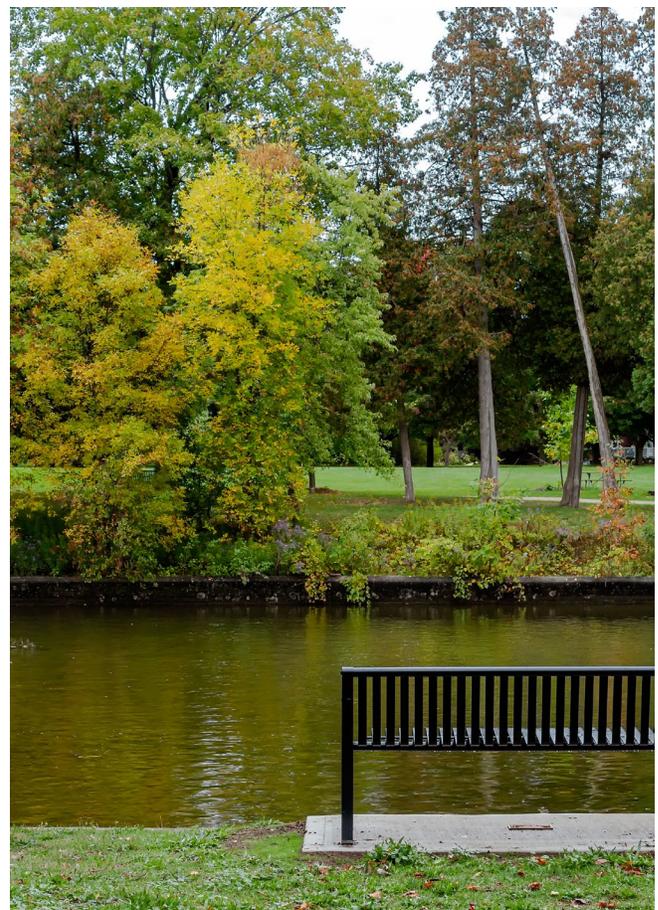
An affordable transportation network is one where investment decisions are made while keeping in mind the lifecycle costs of the decision. This means that both the capital and the operation/maintenance costs are considered. In an affordable transportation network, cost effective solutions are valued above ones that provide the same value but cost exponentially more. An affordable

transportation network is also one that considers the user costs associated with each trip.

To offset maintenance and operations costs, an affordable system looks for opportunities to maximize revenue generation from transportation network by exploring new revenue generation opportunities.

Supportive of Land Use

A transportation system that is supportive of land use creates context-sensitive transportation links and enables the development of healthy high- and medium-density mixed use communities. Such communities have strong active transportation connections but also enable their residents to travel via any mode of their choice. A land use supportive transportation network also ensured that all people are well connected to their places of work by multimodal transportation.





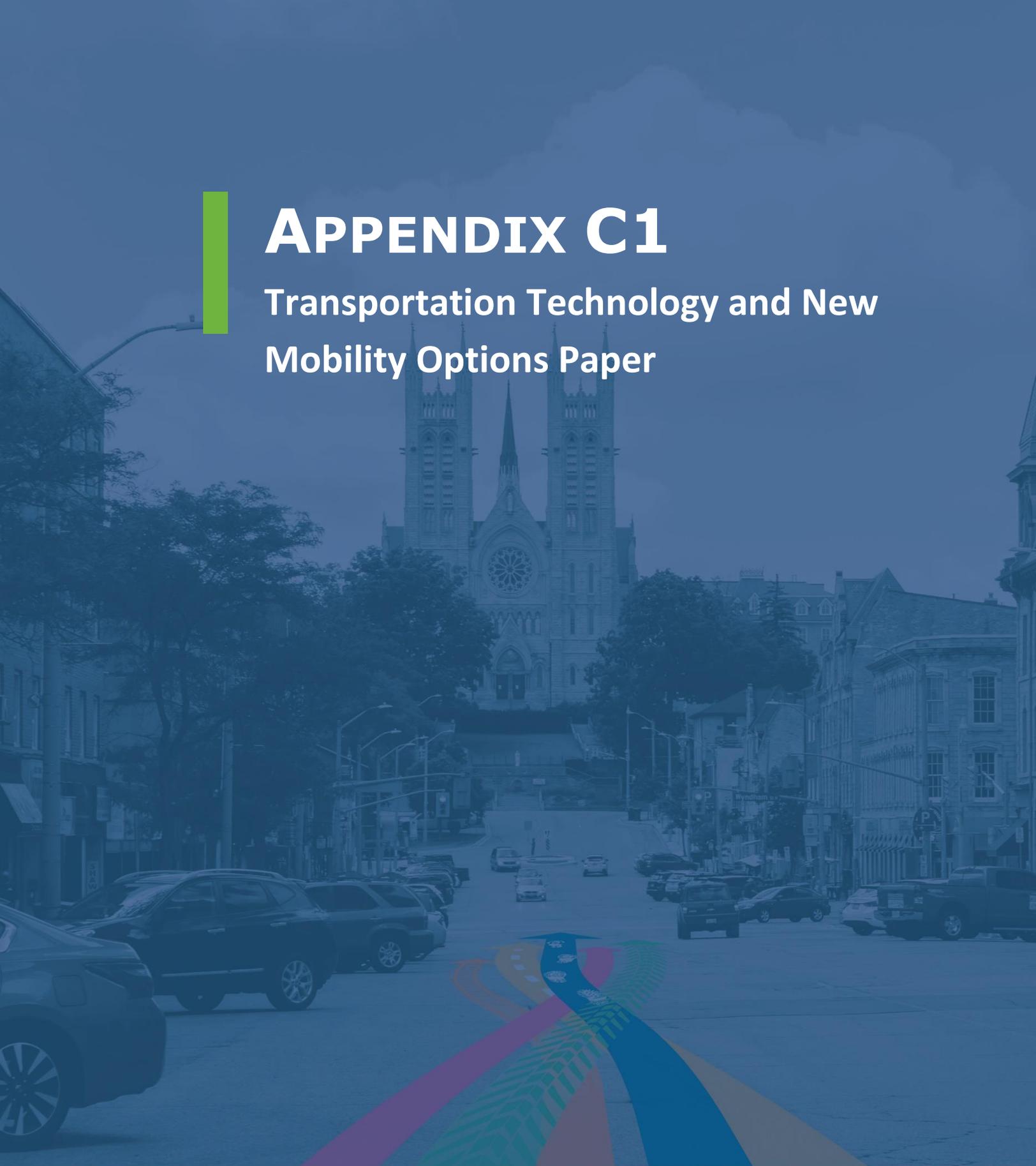
Goals for the Guelph TMP

The goals for the TMP will support the vision and values identified previously in this paper.

Table 1 shows the seven goals for transportation in Guelph and the specific values (presented in the previous section of this paper) that they support.

Table 1: TMP Goals and the Values they Support

<div style="text-align: center;"> TMP Values </div> <div style="text-align: center;"> TMP Goal </div>	Safe	Equitable	Complete	Sustainable	Affordable	Supportive of Land Use
1. People of all ages and physical ability will be able to travel safely using any transportation mode that they choose	x	x	x	x		
2. Guelph’s transportation system will be easy-to-use, reliable and give people and businesses the options they want when they need them			x	x		
3. Transit service will provide travel times and traveler convenience at levels that are competitive with travel by car		x		x		
4. The carbon footprint from the transportation sector will aim for net zero by 2050			x	x		
5. Guelph’s streets, trails, and rail networks will align with the City’s land use objectives	x			x		x
6. Investment decisions will be made considering the asset lifecycle costs					x	
7. Guelph’s transportation system will plan for the changes of tomorrow, while delivering great service today				x		



APPENDIX C1

Transportation Technology and New Mobility Options Paper

An aerial photograph of a city street intersection, overlaid with a semi-transparent blue filter. Several cars are visible on the road, each with concentric circles around it representing Wi-Fi or cellular signal ranges. A pedestrian is walking on the sidewalk, and a cyclist is riding on the path. The background shows buildings and trees.

Transportation Technology and New Mobility Options

City of Guelph Transportation Master Plan

Background Paper Series



Guelph Transportation Master Plan

Moving Guelph Forward

Guelph is growing and how we move around our city is changing. As a result, we are exploring transportation options to make our city move better in every way. Through the Transportation Master Plan (TMP) update, we will review all of the ways we move: walking, cycling, riding transit, driving, trucking, and using trains. Our goal is to ensure that we offer diverse travel options, have appropriate transportation capacity, and maintain a high quality of life for both existing and future residents and workers.

The updated TMP will look at transportation planning in Guelph beyond 2031. The main objectives of this update are:

- To ensure that the new plan builds upon current policies, including the Official Plan and other master plans that have been approved since 2005;
- To recommend new policies and guidelines that reflect the vision for our community and balance mobility, environment, and efficiency, while prioritizing safety and access for all travellers; and
- To explore how new, evolving technologies and travel services will shape the future of transportation in Guelph.

This paper is part of a series of background papers intended to communicate information, key trends, and concepts. These will form the foundation of and set the strategic direction for our updated TMP. The papers are intended to support conversations in the community and within City Hall about how we plan for the future of mobility.

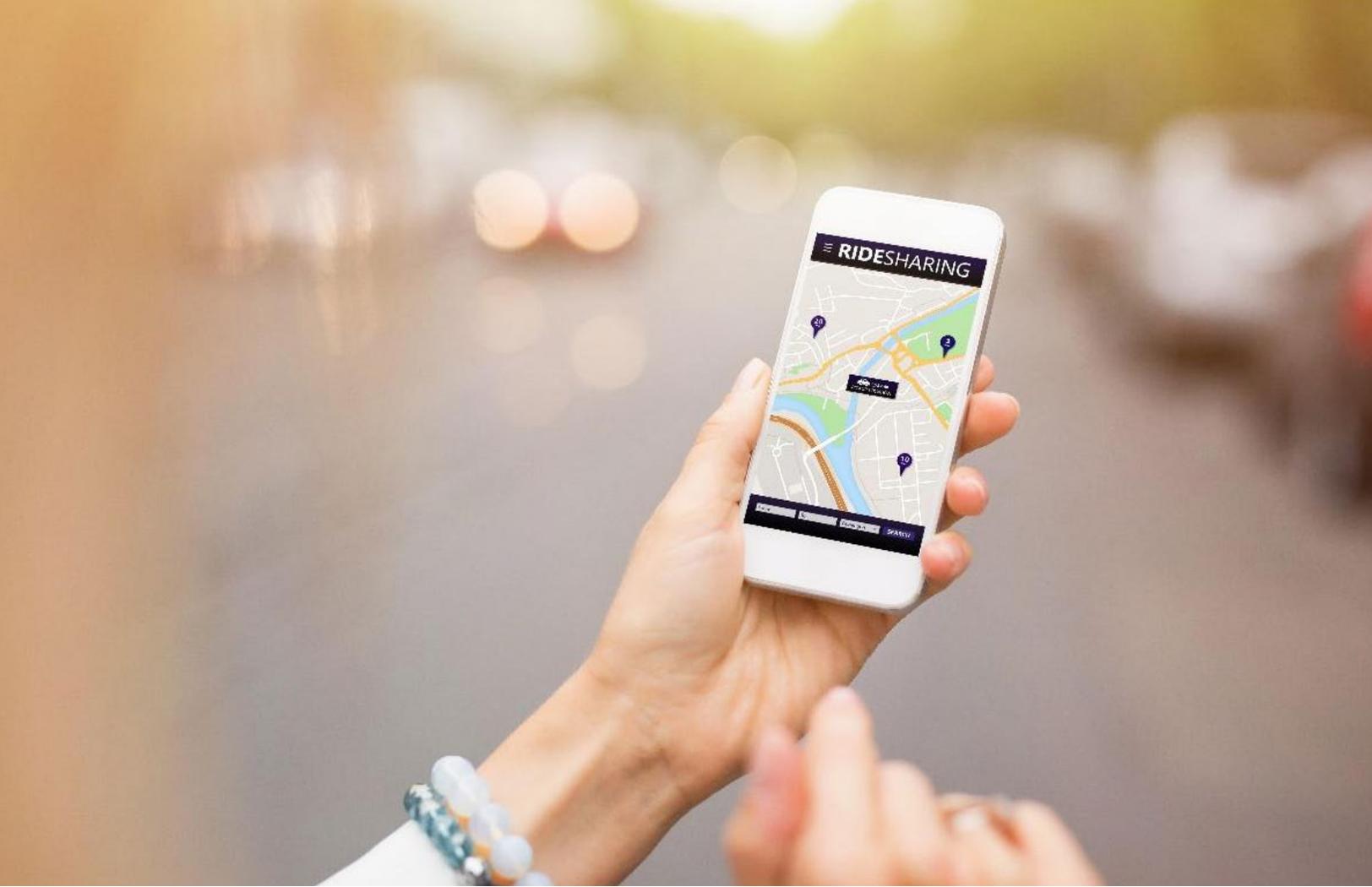
The series includes the following papers, which are all available at guelph.ca/tmp:

- **Transportation Technology and New Mobility Options**
- **The Changing Transportation System User**
- **Transportation and Building 21st Century Cities**
- **Road Safety**
- **Network Planning**
- **Transportation System Resilience**

Each of the background papers opens with an introductory primer on the topic before it examines key global trends, considers how these topics and trends are currently addressed in Guelph, and concludes with an analysis of the implications of that topic on planning Guelph's future transportation system.

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New Mobility: A Primer

Over the last few decades, amidst the rapid evolution of digital technologies and ever-improving connectivity, new transportation-related innovations have emerged at an unprecedented rate. These innovations are changing how we move, shaking up the transportation sector, and reshaping our cities.

Understanding the changes in how people and goods move in urban environments is critical to forecasting what transportation will look like in the future and knowing what we should plan for. This paper discusses a number of new and emerging technology-driven changes to mobility that exist in communities today or are on the horizon.

Specifically, the paper covers:

- Ride-hailing
- Microtransit
- Micromobility
- Mobility-as-a-Service (MaaS)
- E-commerce
- Electrification
- Self-driving Technology
- Connected Mobility

Starting with an introduction of each of these technologies and new approaches, this paper discusses how they are being implemented around the world and outlines what is already present in Guelph today. The paper concludes with some key takeaways about new mobility and how it will affect transportation plans for the future.

Ride-hailing

Ride-hailing is an on-demand service offered by transportation network companies (TNCs). Since the early 2010's, TNCs have been springing up in cities and allowing individuals to use their own car to transport passengers for a fare that is often cheaper than a traditional taxi service. Ride-hailing services are typically booked and paid for via an app that also allows both drivers and passengers to rate each other.

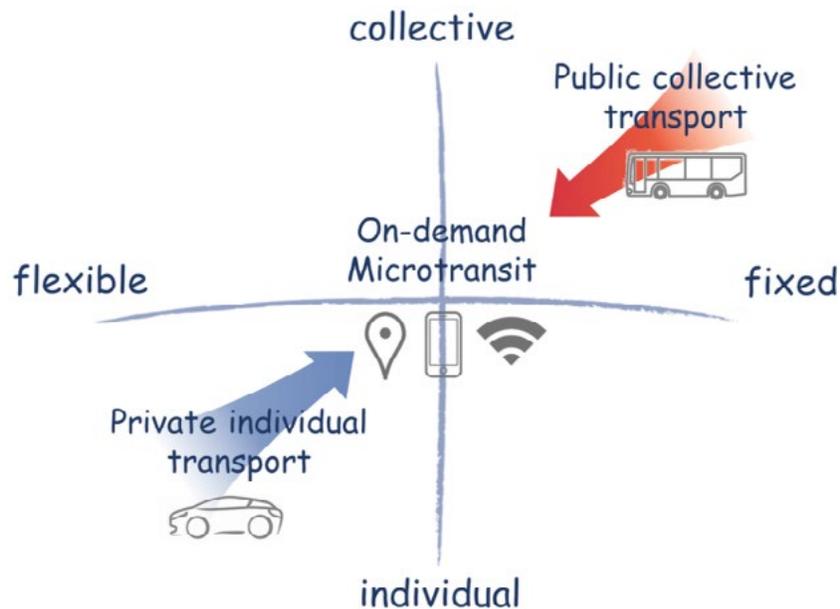
Uber and Lyft are the most well known TNCs but there are many other companies offering ride-sharing services. Smaller TNCs often tend to be limited to a specific local geography.

Microtransit

Microtransit - also known as "dynamic transit" - is a demand-responsive public transit service that uses smaller vehicles (e.g. vans, minibuses, etc.) than would be expected with a conventional service. Microtransit can offer on-demand or a form of fixed-schedule services with either dynamic or fixed routing. Within its service area, microtransit may provide door-to-door service or it may have predetermined stops and only serve the stops where a trip request is made. The scheduling, dispatch, software, and operational aspects of microtransit can be operated by the public transit system, by a third-party service provider, or through a partnership between a local transit system and a private company.

With these attributes, the microtransit model combines some of the flexibility of single user transportation with attributes of a conventional public transit service. This unique role presents great opportunities to fill in gaps in the traditional transit network.

Figure 1: Visual representation of the on-demand microtransit model¹



¹ Reproduced from Smart Circle, "The rise of the Microtransit movement.". <https://www.smart-circle.org/blog/microtransit/>



The cost-effectiveness of microtransit is dependent on its service area. Though microtransit is more convenient for the rider than conventional transit service, it can also cost significantly more to serve the same number of riders with microtransit. The microtransit model is often most economical in smaller low-density service areas where potential riders are spread far apart from each other, making it challenging to offer an efficient and convenient fixed-route service.

Micromobility

Micromobility refers to the use of light vehicles that can carry one or two passengers at a time, such as bicycles, scooters, and even small vehicles. Micromobility can be human-powered or powered by an electric motor. Users typically start their trip upon coming across an available device and can end their trips anywhere within a geo-fenced area, leaving the shared device available for the next user. Access to micromobility devices is often facilitated through a smartphone app, which allows users to locate available devices, commence or terminate their trip, and pay for the service. These innovations can provide relatively low-cost and convenient options for short trips, making them especially attractive within urban centres.

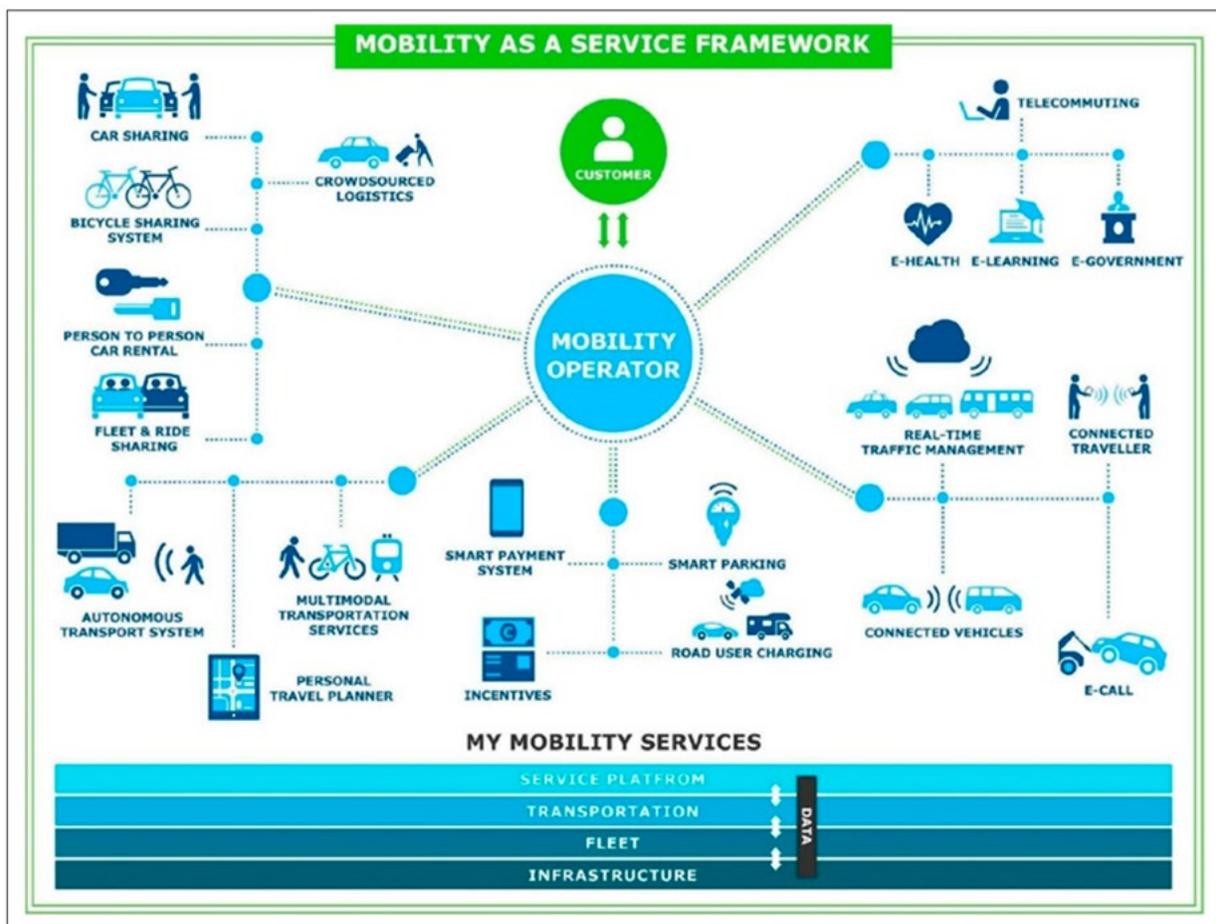
Mobility-as-a-Service

Mobility-as-a-Service (MaaS) is an emerging user-oriented philosophy that takes advantage of digital platforms and real-time data to get a user of the service from point A to point B in the most convenient and personalized way possible for one single fee.

MaaS leverages modern transportation options to optimize personal mobility. When planning a route, MaaS platforms can link transit, ride-hailing, car-sharing, micromobility, walking, and more to create one seamless trip for the user of this service.

MaaS also prioritizes user preference: MaaS platforms often allow users to influence route planning by indicating their preferred trip attributes such as modes of travel or their preference for trade-offs between the number of transfers and travel time. MaaS’s combination of trip planning, booking, and payment in one location is a key factor of its convenience.

Figure 2: Illustration of Mobility-as-a-Service²



² Reproduced from Kivimäki, M. "MaaS-Finland on the leading edge," Mobility as A Service Seminar and Networking Event, Ministry of Transport and Communications: Ventaa, Finland, 2014

Delivery Services

Since the early 2000s, the ever-increasing convenience and choice provided by online shopping has driven major changes in how we buy things. Today, it is easy to purchase a wide variety of things online, from clothes and furniture to groceries and meals from your favourite restaurant. The growing popularity of online shopping has resulted in customers being increasingly reliant on last-mile home delivery services to get their purchases to their doorstep.

Courier network service companies have emerged to meet some of these new delivery demands. These services use online apps or platforms to facilitate deliveries, which are often done by individuals using their personal vehicle or bicycle. The use of courier network services helps improve delivery efficiency by reducing the number of individual trips and the number of large vehicles required.

The growing options and convenience offered by delivery services improve the comfort and quality of life for many people. But as more individual packages are being delivered to more homes at a more frequent rate, an increasing number of delivery service vehicles are competing with other street users for short-term parking space and curb access. The demand-responsive nature of courier network service fleets also makes it challenging for professionals to forecast (and thus plan for) how many of them will be on the streets on any given day.

Electrification

Electrification refers to the process of shifting vehicle propulsion systems from fossil fuels to electricity. Driving personal electric vehicles (EVs) allows individuals to enjoy the convenience and comfort of a personal car while reducing their environmental impact. Some people group hybrid vehicles (i.e. vehicles that use two or more distinct types of power, such

as both internal combustion and electric motors) under the EV umbrella. However, within the context of this paper, EVs refer to vehicles that run fully on electric energy and are either battery-powered (BEVs) or plug-in (PEVs).

A shift to EVs will reduce greenhouse gas emissions, improve air quality, and reduce transportation-related noise in urban centres. However, moving all existing drivers to EVs will not reduce traffic congestion. Electrification also still has major hurdles to overcome in the next decades. Since range between charges continues to be a major limiting factor for EVs, large-scale adoption of EVs would require significantly more public chargers than exist today. And although AVs are becoming more affordable, high up-front costs are still a barrier for many potential EV owners.

Note that electrification goes beyond cars. Buses, trains, and goods movement vehicles are also seeing increasing numbers of electric options, which offers opportunities to reduce environmental impacts from the public transit and commercial transportation sectors. Electrification is also occurring in smaller personal mobility devices, with the growing popularity of electric bikes (e-bikes) and electric scooters (e-scooters). Electrification of personal mobility devices minimizes the physical effort required to move, making them more accessible for some people with reduced mobility.

Self-driving Technology

With ongoing advancements in self-driving technologies, we are steadily nearing a world with autonomous vehicles (AVs) on our roads, which will include cars, transit, and commercial vehicles. Although fully automated vehicles are still a future technology, each year introduces a wider range of automated functions to assist drivers. These include lane keeping assist, adaptive cruise control, and self-parking.

Driving automation systems encompass a range of features that perform part of or the entire task of driving. The Society of Automotive Engineers (SAR), a globally active engineering association, describes six levels of driver assistance technology, as shown in **Table 1**. In this classification, Level 0 refers to no automation while Level 5 refers to full automation under all conditions. With existing technologies that are available to the public, some vehicles today operate within the middle levels of automation.

Table 1: Summary of Levels of Vehicle Automation³

Levels of Automation	Who Does What and When
Level 0	The human driver does all the driving.
Level 1	An advanced driver assistance system on the vehicle can sometimes assist the human driver with steering or braking/accelerating, but not both simultaneously.
Level 2	An advanced driver assistance system on the vehicle can control both steering and braking/accelerating simultaneously by itself under some circumstances. The human driver must continue to pay full attention (i.e. “monitor the driving environment”) at all times and perform the rest of the driving tasks.
Level 3	An automated driving system (ADS) in the vehicle can perform all aspects of driving tasks by itself under some circumstances. In those circumstances, the human driver must be ready to take back control at any time when the ADS requests the human driver to do so. In all other circumstances, the human driver performs the driving task.
Level 4	An automated driving system on the vehicle can perform all driving tasks and monitor the driving environment (essentially, do all the driving) by itself under certain circumstances. The human need not pay attention in those circumstances.
Level 5	An automated driving system on the vehicle can do all of the driving in all circumstances. The human occupants are just passengers and never need to be involved in driving.

AVs require a suite of technologies to operate autonomously. While some of these exist today, many others are at various stages of testing and development. **Figure 3** summarizes the technologies that AVs require.

³ National Highway Traffic Safety Administration, US Department of Transportation, *Automated Vehicles for Safety*. <https://www.nhtsa.gov/technology-innovation/automated-vehicles-safety>

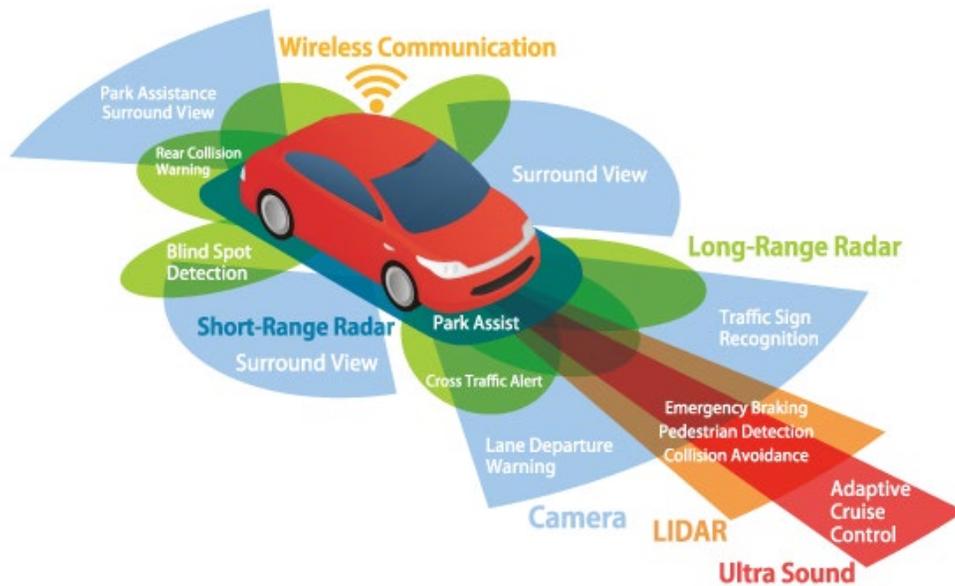


Figure 3: Illustration demonstrating self-driving car technology⁴

Connected Mobility

We are living in an increasingly connected world. The past decade has seen a rise of “smart” versions of many everyday objects like watches, thermostats, or doorbells. These connected devices share data with other devices to offer additional convenient features to everyday life. This system of connection to and between everyday items via the internet is referred to as the Internet of Things (IoT).

IoT encompasses more than just household objects. Increased connectivity within the transportation network has the potential to transform the way we move. Today’s wireless networks have the abilities to connect cars, buses, scooters, trucks, trains, traffic signals, cell phones, and other mobility technologies to each other, increasing communication between these objects and devices.

Connected mobility has the potential to reduce collisions, improve safety, improve roadway efficiency, and provide continuous real-time data to travellers.

Network connectivity in transportation can be used to:

- Implement dynamic speed limits;
- Manage parking;
- Implement congestion pricing;
- Manage traffic incidents;
- Provide transit priority in response to real-time conditions; and/or
- Adjust traffic signals in real time.

Connectivity of individual vehicles to a larger network will also likely be a key feature in AV fleets to enable safe and efficient movement as well as to serve as a back-up mechanism if individual vehicles fail.

Adding more devices to the IoT allows for greater interaction between devices and generates larger amounts of data, which can help better inform important societal decisions. However, the ever-growing volume of new data requires protection and careful management to ensure that people’s privacy and personal information are not being exploited.

⁴ Landmark Dividend, “Self-Driving Car Technology: How Do Self-Driving Cars Work?” <https://www.landmarkdividend.com/self-driving-car/>

New Mobility Trends

Many of these innovative approaches to daily travel introduced in the previous section are already being implemented in communities across the world. This section outlines some implementation case studies and corresponding key takeaways from each one.

Ride-hailing

Today, various ride-hailing services are available on all inhabited continents. However, the introduction of these services have often posed challenges for a variety of communities. Transportation network companies (TNCs) have often arrived in cities on their own schedule, leaving municipalities scrambling to draft new regulations, construct supporting infrastructure, and ensure fair competition for the local taxi industry. Several Canadian cities, including Calgary, Edmonton, Vancouver, and Winnipeg, banned TNCs outright until they could draft up rules and frameworks for how these new companies could operate within their municipality.

In addition to ride-hailing, some TNCs now offer ride-sharing services such as UberPool and Lyft Shared in select cities. Ride-sharing services optimize a single trip by completing pick-ups and drop-offs for multiple passengers traveling in the same general direction. Since it reduces the convenience of an individual rider by increasing their trip length, ride-sharing trips have cheaper fares than individualized ride-hailing trips. Ride-sharing services are considered to be a form of *microtransit* by some people.

Microtransit

Microtransit services have been appearing in cities around the world. These include dedicated on-demand shuttles or minivans and ride-sharing services offered by TNCs, as described previously. The Town of Innisfil in Ontario currently provides its entire “public transit” service through a contract with Uber. Meanwhile, Calgary Transit has been piloting the use of minibuses to provide on-demand service in select neighbourhoods with low population densities or low ridership levels since 2019. Calgary Transit’s service connects riders in these neighbourhoods to nearby transit hubs, using the same fare that applies for the rest of the system.

A challenge for many communities is figuring out how microtransit can be integrated with conventional public transit service so that microtransit supports conventional service rather than competes with it. Riders typically enjoy the convenience of an on-demand microtransit service. However, if the service’s popularity causes ridership to grow significantly, it may become more cost effective to switch to a fixed route service. This switch may cause a backlash from riders who have grown accustomed to on-demand service. Microtransit may also require higher fares to cover the operational costs of an on-demand service but having different fares within the same transit system may create a confusing experience or contribute to inequity for different users.



Micromobility

Over the last few years, micromobility devices have popped up in cities across the world, typically during the warmer months of the year. While some people celebrate the utility of these devices, others raise concerns about the nuisances they may cause. Dockless bikes and scooters offer riders convenience and improved first mile/last mile connectivity. However, residents of many communities express their dissatisfaction over micromobility devices being carelessly operated on sidewalks or left scattered across the city.

Despite some concerns, the use of micromobility is growing in popularity. In a review of 84 million shared micromobility trips from across the United States of America (USA), the National Association of City Transportation Officials (NACTO) found that the number of trips taken in 2018 were more than double the number taken in 2017. The same study found that most micromobility trips were 4 kilometres (km) or shorter in length and 25 minutes or shorter in duration. Additionally, NACTO's study found that within micromobility, bikesharing was used more often for commuting purposes, first mile/last mile connections, and social trips while scooter-sharing was used more often for recreational or exercise purposes.⁵

⁵ National Association of City Transportation Officials (NACTO), 2019, *Shared Micromobility in the US*. https://nacto.org/wp-content/uploads/2019/04/NACTO_Shared-Micromobility-in-2018_Web.pdf

Municipalities that offer micromobility services are taking one of three different approaches:

1. Keeping these services privately owned and operated

- BIXI Montreal, a bike-sharing service, is owned and operated by the City of Montreal
- Bike Share Toronto is owned and operated by the Toronto Parking Authority

2. Enabling third-party providers to operate micromobility services within their jurisdiction

- Private providers Lime, Bird, and Roll operate their e-scooters in Calgary and Ottawa during the summer months

3. Building public-private partnerships for ownership and operation of these services

- The Sobi bike-share service in Hamilton received capital investments from Metrolinx and the City of Hamilton but is owned and operated by Social Bicycles
- The Mobi bike-share service in Vancouver received capital investments from the City of Vancouver but is owned and operated by Vancouver Bike Share

Regardless of the ownership and cooperation model used, municipalities usually have to update their regulations and policies to accommodate these new services prior to introducing them.

Mobility-as-a-Service

Whim is a successful Mobility-as-a-Service (MaaS) platform that currently operates in Helsinki, Finland. Instead of paying for a car or a bus pass, Whim users pay for a monthly plan that offers them access to a wide variety of transportation options including rental cars, taxis, bike-share, and public transit all in one app. In addition to Whim, MaaS platform pilots are also being carried out in other European cities including Amsterdam, Madrid, Vienna, Zurich, Birmingham, Amsterdam, Munich, and Berlin. So far, implementation of MaaS platform pilots has been generally limited to dense urban centres.

In North America, the free Transit app is integrated with ride-hailing, car-sharing, and microtransit in supported regions. The free app offers users route planning services based on real-time public transit data. When offering suggested routes, it also presents options that combine transit with cycling or shared modes and displays the estimated cost for the overall trip. The app is linked to other provider platforms, making it easier for a user to pay for all legs of a multimodal trip.

So far, MaaS platform providers have been private entities. But public-private partnerships may be the key to the success and more widespread implementation of MaaS platforms. Municipalities alone do not operate the wide variety of transportation options that would make a MaaS platform successful. But at the same time, individual private service providers may not always see the benefit of partnering with each other to develop and maintain a MaaS platform without additional incentives. Furthermore, full privatization of MaaS platforms can create issues as communities become more dependent on them since private corporations are not held accountable to the general public.



Delivery Services

Today, e-commerce is a massive global industry. By 2021, e-commerce sales are expected to account for 17.5 per cent of total global retail sales.⁶ Our changing shopping habits are reducing the number of trips individuals make to traditional brick and mortar retail while also increasing the number of trips made by delivery bicycles and vehicles on shorter schedules. Delivery vehicles and bicycles have to make frequent curbside stops for short to medium lengths of time. The impacts of this are seen in many municipalities, where curbside space is at an increasing minimum, particularly in downtown environments. Limited opportunities for parking are resulting in more delinquent behaviour by some delivery drivers that impedes the flows of pedestrian, cyclist, and/or vehicle traffic.

A growing number of municipalities across North America and around the world are developing ways to manage curb space. Both the Institute of Transportation Engineers (ITE) and the National Association of City Transportation Officials (NACTO) have published guidance for curb space management in recent years. These include the [Curbside Management Practitioners Guide](#) and [Curb Appeal](#):

⁶ Statista, 2020, "E-commerce share of total global retail sales from 2015 to 2023." <https://www.statista.com/statistics/534123/e-commerce-share-of-retail-sales-worldwide/>

[Curbside Management Strategies for Improving Transit Mobility](#), respectively.

Common tools for curb space management used by some municipalities include:

- The reallocation of curb space for specific uses like bike lanes and bus stops;
- Using automated enforcement;
- Flexible parking pricing according to actual usage; and
- Dedicated loading areas and regulations on delivery times.

Technology is also being harnessed to analyze data and map curbside activity in order to identify where and when parking and loading is available. Some new platforms and apps use real-time data to help drivers find long-term parking, delivery vehicles find short-term parking, or cities better understand and manage their curbside demands.

Meanwhile, shipping and logistics companies are constantly developing more efficient ways to deliver products. The impacts of emerging innovations like large-scale drone deliveries on the transportation network are still unknown but are anticipated to further change transportation in cities.

Electrification

Sales of personal electric vehicles (EVs) are growing. In Canada, sales of both plug-in and battery-powered EVs have risen exponentially over the last few years, from 3,254 units sold in 2013 to 34,357 units sold in 2018.⁷ A similar trend is seen worldwide: Deloitte reports that 2018 was a record year for EV sales, with two million units sold around the world, and forecasts that an additional 21 million EVs will be on the road globally by 2030.⁸

To support EV usage, governments are constructing more public charging stations and offering incentives for the purchase of EVs or investment in EV infrastructure. Since 2019, Transport Canada has offered a \$2,500 to \$5,000 rebate for the purchase of eligible zero-emissions vehicles (ZEVs), which include EVs. Provincial governments in British Columbia and Quebec also offer additional rebates for the purchase of new or used EVs and for the installation of personal charging stations. In Ontario, vehicles with a green license plate (obtained during registration of eligible vehicles like EVs) are permitted to use High Occupancy Vehicle (HOV) lanes on provincial highways even if there is only one person in the car.

EV technologies are also continuously improving and offering further ranges of travel between charges. However, EV drivers continue to be limited by the range of their vehicles. Electric charging stations are not nearly as widely available as gas stations. And when chargers are available, users cannot expect to fully “refuel” their EV in a short period of time as they would with a 5-minute stop at the gas station. Even the fastest EV chargers today take about an hour to fully charge a car and most public charging stations do not offer the fastest available chargers.

There are three levels of EV charging stations:

Level 1 – These are the lowest voltage charging stations. Level 1 chargers are essentially standard wall outlets. They take many hours to fully charge a car and are most suited for post-commute overnight parking.

Level 2 – There are most commonly available as public chargers today. They have relatively higher voltages but still take several hours to fully charge an electric car.

Level 3 – These charging stations offer the highest voltage and can typically fully charge a car in an hour or less. However, these are not commonly available as public chargers. Additionally, not every EV on the road today is compatible with a Level 3 charging station.



7 FleetCarma, 2018, “Electric vehicles sales update Q3 2018, Canada.” <https://www.fleetcarma.com/electric-vehicles-sales-update-q3-2018-canada/>

8 Deloitte, 2019, “21 million more electric vehicles expected worldwide by 2030.” <https://www2.deloitte.com/uk/en/pages/press-releases/articles/21-million-more-electric-vehicles-expected-worldwide-by-2030.html>



Self-driving Technology

While autonomous technology is evolving rapidly, autonomous vehicles (AVs) are not yet ready for widespread implementation. Fully autonomous vehicles do not currently operate on public roads anywhere, with the exception of some small-scale pilots within narrowly-defined areas, usually in warm climates and with predictable geography. As a result, there is still considerable uncertainty about how AVs will affect travel demands, mode shares, the allocation of road space, or demands for parking.

Among transportation professionals, there has been significant effort to predict the impacts of self-driving technologies before they become mainstream. Informed hypotheses can help communities prepare so that the potential benefits of AVs are maximized while the unintended consequences are minimized.

The following are some current trends and possible scenarios of a future with AVs.

Safety and security: AVs have the possibility to dramatically improve road safety as they eliminate driver error and reaction time. In theory, AVs could dramatically reduce car-related fatalities and injuries since human drivers would no longer be in control. However, the algorithms and programs that will run these vehicles will be developed by humans and thus incorporate the biases and moral perspectives of their creators. When AVs may be forced to respond to impossible choices such as hitting a pedestrian to avoid a head-on collision against hitting the oncoming vehicle and injuring the car passenger, their response will depend on the input of their programming.



As with any connected digital technology, cybersecurity is a major consideration for AVs. Relinquishing driver control to software makes car occupants susceptible to hacker overrides. With the current rise of software security breaches, individual AVs or AV fleets will need to be designed and operated in a way that ensures the security of their operations and the safety of their occupants. Actors with nefarious motives should not be able to completely shut down the transportation network of a given community or compromise the safety of users.

Finally, AVs will not conquer our roads overnight. From the perspective of road safety, the most challenging period for AV deployment will likely occur during the transition to widespread adoption, when there is a mixture of fully-autonomous vehicles and vehicles still driven by humans on the roads. During this transitional period, the mindset and priorities of the different groups of vehicle operators may not be aligned with each other. And if human drivers are not accustomed to sharing roads with AVs, misunderstanding of intention and unintended conflicts may arise.

Environment: It is likely that all AVs will be electrically powered when the industry reaches full automation. If this turns out to be true, AVs would help eliminate

greenhouse gas (GHG) emissions and pollution associated with driving. However, the electrification of AVs may require more charging stations and more frequent charging since some of their power will be consumed by additional hardware and software. Otherwise, the cars may need to be powered by a combination of electric power and other fuels, which may lessen the environmental benefit.

Private vs. shared ownership: There are two distinct visions for a wide-scale deployment of AVs. In the first scenario, today's cars owners become tomorrow's AV owners, largely replicating the current model of personal vehicle ownership. In this future, the number of vehicles on the road networks stays the same or increases as more people invest in AVs due to their convenience. As a result, congestion will not be eased by the arrival of AVs and demand for parking at major destinations will increase dramatically. If parking is unavailable, empty AVs may travel home until they are recalled by their owner or be forced to continuously circle on roads while waiting for their owners. This will put more vehicles on the road outside of peak periods of travel and increase the annual number of vehicle-kilometres-travelled (VKT) on our roads.

Alternatively, shared mobility and AV technology could converge to create a model where personal ownership of AVs is minimized. Fleets of AVs could be owned by private (e.g. TNCs) or public entities who offer on-demand AV service through ride-hailing or ride-sharing. This version of the future will not require as much parking as the first scenario though fleets will require dedicated garage and maintenance facilities. Additionally, this version of the future doesn't prohibit people from experiencing the benefits of AVs if they cannot or choose not to purchase a personal AV. However, shared mobility is ultimately less convenient than private ownership and availability of AVs for everyone who needs a ride would fluctuate with demand.

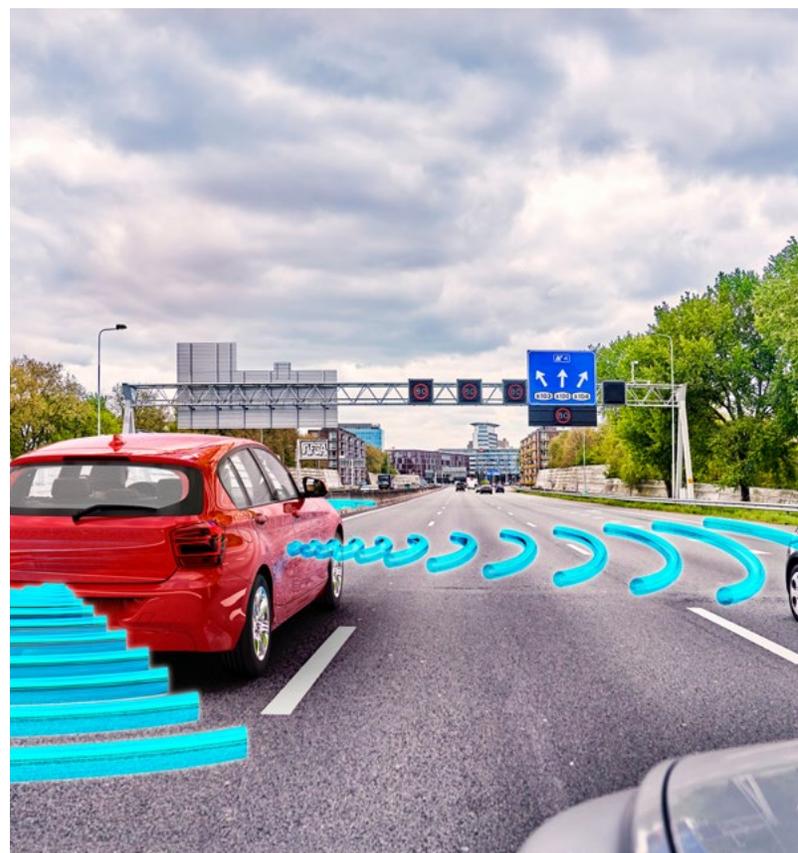
Public perception: Today, nearly 50 per cent of people still believe that fully self-driving cars will not be safe and less than 50 per cent of people think that “travelling in a fully self-driving car will be a positive experience.”⁹ But societal attitudes may adjust as AVs become more sophisticated and as more people embrace autonomous technologies. With full automation, people’s attention will no longer be required to operate a vehicle. This can turn commutes into useful time during which commuters can work, carry out recreational activities, or even nap. These added opportunities during commutes may change public perception towards AVs. They can also have a significant impact on how and when people travel as well as where they decide to live.

Preparing with policy: Municipal, provincial, state, and federal governments around the world are actively developing policies and regulatory frameworks to accommodate AVs by considering the various possible future scenarios. At the start of 2019, Transport Canada released two documents: [Canada’s Safety Framework for Automated and Connected Vehicles and Safety Assessment for Automated Driving Systems in Canada](#). The release of these reports signaled federal support for the acceleration of a safe introduction of automated and connected vehicles on Canadian roads.

In Canada, Ontario is leading the way on regulatory framework for and testing of AV technologies. In January 2019, the Ontario Government expanded the rules of Ontario’s 10-year Automated Vehicle Pilot Program (originally launched in 2016). The expansion allows cars equipped with Society of Automotive Engineers (SAE) Level 3 technology to operate on public roads in the province provided that there is a passenger on board who can take control of the vehicle if required. It also allows for testing of completely driverless AVs under strict conditions.

Many municipal governments are also completing studies to understand how AVs will affect travel in their communities and what infrastructure needs to be in place when AVs arrive to maximize their benefits:

- The City of Calgary has recently completed a [Future of Transportation in Calgary](#) report that looks at the possible impacts, opportunities, and risks of various new mobility technologies including AVs.
- The City of Ottawa has invested in test track facilities for autonomous vehicle technologies.
- The City of Toronto has developed an [Automated Vehicles Tactical Plan](#) that contains detailed policies, actions, and measurable objectives for the City to 2022. It also compiles a detailed list of knowledge gaps and direction to complete further research in anticipation of AV deployment.



⁹ Deloitte, 2019, *2019 Global Automotive Consumer Study*. <https://www2.deloitte.com/us/en/pages/manufacturing/articles/automotive-trends-millennials-consumer-study.html>



A driverless shuttle at the University of Michigan's Mcity Test facility in Ann Arbor MI. Source: University of Michigan

Connected Mobility

Computer control of traffic signals allows many municipalities to set traffic signal timing plans that change by time of day to accommodate different traffic patterns or demands. Traffic engineers also use preemption, a practice that temporarily manipulates traffic signal timing plans that are already in effect. This practice can help enable priority for emergency vehicles, certain movements, or certain modes. Existing traffic signal technologies can now be augmented by in-system detection of traffic volumes and patterns that set up optimal signal timing when coordinated with other real-time data from across the city.

As technology becomes more sophisticated, cities are also experimenting with more elements of connected transportation network:

- Many cities already have transit vehicles that communicate with each other. In Canada, examples of this include TransLink's driverless Skytrains in Vancouver and automatic train control in the Toronto Transit Commission (TTC's) subway system.
- Recently, the City of Vancouver and the City of Edmonton held pilot programs in partnership with academia and industry to experiment with different connected mobility technologies. These pilots

were completed on test roads and in laboratory test environments, using sensors in roads to collect and analyze data. Test vehicles in these trials also used wireless internet to share information and communicate with each other through a central communications hub.

- The City of Ottawa's test track facilities for autonomous vehicle technologies also support studies and testing of connected mobility technologies like traffic signal coordination.
- At a demonstration lab in Vienna and through a pilot study in Germany, vehicles are being connected to road infrastructure and traffic control centers to manage congestion in real-time.

While very beneficial to municipalities for transportation system management, connected mobility technologies are also helpful to individual users of a transportation system. Ever more powerful traveller information systems like Google Maps are helping travelers optimize their routes and avoid congestion. And car manufacturers are continuously integrating car to car communication and other connected features into new car models. For example, General Motors (GM) is equipping new models with technology that enables communication with other similar models to help to detect potential upcoming hazards, like slippery roads.

The proliferation of fifth generation (5G) mobile networks, is anticipated to be a key driver in the advancement of connected mobility technology as it will provide the necessary cellular bandwidth and internet speed for more and better connection.

Several of the emerging transportation technologies and options discussed in this paper have already made their way to Guelph. This section provides an overview of the options that are available today and the roles they play in our existing transportation system.

New Mobility in Guelph Today

Ride-hailing

In 2015, Guelph's City Council approved ride-hailing operations under a set of predetermined rules and conditions. The rules include criminal background checks, having \$3-million insurance for each vehicle, annual safety checks for vehicles, and inability to accept street hails or cash fares like regular taxis.

Today, Uber operates in Guelph. Guelph falls within Uber's southwestern Ontario service area, which also includes London, Waterloo Region, and Hamilton.

Microtransit

There is currently no microtransit service being offered in Guelph. However, Guelph Transit is currently using elements of microtransit for Transit Mobility Services, its accessible transit service. For this service, Guelph Transit has partnered with a third-party technology provider for automated dispatch and routing to make the service more efficient.

Just outside of the city, Wellington County is currently piloting [RIDE WELL](#), a publicly funded county-wide on-demand rural transit service. RIDE WELL uses full-time drivers and dedicated vehicles to provide door-to-door service to and from any address in the County. RIDE WELL also provides door-to-door service to and from any address in the City of Guelph provided that the trip starts or ends in Wellington County. Trips can be booked via an app, website, or toll-free number. The on-demand service optimizes routing to get as many people to their destinations with as few vehicles and trips as possible.

Micromobility

There are currently no shared micromobility platforms or services operating within Guelph

Mobility-as-a-Service

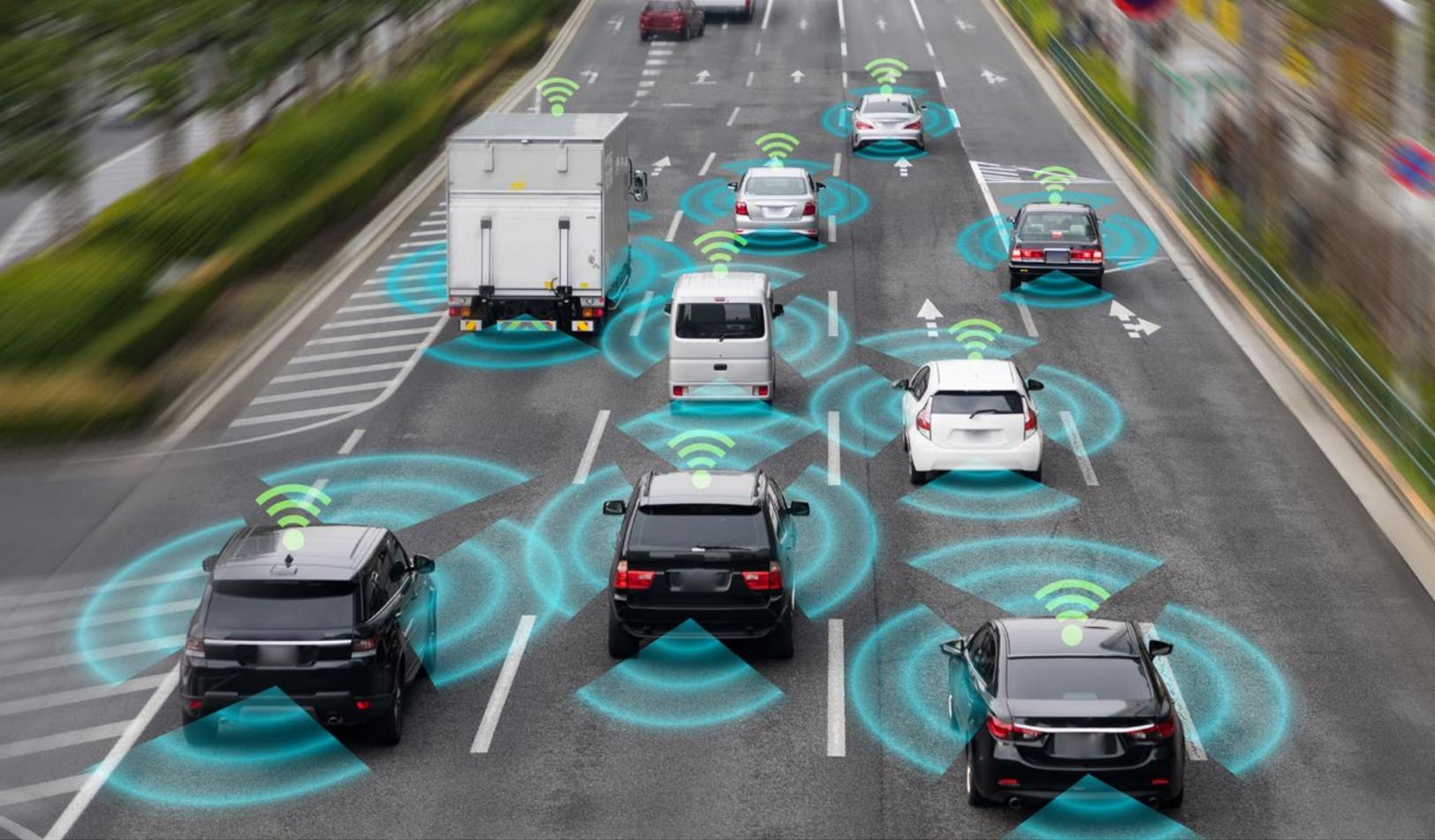
There are currently no services using the MaaS philosophy being offered in Guelph.

Delivery Services

Like other cities, Guelph has experienced the increased popularity of courier network services, increased delivery truck traffic within the city, and a resulting increased demand for curb space, particularly in downtown. The City anticipates that if current trends continue, increased demands for short-stay loading will have to be rationalized with other demands for curb space.

Electrification

Guelph's [Community Energy Initiative](#) (CEI) - the City's ambitious plan for reducing energy use and GHG emissions - was first set up in 2007. In 2018, CEI set a target of having Guelph produce net zero carbon emissions by 2050. The CEI task force provided 20 potential actions for the City to help Guelph achieve this target.



The list of actions included electrification of transit, electrification of the municipal fleet, and encouraged/incentivized electrification of personal vehicles.

In 2012, Guelph was one of the first Canadian communities to install an electric vehicle charging station. Today, there are over 20 public charging ports within 15 kilometres (km) of the city. In 2016, Guelph also had 10 per cent more battery electric vehicles (including hybrids) than the provincial average.

In January 2020, Guelph Transit announced that it will replace 35 older diesel buses with electric buses, add 30 brand new electric buses to their fleet, install on-route charging infrastructure, and construct a new bus storage and maintenance facility with electric charging stations.

Self-driving Technology

Like in the rest of the country, no fully autonomous vehicles operate on public roads in Guelph today.

Connected Mobility

Similar to many other municipalities, Guelph uses traffic signal preemption at select intersections for Fire Services emergency vehicles. Preemption is used to halt conflicting movements in advance of the emergency vehicle arriving at the intersection. This helps improve emergency response times and makes the roads safer for everyone. The City does not currently have any other forms of traffic signal priority measures.

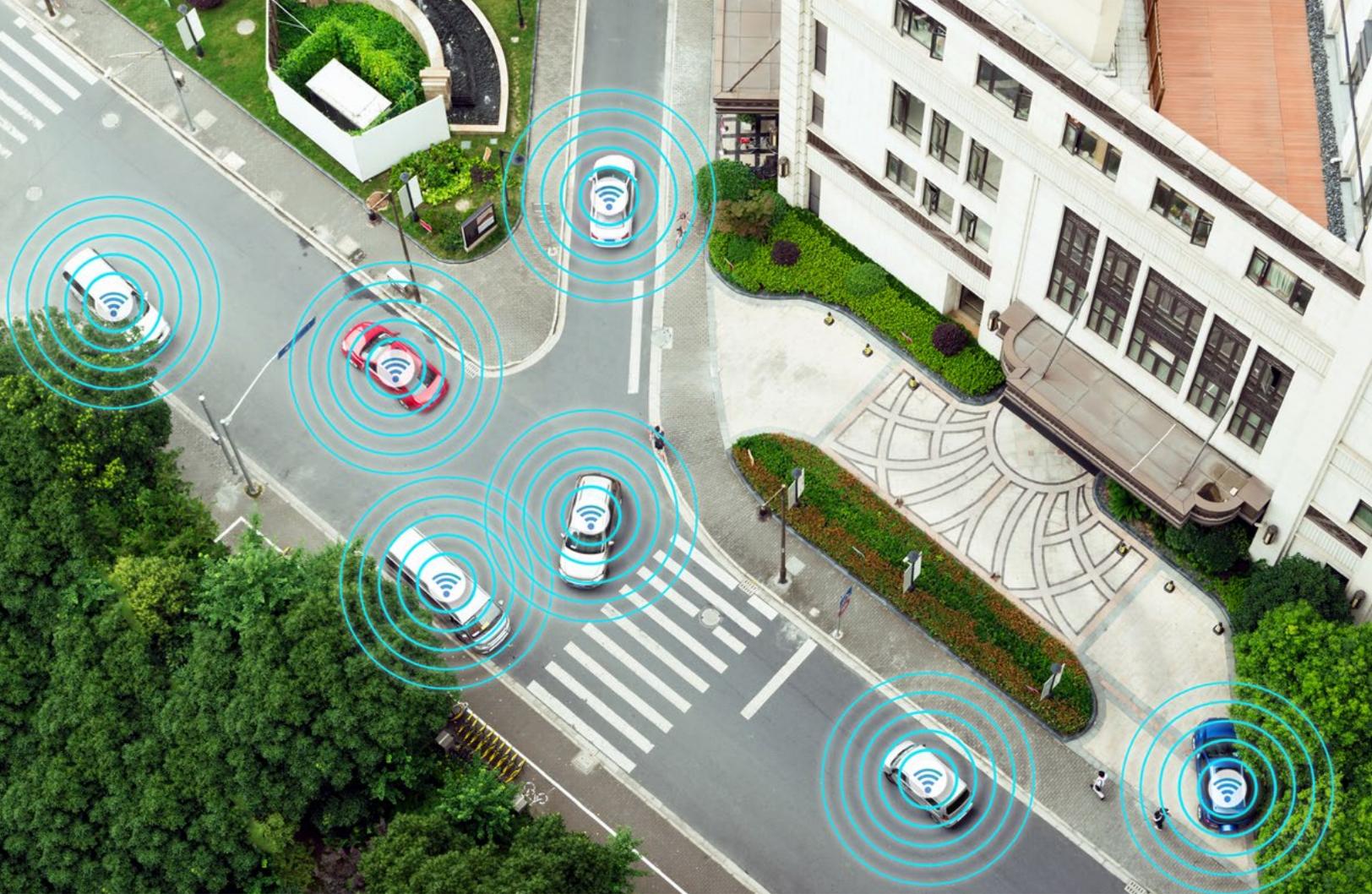
This fall, the City will be piloting new traffic counting and detection technologies. These technologies will enable the City to have real-time traffic counts at select locations during all hours of the day. Having real-time traffic data will help the City make more informed operational decisions about its transportation network.

Moving Guelph Forward: New Mobility

Transportation is affected by the rapid rate of technological innovation and advancement in our society. New technologies and new mobility options are changing how people and goods move through their communities. These changes generally make life more convenient but their disruptive nature can negatively impact transportation networks that are not ready for sudden change. To embrace the future of transportation and ensure a transition that is as seamless as possible, we have to build communities that are ready for and supportive of these anticipated changes.

Based on the trends, best practices, and existing conditions outlined in this paper, the following is a list of key takeaways about emerging transportation technologies and new mobility:

- The various new and emerging mobility options such as ride-hailing, microtransit, and micromobility have the potential to improve daily transportation for many people. However, their sudden presence in a community can be disruptive. Before permitting their operation, policymakers and planners should seek to maximize their benefit without negatively affecting other modes of travel.
- With so many new and emerging options for travel, Mobility-as-a-Service (MaaS) platforms present opportunities to seamlessly integrate trips across different modes. Though growing in popularity, these platforms are still relatively rare and offered only by private entities. Support or partnerships from the public sector may help MaaS reach its full potential.
- The popularity of online shopping is constantly growing and causing personalized goods movement to become more important to communities. Effective curbside management is crucial to ensuring efficient delivery services while also preventing conflicts with other modes.
- Electrification of transportation options is critical to helping communities reach their emissions-related sustainability goals. However, electrification alone will not solve all of the other problems associated with a dependence on cars.
- Autonomous vehicles (AVs) are on the horizon but the industry has not reached full automation yet. Since the precise impacts of AVs remain unknown at this time, planning for different AV deployment scenarios is the best way to maximize their benefits when they arrive.
- Connected - or "smart" - features of transportation make travel more convenient. The data collected through these features can help decision-makers make more informed choices than ever before. But regulatory frameworks and privacy protections are needed to prevent exploitation of this data.
- The City is already implementing some new technologies and mobility options into Guelph's transportation network. However, there are still many opportunities to use transportation innovations to fill in network gaps and improve mobility in Guelph.



What do you think?

What does the future of transportation in Guelph look like? How will the movement of people and goods in Guelph change over the next several years? What should planners and policymakers do to ensure that new transportation technologies and innovations provide the most benefit to residents?

Let us know! Visit guelph.ca/tmp to learn more about the transportation topics and trends informing the development of our Transportation Master Plan and to find out how you can have your say on Moving Guelph Forward.

Acknowledgements

City of Guelph

Jennifer Juste, Project Manager

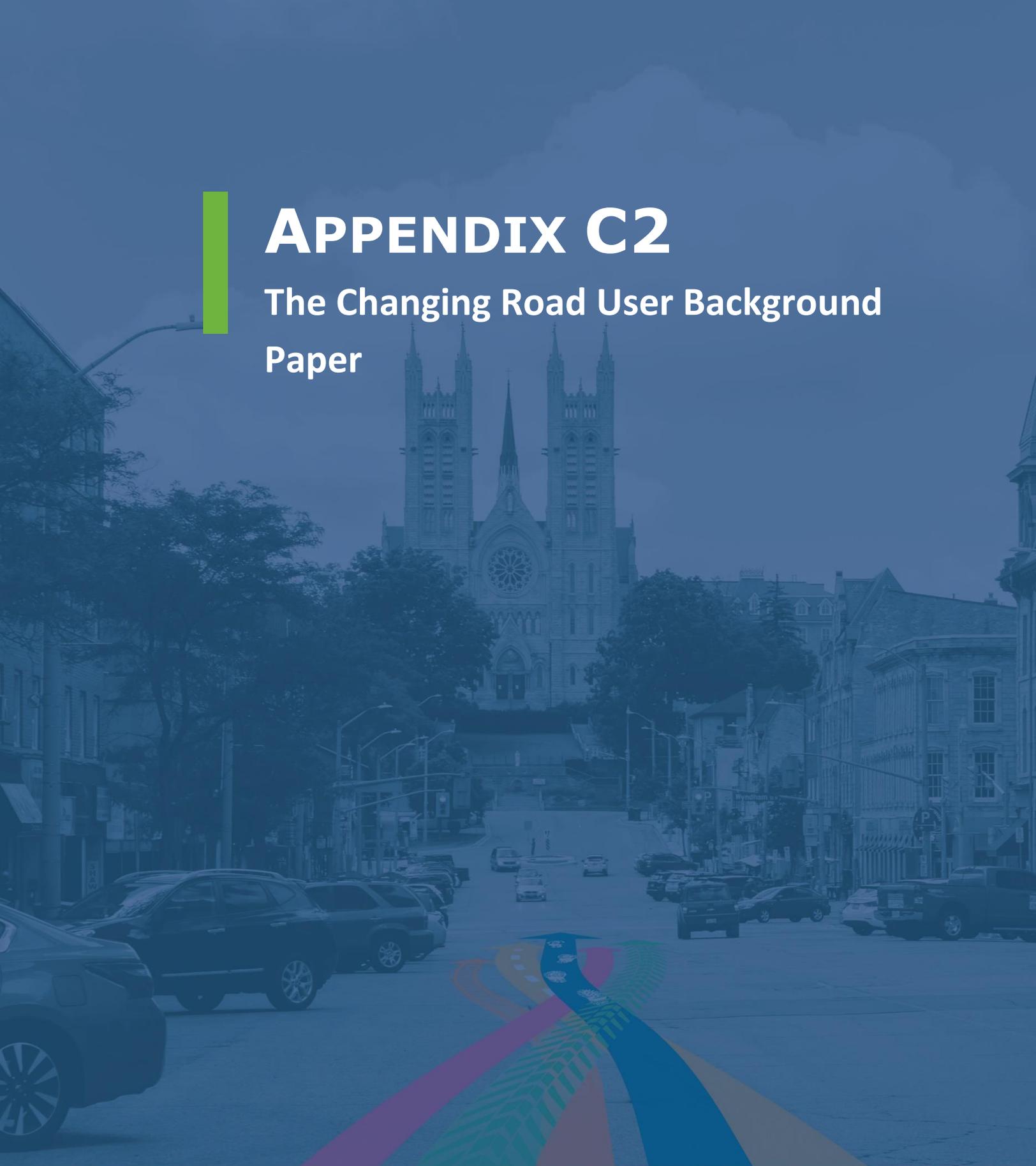
With support from: David de Groot, Liraz Fridman, Tyson McMann, Rory Templeton, Benita van Miltenburg, Jamie Zettle

Consultant Team - Dillon Consulting Limited

Shawn Doyle, Project Manager

Mariam Bello, Project Coordinator/Primary Author

With support from: Jeff Axisa, Nicole Beuglet, Morgan Boyco, Maria King, Adam Lanigan, and Kristin Lillyman



APPENDIX C2

The Changing Road User Background Paper



The Changing Transportation System User

City of Guelph Transportation Master Plan
Background Paper Series



Guelph Transportation Master Plan

Moving Guelph Forward

Guelph is growing and how we move around our city is changing. As a result, we are exploring transportation options to make our city move better in every way. Through the Transportation Master Plan (TMP) update, we will review all of the ways we move: walking, cycling, riding transit, driving, trucking, and using trains. Our goal is to ensure that we offer diverse travel options, have appropriate transportation capacity, and maintain a high quality of life for both existing and future residents and workers.

The updated TMP will look at transportation planning in Guelph beyond 2031. The main objectives of this update are:

- To ensure that the new plan builds upon current policies, including the Official Plan and other master plans that have been approved since 2005;
- To recommend new policies and guidelines that reflect the vision for our community and balance mobility, environment, and efficiency, while prioritizing safety and access for all travellers; and
- To explore how new, evolving technologies and travel services will shape the future of transportation in Guelph.

This paper is part of a series of background papers intended to communicate information, key trends, and concepts. These will form the foundation of and set the strategic direction for our updated TMP. The papers are intended to support conversations in the community and within City Hall about how we plan for the future of mobility.

The series includes the following papers, which are all available at guelph.ca/tmp:

- **Transportation Technology and New Mobility Options**
- **The Changing Transportation System User**
- **Transportation and Building 21st Century Cities**
- **Road Safety**
- **Network Planning**
- **Transportation System Resilience**

Each of the background papers opens with an introductory primer on the topic before it examines key global trends, considers how these topics and trends are currently addressed in Guelph, and concludes with an analysis of the implications of that topic on planning Guelph's future transportation system.

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The Changing Transportation System User: A Primer

The inherent challenge in any transportation planning exercise is predicting the future mobility needs of a community that is constantly evolving. The needs, values, and desires of a community all play a direct role in determining where people need to go and how they want to get there. But in our complex societies, these needs, values, and desires change over time. This means the profiles of the people who use transportation - the transportation system users - are always changing.

This paper discusses the way that transportation usage is likely to change in the future, starting with a primer on the factors that influence travel behaviour. The paper also provides an overview of some major trends and changes in how people move around the world as well as in Guelph. It concludes with some key takeaways about what to consider when planning a transportation system for the future.

Factors Influencing Travel Behaviour

Transportation professionals use the terms “travel demands” or “transportation demands” to discuss the transportation needs of a given community. Although there is no way to predict how people will travel in the future with 100 per cent certainty, understanding transportation demands of today and how they differ from demands of the past is helpful to making informed hypotheses about the future. Forecasted future demands are fundamental to planning for tomorrow.

Making hypotheses about how and why people will travel is challenging. Travellers in a transportation system are able to make different choices and shift their trips in terms of time, mode, and route. They also choose whether a trip is made at all.

A number of key demographic indicators such as age, income, gender, education, employment, or household size all impact individual travel behaviour. Societal shifts such as distribution of where people live (i.e. in urban, suburban, or rural areas) as well as the rate of growth also impact overall travel patterns and demands.

Though there are many factors that affect transportation demand, this paper will specifically focus on three emerging societal trends that are likely to have the most significant impacts on transportation demands in the next several years:

- Changing demographics in urban communities;
- Declining popularity of personal car ownership; and
- Growing concerns about environmental impacts of transportation.

Table 1: Factors that affect transport demand¹

 Demographics	 Commercial Activity	 Transport Options	 Land Use	 Demand Management	 Prices
<ul style="list-style-type: none"> • Number of people (residents, employees and visitors) • Employment rate • Wealth/incomes • Age • Lifecycles • Preferences 	<ul style="list-style-type: none"> • Number of jobs • Business activity • Freight • Transport • Tourist activity 	<ul style="list-style-type: none"> • Walking • Cycling • Micromobility • Public transit • Ride-hailing • Ride-sharing • Car-sharing • Automobile • Taxi services • Telework • Delivery services 	<ul style="list-style-type: none"> • Density • Mix • Walkability • Connectivity • Transit service • Proximity • Roadway design 	<ul style="list-style-type: none"> • Road use prioritization • Pricing reforms • Parking management • User information • Promotion campaigns 	<ul style="list-style-type: none"> • Fuel prices and taxes • Vehicle taxes and fees • Road tolls • Parking fees • Vehicle insurance • Transit fares

¹ Adapted from Litman, T., 2019, *Understanding Transport Demands and Elasticities: How Prices and Other Factors Affect Travel Behavior*, Victoria Transport Policy Institute. <http://www.vtpi.org/elasticities.pdf>

Transportation Demand – The Example of Peak Times

One challenge of a growing community is mitigating impacts of additional travellers on the transportation network. Most people commute around the same time on weekday mornings and afternoons so the worst of traffic congestion typically occurs during those times. As a result, transportation analysis has traditionally focused almost exclusively on traffic conditions during the peak hours of travel for a typical weekday – typically one hour in the morning between 7AM and 9AM and one hour in the afternoon between 4PM and 6PM. The intent behind this was to ensure that the road network has sufficient capacity to handle the most significant vehicle demands during the busiest periods.

This conventional approach considers capacity of the transportation system like a series of pipes, where a fixed capacity must be large enough to meet the fixed demands. In other words, if the pipes are not big enough to accommodate demand, the system will fail. But the pipe metaphor only extends so far. In reality, the peak hour is not a closed system. Transportation professionals can calculate a volume-to-capacity (v/c) ratio of greater than 1.0, which implies that transportation demands will exceed the capacity of the roads. But in practice this is physically impossible – there can never be a number of vehicles on a street that exceeds the capacity of the lanes. And users of the transportation system are not inanimate like water. Users are able to adapt and make different decisions in response to real-time conditions and the options available to them.

For one, people can choose to make their trips outside of the peak hour. This would result in a “flattening” of the peaks on a travel demand profile, as shown in **Figure 1**. Flattening will lead to longer peak periods of busy activity but it will also require a lower system capacity.

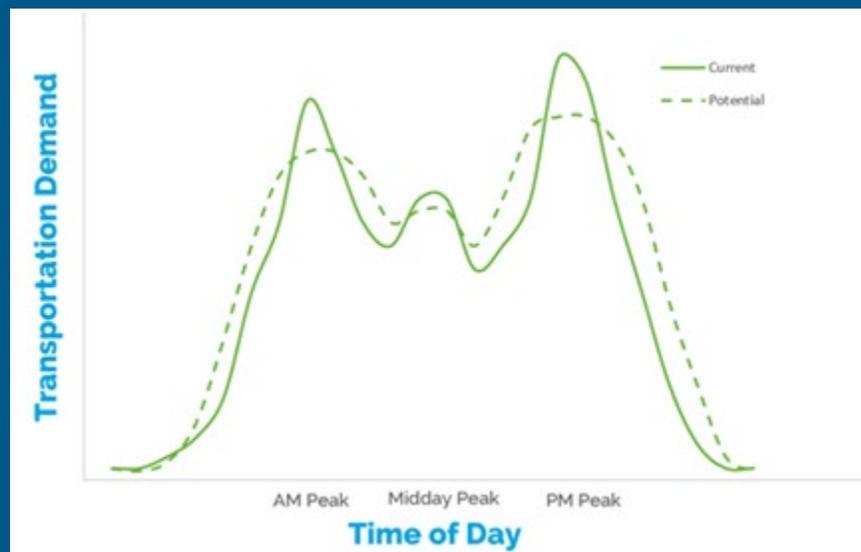


Figure 1: A visual representation of flattening a generic travel demand profile’s curves.

People can also decide to travel by modes other than car to avoid traffic congestion or to get more exercise by choosing an active mode. They can also change their routes to avoid the worst of congestion. And ultimately, they can decide not to travel at all by opting to work from home or to order delivery, for example.



Transportation System User Trends

This section presents the patterns that are being observed around the world with respect to the three major societal trends identified in the introduction. It also discusses the possible impacts that these trends may have on future transportation.

Changing Demographics

In 2018, the United Nations (UN) reported that 55 per cent of the world's population lived in urban areas. The UN expects this proportion to increase to 68 per cent by 2050.² As more people migrate into urban centres around the world, travel demands in cities will increase. This represents an opportunity: if cities plan, design, and construct infrastructure to make sustainable transportation more attractive and convenient, people who move to cities might never require a car. Instead, they might become accustomed to travelling by sustainable modes from the start. But if cities remain car-oriented as they grow, people who move to cities will just contribute to further traffic congestion.

While the global population is growing, particularly in cities, the UN also reports that in many communities, the population is aging. In a recent report, the UN reported that:

In 2018, for the first time in history, persons aged 65 years or over worldwide outnumbered children under age five. Projections indicate that by 2050 there will be more than twice as many persons above 65 as children under five. By 2050, the number of persons aged 65 years or over globally will also surpass the number of adolescents and youth aged 15 to 24 years.³

An aging population presents new consideration for transportation planning. Mobility that's designed for older people will require accessibility to become a fundamental pillar of our transportation networks. Cities will also need to ensure a variety of convenient and comfortable transportation options for those who may no longer be able to drive.

² United Nations Department of Economic and Social Affairs, 2018, "68% of the world population projected to live in urban areas by 2050, says UN." <https://www.un.org/development/desa/en/news/population/2018-revision-of-world-urbanization-prospects.html>

³ United Nations Department of Economic and Social Affairs, 2019, *World Population prospects 2019: Highlights*. https://population.un.org/wpp/Publications/Files/WPP2019_Highlights.pdf

The societal values of communities are also affected by demographics. Currently, Millennials and Generation Z make up over half of the world’s population. Most of Generation Z have yet to reach adulthood, but Millennials, who represent about 30 per cent of the world’s population, are the biggest cohort of adults today.⁴ This gives their perspectives a bigger platform and more power to influence decisions. And when it comes to perspectives, studies of attributes associated with different generations suggest that when compared to generations that preceded them, Millennials tend to:

- Be more socially and environmentally conscientious;
- Be more comfortable with societal change and technological disruption;
- Have increased levels of technological literacy; and
- Be more supportive of a sharing economy.

These demographic trends can have important implications on what communities want from their transportation systems. The attributes associated with Millennials suggest a desire to move away from car-oriented transportation and towards sustainable transportation or new forms of mobility.

⁴ World Economic Forum, 2018 “Generation Z will outnumber Millennials by 2019.” <https://www.weforum.org/agenda/2018/08/generation-z-will-outnumber-millennials-by-2019/>

⁵ Pew Research Center, 2019, “Defining generations: Where Millennials end and Generation Z begins.” <https://www.pewresearch.org/fact-tank/2019/01/17/where-millennials-end-and-generation-z-begins/>

A Primer on Generations

Thresholds and cut-offs for where one generation ends and another begins are often blurred because there is no one accepted definition for different generations. **Table 2** provides a general guideline for some commonly accepted birth years and ages of members of differential generational cohorts.

Table 2: Overview of Generational Cohorts⁵

Generational Cohort	Approximate Birth Year Cut-offs	Approximate Age Ranges as of 2020
Silent Generation	1928-1945	75 - 92
Baby Boomers	1946-1964	56 - 74
Generation X	1965-1980	40 - 55
Generation Y or Millennials	1981-1996	24 - 39
Generation Z	1997-2012	8-23

** Note that the exact cut-off years for each generation may vary slightly in different sources.*



Declining Popularity of Cars

Car ownership, once a rite of passage, is not as popular as it once was. Around the world, young people are choosing not to own cars. A 2013 study on the behavior of Millennials found that only 15 per cent of those surveyed find car ownership to be “extremely important.” Furthermore, 25 per cent of respondents said that car ownership is “important, but not a big priority” while an additional 25 per cent would “purchase one if [they] really needed it, but [are] indifferent otherwise.” And about 30 per cent of respondents had no intention “to purchase one in the future” at all. ⁶

In Canada, the Canadian Automobile Association (CAA) reported that car ownership for young people is significantly down when compared to their parents at the same age.⁷ These findings are echoed in a separate 2019 study, which found that in Canada, the smallest proportion of car owners is found among people aged 18-34, with about 68 per cent of people in this age group owning cars.⁸

The reduction in car ownership coincides with the advent of the smartphone and changes in attitudes about urban living. These technologies and attitudes have given rise to new mobility innovations and made the sharing economy more popular.

⁶ Goldman Sachs, “Millennials: Coming of Age.” <https://www.goldmansachs.com/insights/archive/millennials/>

⁷ Canadian Automobile Association (CAA), 2018, “Why Young People are not Buying Cars.” <https://broker.caainsurance.com/Ontario/Insights/Articles/why-young-people-are-not-buying-cars.aspx>

⁸ Driving, 2019, “Canadians love their cars but they hardly ever use ‘em.” <https://driving.ca/auto-news/news/canadians-love-their-cars-but-they-hardly-ever-use-em>



The emergence of car-, bike, and scooter-sharing services offered an affordable and convenient alternative to individual car ownership, especially for residents of large urban centres or dense urban cores. Shared transportation helps eliminate the high costs associated with vehicle ownership and parking-related fees by providing a reasonable alternative with no long-term commitments.

Other emerging forms of mobility also affect opinions about car ownership. A 2019 study found that in the United States (US,) 46 per cent of Millennials and Generation Z respondents questioned the need to own a car given the rise of ride-hailing. This is compared to 20 per cent of Generation X respondents and only 17 per cent of Baby Boomers and older generation respondents.⁹

There is a possibility that younger generations are simply delaying car ownership instead of foregoing it altogether. Over the last few decades, the cost of higher education and home ownership have skyrocketed beyond inflation while wages have not increased at the same rates. Additionally, the 2008 global recession occurred when many Millennials were just entering the job market, affecting their entry into the workforce. The aforementioned study that found that the smallest proportion of car owners in Canada are people aged 18-34 also noted that this same age cohort is the "most interested in owning a car in



the future." The study also found that only 11 per cent of Canadian car owners planned to get rid of their car in the next 10 years. However, 41 per cent of respondents wished they had better transportation alternatives so they would not need a car and 39 per cent stated that they would prefer to not own a car at some point in their lives.¹⁰

But car ownership isn't the only indicator of shifting attitudes. A study by the University of Michigan and the Automobile Association of America (AAA) found a downward trend in licensing across the US. In 1983, 87 per cent of 19-year olds had their driver's license. However, this number dropped to 69 per cent in 2010. The study also noted that "all of the effects... found for the U.S. were there for Canada."¹¹

Although many members of younger generations might simply be choosing to get their licenses later in life when car ownership becomes a more likely possibility, some might be choosing to never get them at all. And people without a license have no need for a personal car. If these trends continue and if new mobility options are made available to more people, it is possible that dependence on cars will decrease. If less people own cars, the popularity of travel by sustainable modes is likely to grow.

9 Deloitte, 2019, *2019 Global Automotive Consumer Study*. <https://www2.deloitte.com/us/en/pages/manufacturing/articles/automotive-trends-millennials-consumer-study.html>

10 Driving, 2019, "Canadians love their cars but they hardly ever use 'em." <https://driving.ca/auto-news/news/canadians-love-their-cars-but-they-hardly-ever-use-em>

11 CBC News, 2013, "Teens say they're 'too busy' to get driver's licenses." <https://www.cbc.ca/news/canada/windsor/teens-say-they-re-too-busy-to-get-driver-s-licences-1.1381485>



Growing Importance of Environmental Sustainability

In recent decades, there has been an increase in the awareness of the devastating effects that climate change is likely to have on our world. In 2018, a landmark report by the UN Intergovernmental Panel on Climate Change (IPCC) was prepared by 91 authors and review editors from 40 different countries. The report, which included over 6,000 scientific references, stated that the global community had 12 years to make dramatic and unprecedented changes to limit the impacts of climate change to 1.5 degrees Celsius from pre-industrial levels.¹²

More and more communities around the world are being directly affected by climate change and the impacts are difficult to ignore. National, provincial, state, and municipal governments around the world have come to increasingly see climate change as a crisis. In Canada, a growing number of municipalities have declared formal local climate emergencies. In 2019, the House of Commons passed a motion to declare a national climate emergency.

The global transportation sector is acknowledged to be a major contributor of greenhouse gas (GHG) emissions. In 2016, the Executive Director of the United Nations Environment Program (UNEP) said that “designing transport systems around cars puts more vehicles on the road, increasing both greenhouse gas emissions and deadly air pollution.”¹³ A report by the UN Environment Programme (UNEP) also found that motorized transportation is responsible for nearly a quarter of global carbon dioxide (CO₂) emissions. The same report stated that transportation is the fastest growing sector in GHG emissions and is on track to be responsible for a third of all global GHG emissions by 2050.¹⁴

Environmental awareness has led more people to have a better understanding of the negative environmental impacts of their choices, such as relying on cars. As a result, many people are choosing to drive less frequently and are making informed shopping decisions that consider their products’ supply chains.

¹² Intergovernmental Panel on Climate Change (IPCC), 2018, *Global Warming of 1.5°C*. <https://www.ipcc.ch/sr15/>

¹³ UN News Centre, 2016, “UN Environment report: Put people, not cars first in transport.” <https://www.un.org/sustainabledevelopment/blog/2016/10/un-environment-report-put-people-not-cars-first-in-transport-systems/>

¹⁴ UN Environment, 2016, *Share the Road Global outlook on walking and cycling*. <https://www.unenvironment.org/sw/node/17898>

Transportation System Users in Guelph Today

The previous section provided a global perspective on three key societal trends. This section looks at those same trends from a local perspective and identifies how transportation system users are changing in Guelph.

Demographics

Today, Guelph's community is relatively young. In 2016, the median age in Guelph was 38.3 years. And though Guelph is aging (in 2011, Guelph's median age was 37.7), the biggest age group in Guelph continues to be people aged 20-24, who make up about 8 per cent of the population. For context, people aged 20-24 make up 6 per cent of Canada's population. Overall, 36 per cent of Guelph's population is between the ages of 20 and 45 while only 20 per cent of people are 60 or older.^{15,16} However, this could change over time.

Like in most Canadian cities, individuals and families in Guelph often become car-reliant due to their lifestyles and work realities. With trip destinations often scattered across the city, it can be difficult for a parent to drop their child off at school, go to work, and complete all of their weekly errands without a vehicle. But over 50 per cent of households in Guelph do not have children.^{17,18}

This reality presents an opportunity: some people living in households without children may have more flexibility to their lifestyles and could live comfortably without a car given other convenient options for travel.

Guelph has a large proportion of shift-based industrial employment, rendering some local travel demand less flexible. While office-workers may have opportunities to pick their working hours or work from home, those working shifts at a warehouse or manufacturing facility are much less likely to have the same flexibility.

Popularity of Cars

Table 3 shows trends in the number of vehicles per household and the average household size in Guelph and Wellington County over time. As shown in the table, Guelph's car ownership per household has remained stable over the last two decades. During that same time, the average household size has also remained about the same, suggesting that car ownership per person has not changed dramatically.

The trend is different in Wellington County. Over the last 20 years of data, the number of vehicles per household in the County has grown despite the household size remaining roughly the same. This suggests that car ownership per person has gone up.

Although there is no easily accessible data on licensing trends in Guelph, it is likely that rates of licensure in our city show similar patterns to what is observed across the country since mobility options in Guelph are similar to what's available in other Canadian cities.

¹⁵ Statistics Canada, 2016 Census of Population

¹⁶ City of Guelph, 2018, "Guelph as a Village of 100 People." <https://guelph.ca/wp-content/uploads/Community-Plan-Guelph-as-a-Village-of-100-People.pdf>

¹⁷ Statistics Canada, 2016 Census of Population

¹⁸ City of Guelph, 2018, "Guelph as a Village of 100 People." <https://guelph.ca/wp-content/uploads/Community-Plan-Guelph-as-a-Village-of-100-People.pdf>

Table 3: City of Guelph and Wellington County Vehicle Ownership Statistics

Survey	City of Guelph		Wellington County*	
	Vehicles/ Household	Persons/ Household	Vehicles/ Household	Persons/ Household
2016 TTS	1.5	2.5	2.2	2.7
2011 TTS	1.6	2.6	2.0	2.7
2006 TTS	1.5	2.6	1.9	2.7
1996 TTS	1.4	2.6	1.8	2.9

*Includes Centre Wellington, Erin, Guelph/Eramosa, and Puslinch

Perspectives on Environmental Sustainability

Strong environmental awareness is important to Guelph's residents. Environmental stewardship is one of the key values of our 2018 [Guelph Community Plan](#) and protection of the environment is one of the Plan's key focus themes. Our actions align with these values. In 2016, Guelph residents used less water per person per day (167 L) when compared to the average for the province of Ontario (200 L) and the average for all of Canada (250 L). Guelph also decreased its annual GHG emissions per capita by 35 per cent between 2006 and 2016.¹⁹

Guelph's [Community Energy Initiative](#) (CEI), established in 2007, is the City's plan to use less energy and reduce GHG emissions. In 2018, CEI updated its target for Guelph to produce net zero carbon by 2050. As part of the CEI, Guelph's City Council has also committed all of the City's corporate operations to being powered by 100 per cent renewable energy by 2050.

In May 2019, Guelph City Council voted to "acknowledge a climate crisis." Though it is not a formal declaration of a climate emergency, the acknowledgement underlines Guelph's understanding of the severity of climate change and commits the City to mitigation efforts.

19 Data Management Group, University of Toronto, *2016 Transportation Tomorrow Survey (TTS)*.

20 City of Guelph, 2018, "Guelph as a Village of 100 People." <https://guelph.ca/wp-content/uploads/Community-Plan-Guelph-as-a-Village-of-100-People.pdf>



Moving Guelph Forward: The Changing Transportation User

Communities are always evolving. As a result, the needs, desires, and values for transportation in communities are also constantly changing. Although we can't know exactly what the future will look like, there are several ongoing social trends that hint at how we may wish to travel in the next several years. Learning more about these trends and incorporating them into our plans will help us be ready for the future.

Based on the trends and existing conditions outlined in this paper, the following is a list of key takeaways about the changing transportation user:

- The demographics of our communities are shifting. More people are moving to urban centres at the same time as the general population is aging. Responding to these shifts will require cities to make their transportation systems

more multimodal, more supportive of sustainable transportation, and more accessible to people of all ages and abilities.

- The number of adults who belong to Millennial and Generation Z cohorts is growing. This makes them a more powerful force in decision-making. The values and preferences of the members of these two generations may influence a shift away from car-dependency in cities.
- While car ownership remains very popular, some trends hint at a communal desire for a transportation system that doesn't require everyone to own a car. Our choices about which modes to prioritize and support with infrastructure can respond to this desire or discourage it.



What do you think?

What will future transportation users expect mobility to look like in Guelph? What should we do to plan for a transportation system that serves the future needs and desires of our community? How do we ensure that imminent future growth doesn't lead to more transportation-related congestion and pollution in our city?

Let us know! Visit guelph.ca/tmp to learn more about the transportation topics and trends informing the development of our Transportation Master Plan and to find out how you can have your say in Moving Guelph Forward.

Acknowledgements

City of Guelph

Jennifer Juste, Project Manager

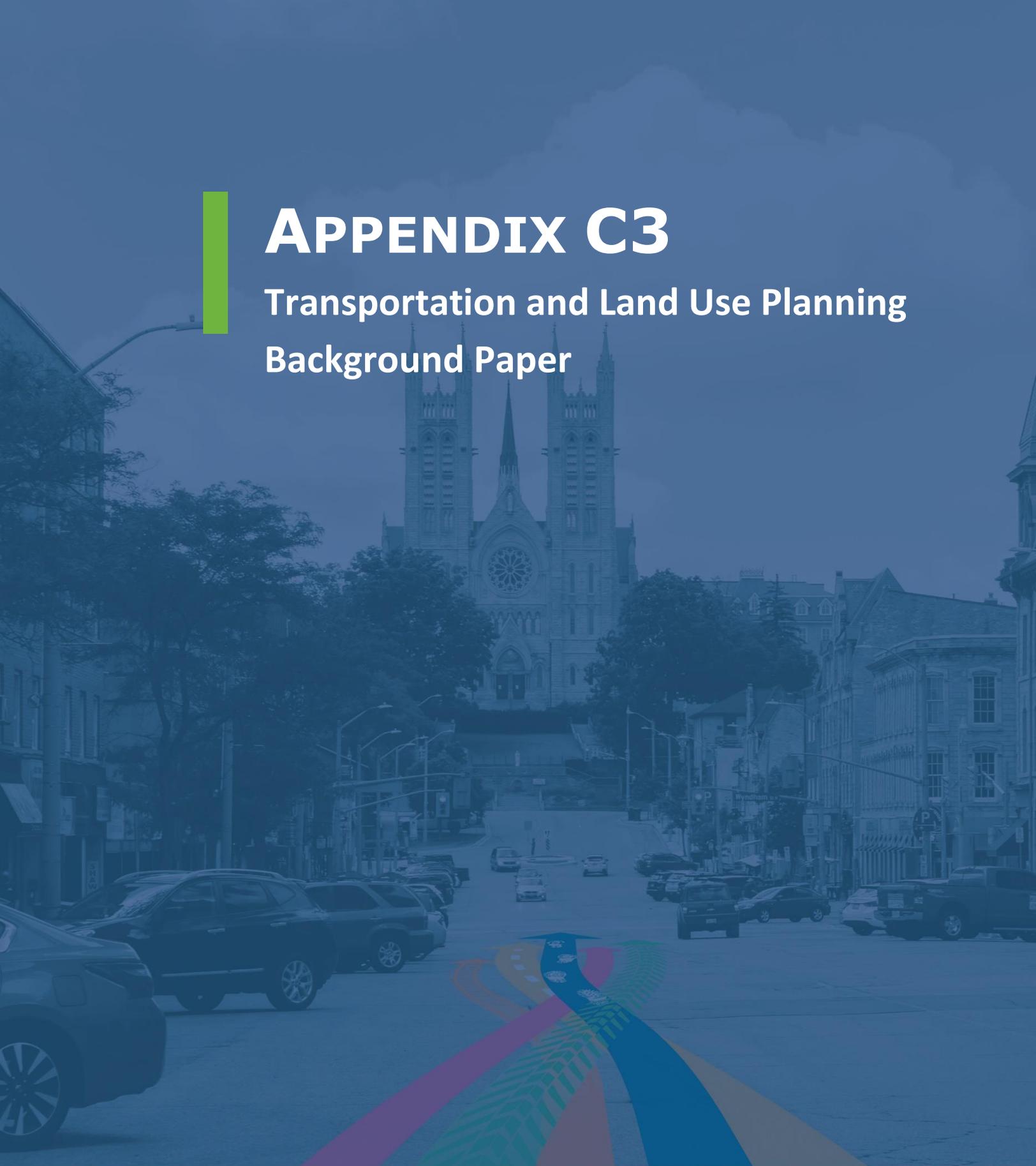
With support from: Madeleine Myhill

Consultant Team – Dillon Consulting Limited

Shawn Doyle, Project Manager

Mariam Bello, Project Coordinator/Primary Author

With support from: Jeff Axisa, Nicole Beuglet, Morgan Boyco, Maria King, Adam Lanigan, and Kristin Lillyman



APPENDIX C3

Transportation and Land Use Planning Background Paper

Transportation and Building 21st Century Cities

Intersection of Transportation and Land Use
Planning

City of Guelph Transportation Master Plan
Background Paper Series



Guelph Transportation Master Plan

Moving Guelph Forward

Guelph is growing and how we move around our city is changing. We're exploring transportation options to make our city move better in every way. Through the Transportation Master Plan update, we will look at all of the ways we move: walking, cycling, riding transit, driving, trucking and using trains. A renewed plan will ensure we have the right travel options and capacity to support the people and jobs we expect as Guelph grows, while maintaining high quality of life for residents and workers.

The updated Transportation Master Plan (TMP) will define how our transportation system will support the community as Guelph continues to grow. The update will look at transportation planning in Guelph beyond 2031. The main objectives are:

1. to ensure the new plan builds upon current policies, including the Official Plan and other master plans that have been approved since 2005;
2. to recommend new policies and guidelines that reflect our community's vision and that balance mobility, environment and efficiency while prioritizing safety and access for all travellers; and
3. to explore how new and evolving technologies and travel services will shape the future of transportation in Guelph.

This series of background papers offer information and analysis of some of the key trends and concepts that will underpin the development and set the strategic direction of the City of Guelph TMP. The papers are intended to support conversations in the community and across City Hall about how Guelph plans for the future of mobility.

The series includes the following papers, all available at guelph.ca/tmp.

- 1. Transportation Technology and New Mobility Options**
- 2. The Changing Transportation System User**
- 3. Transportation and Building 21st Century Cities**
- 4. Road Safety**
- 5. Network Planning**
- 6. Transportation System Resilience**

Each of these background papers opens with an introductory primer on the topic before examining key trends globally, followed by a look at how these topics and trends are currently addressed in Guelph, before concluding with an analysis of the implications for planning Guelph's future transportation system.

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Intersection of Transportation and Land Use Planning: A Primer

Land use and transportation are intertwined. Therefore, land use and transportation planning must be coordinated to ensure that the objectives of both are achieved. This paper speaks to some of the key points of intersection between land use planning and transportation planning being considered by the City of Guelph.

How does land use planning influence transportation planning?

Land use planning establishes levels of activity/demands for travel

The City of Guelph's [Official Plan](#) (OP) establishes the overall distribution of people and jobs throughout the City. It also establishes land uses for all land in the city. Land uses include ways that properties can be used, how tall buildings can be and how many residential units there can be on each property – known as density – which is basically a measure of how many people live or work in a building or a neighbourhood. The more people living or working in a neighbourhood or along a street, the more opportunity there is to serve travel demands using mass transportation like public transit.

Land use planning and practices influence mode choice...

...through land use mix

The mix of land uses in an area determines the number of everyday destinations that can be easily accessed using short trips. The broader the range of services, housing, shopping, jobs and restaurants available close-by, the more likely it is that people will choose the local option, keeping their trips short. Short trips offer travellers a broader range of mode choice because walking and cycling are only attractive options for many people if the trip is short.

A mix of land uses around employment centres also supports transit use for commuter trips. Employees who have access to a range of services close to work are more likely to use transit for their primary trips. Additionally, mixing land uses around employment centres creates demand for two-way travel, increasing travel demand in areas well served by transit.

...through community design

"Direct-ness" of street pattern impacts access, connectivity and trip length for active transportation modes - walking and cycling. Street patterns that create short walking distances and direct connections to community boundaries are more supportive of active modes. Street patterns also impact the efficiency and quality of transit service.

...through site design

Site design sets the location of different features on a site. The approach taken to site design impacts access and trip length to and from the site for active modes. Site design also affects travel distances and environments for sustainable modes - pedestrians, cyclists and transit users - which strongly influences mode choice. Site designs that do not include supportive elements for sustainable modes (e.g. bike parking, showers and change facilities, etc.) promote cars as a preferred mode choice.

...through parking regulations

Convenience, cost and availability of parking at the home end of a trip influences car ownership and general car use. Convenience, cost and availability of parking at the destination end of a trip makes driving to that destination more attractive than using any other mode.

Note that parking is not just a transportation issue. Parking is often used to generate revenue for a city. Parking supply is also perceived to be a critical support for economic activity and land development. These goals often encourage increasing parking supply in areas where objectives for increasing sustainable transportation mode share would discourage it. The desire for high levels of convenience have historically led to an over-supply of parking capacity, particularly where land prices are lower.



How does transportation planning reflect land use planning?

The Transportation Master Plan (TMP) reflects strategic community objectives

The TMP sets the level of priority given to the different modes of travel across the city. It makes sure that the networks, policies and programs for different modes are planned to reflect the community objectives.

The TMP sets mode share targets

The TMP sets the targets for the percentage of travelers that will use each mode of transportation for personal travel in the community in the future. These percentages are collectively referred to as the mode share targets. The mode share targets consider the historical travel choices by residents of Guelph and the City's strategic goals related to transportation, climate change and urban form.

The TMP connects neighbourhoods

The TMP develops the networks for all modes of travel. It makes sure that all travel options are available for all destinations across the city and that networks for each mode are connected and continuous.

The TMP determines local priorities for travel modes

The TMP identifies the priority networks (i.e. the connection of streets and paths that will provide a comfortable and convenient environment) for travellers using every mode. The priority networks reflect the existing neighbourhood structure and the growth objectives of the City set by the OP.

The TMP also identifies the City's design practices to improve the environment for the priority modes along different streets. Where the priority networks overlap, the TMP will establish practices for integrating the priority networks.

The TMP influences how well streets integrate into the community

The TMP identifies the design practices that the City will follow to reflect the environment of the street and avoid creating a barrier. The practices will consider the unique needs of streets in different areas, such as urban areas, suburban areas, industrial areas and natural areas.

Intersection of Transportation and Land Use Planning in Guelph

City of Guelph Official Plan

The City of Guelph's [Official Plan](#) (OP) is the guiding document that provides the long-term framework for growth, development and the protection of many valuable cultural and natural heritage resources located across the city. It is a legal document under the Planning Act that contains the goals, objectives and policies to manage and direct physical (land use) change, and its effects on the cultural, social, economic and natural environment within the community. The City also has several areas across the city that have been or are being planned through Secondary Plans defining detailed land use and policies.

The OP was consolidated in 2018 and is currently being reviewed to address conformity with the Planning Act and a number of provincial policies. The vision and principles for growth within the OP include:

- . A compact, connected and complete city;
- . An environment-first approach;
- . Safe and connected transportation choices; and
- . A range and mix of housing that is accessible and affordable.

The TMP is one way that the City will implement its OP vision and principles for growth.

Urban Structure and Strategic Growth Areas

Schedule 1 of Guelph's OP defines an urban structure based on a nodes and corridors model of growth. The Intensification Corridors and Community Mixed-Use Nodes identified in the City's OP are intended to be vibrant areas with increased density and a variety of land uses. The density and mix of uses will create a lot of short trips that can be completed by walking and cycling while also supporting the viability of existing and planned transit service. Greenfield areas (i.e. new subdivisions) will be planned to be compact and will be developed at densities that encourage travel by sustainable modes and promote opportunities to live in close proximity to jobs.

The City of Guelph has done some initial work to consider street design in some the Intensification Corridors and Community Mixed-Use Nodes. [Urban Design Concept Plans](#) have been prepared for the:

- . Woodlawn/Woolwich mixed-use node and the Woolwich intensification corridor;
- . Gordon/Clair mixed-use node;
- . Paisley/Imperial mixed-use node;
- . Watson/Starwood mixed-use node; and
- . Gordon Street intensification corridor.

The TMP will consider the direction from the [Urban Design Concept Plans](#) and leverage and support the opportunities presented by the Intensification Corridors and Community Mixed-Use Nodes.



Vision for Downtown

The [Downtown Secondary Plan](#) establishes a comprehensive vision for revitalizing Downtown Guelph to 2031, reinforcing the historic character of Downtown Guelph while responsibly and creatively planning for growth. The planning framework for Downtown includes several key transportation elements:

- A [Downtown Streetscape Manual](#) that establishes unique street characteristics (such as flexible streets) for the area and emphasizes walking and cycling as preferred modes of travel;
- New walking/cycling connections to Downtown across the Speed River;
- The major transit station area and a high level of local and regional public transit service; and
- Public on-street and off-street parking facilities throughout Downtown.

The City also has a [Parking Master Plan](#) for Downtown that calls for a 1,300 to 1,700 increase in the number of parking stalls.

These strategic plans are key components of the vision for Downtown. The TMP will consider all of these commitments, incorporating what it can and identifying any elements that need further study.

Acknowledgements

City of Guelph

Jennifer Juste, Project Manager

With support from: Melissa Aldunate, David de Groot, Natalie Goss and Krista Walkey

Consultant Team – Dillon Consulting

Shawn Doyle, Project Manager/Primary Author

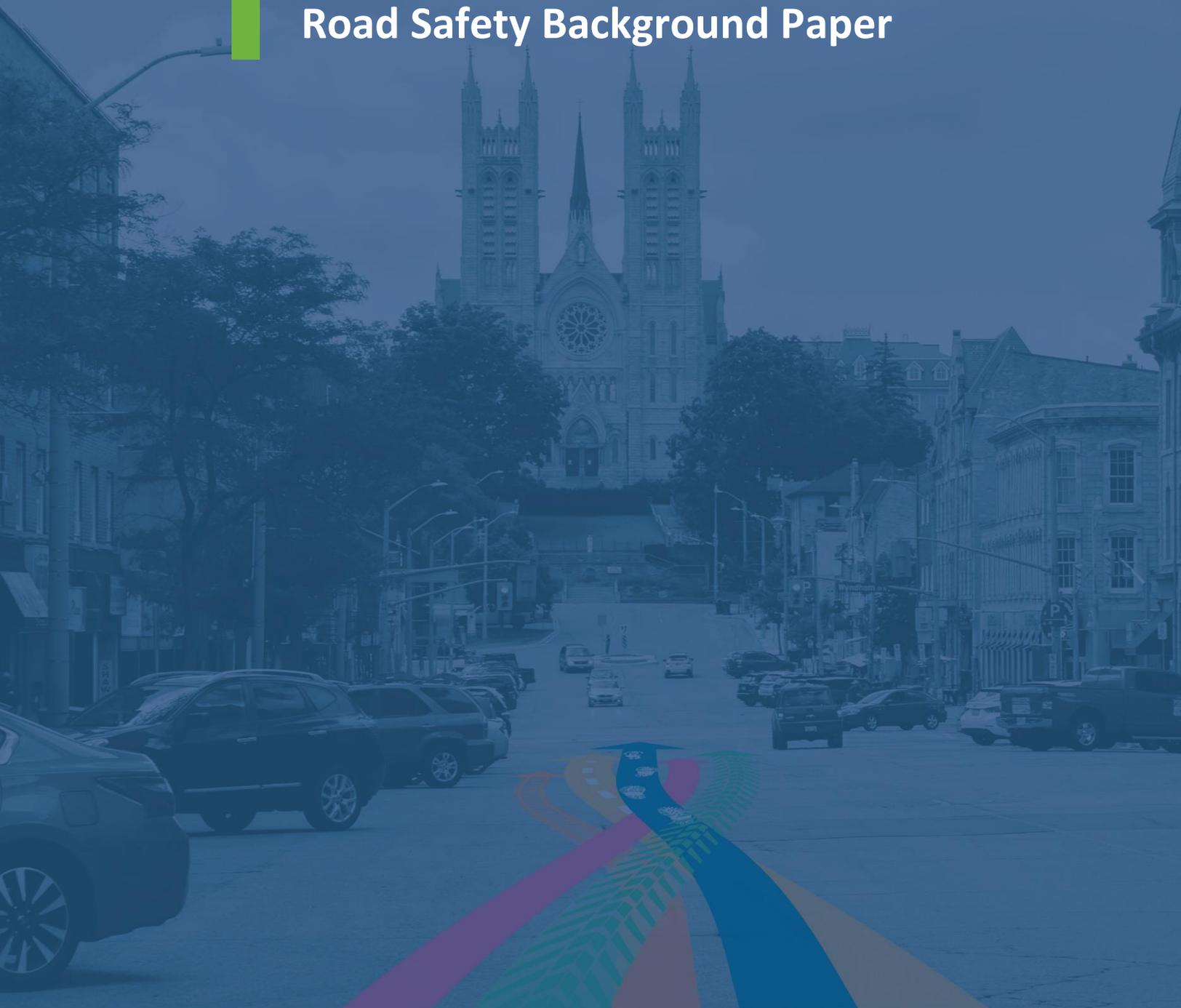
Mariam Bello, Project Coordinator

With support from: Jeff Axisa, Nicole Beuglet, Morgan Boyco, Maria King, Adam Lanigan, and Kristin Lillyman



APPENDIX C4

Road Safety Background Paper



Gordon st

Road Safety

City of Guelph Transportation Master Plan

Background Paper Series



Guelph Transportation Master Plan

Moving Guelph Forward

Guelph is growing and how we move around our city is changing. As a result, we are exploring transportation options to make our city move better in every way. Through the Transportation Master Plan (TMP) update, we will review all of the ways we move: walking, cycling, riding transit, driving, trucking, and using trains. Our goal is to ensure that we offer diverse travel options, have appropriate transportation capacity, and maintain a high quality of life for both existing and future residents and workers.

The updated TMP will look at transportation planning in Guelph beyond 2031. The main objectives of this update are:

- To ensure that the new plan builds upon current policies, including the Official Plan and other master plans that have been approved since 2005;
- To recommend new policies and guidelines that reflect the vision for our community and balance mobility, environment, and efficiency, while prioritizing safety and access for all travellers; and
- To explore how new, evolving technologies and travel services will shape the future of transportation in Guelph.

This paper is part of a series of background papers intended to communicate information, key trends, and concepts. These will form the foundation of and set the strategic direction for our updated TMP. The papers are intended to support conversations in the community and within City Hall about how we plan for the future of mobility.

The series includes the following papers, which are all available at guelph.ca/tmp:

- **Transportation Technology and New Mobility Options**
- **The Changing Transportation System User**
- **Transportation and Building 21st Century Cities**
- **Road Safety**
- **Network Planning**
- **Transportation System Resilience**

Each of the background papers opens with an introductory primer on the topic before it examines key global trends, considers how these topics and trends are currently addressed in Guelph, and concludes with an analysis of the implications of that topic on planning Guelph's future transportation system.

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Road Safety: A Primer

Protecting the safety of road users has always been a core consideration for transportation planners, road designers, and managers of transportation systems. Today, road-related incidents of injury and death continue to be a persistent challenge in many jurisdictions. Therefore, communities across Canada and around the world are increasingly emphasizing road safety in long-range planning and day-to-day operational decisions.

Road-related injuries and fatalities are gradually being recognized as a major public health concern. In response, an increasing volume of research is helping cities better understand the causes of road safety incidents and the effective measures that could considerably improve the safety of our streets for all users. This paper discusses some of the key issues and trends related to road safety, existing approaches to road safety in Guelph, and recommendations for how our updated TMP should consider addressing road safety going forward.

Why Focus on Road Safety?

Around the world, approximately 1.35 million people die in road incidents each year and an additional 20–50 million suffer from non-fatal injuries, which often result in long-term disabilities.¹ Over the last decade in Ontario, nearly 600 people have lost their lives due to traffic-related incidents every year.² Although the number of injuries from traffic-related collisions has been declining over the last 10 years, there are still hundreds of people killed and tens of thousands injured each year as a result of transportation-related incidents in the province.

¹ World Health Organization, 2018. [Global status report on road safety 2018](#).

² Ministry of Transportation, Ontario. [Ontario Road Safety Annual Reports \(ORSAR\) 2010-2018](#).

The Safe Systems Approach

The safe systems approach is a helpful framework for road safety management that is considered an international best practice by the World Health Organization (WHO)³ and the Organization of Economic Cooperation and Development (OECD).⁴ The safe systems approach is based on the principles that life and health should not be compromised by the need to travel and that no level of death or serious injury is acceptable in our transportation network. The fundamental philosophy of the approach is that it should be possible to create a transportation system that is designed to make transportation-related death and serious injury nearly impossible outcomes. According to this approach, safe transportation systems consist of four main elements⁵:

- 1. Safer road use**, which means encouraging all road users to be safe and in compliance with applicable transportation rules based on a philosophy of shared and proportionate responsibility.
- 2. Safer speeds**, which means slowing down vehicular traffic to context-appropriate speeds and ensuring compliance through a combination of design, education, and enforcement.
- 3. Safer roads**, which means designing roads that minimize the likelihood and/or the severity of a collision by “guiding” driver behaviour and segregating users or traffic streams, as required.

- 4. Safer vehicles**, which means designing, building, and regulating vehicles that better protect vehicle occupants and actively improve driver safety using technologies like collision-avoidance systems.

The four elements of a safe system all strive to reduce **the likelihood of a collision** and **the severity of one**, should it occur. Ultimately, speed plays a key role in both the likelihood and the severity of collisions, as described in the following sections.

Reducing Likelihood

According to the WHO, every 1 kilometre per hour (km/h) increase in the average speed of traffic results in a 3 per cent increase in the likelihood of a collision and a 4–5 per cent increase in the likelihood of a fatal incident. This relationship also works in the reverse, with every 1 km/h decrease in average speed resulting in a 3 per cent decrease in likelihood of a collision and a 4–5 per cent reduction in the likelihood of a fatal collision.⁶ Both the perception of hazards and stopping distance are important factors related to speed that can reduce the likelihood of serious road safety incidents.

³ World Health Organization. [Global Plan for the Decade of Action for Road Safety 2011-2020](#).

⁴ Organization of Economic Cooperation and Development, 2008. [Towards Zero: Ambitious Road Safety Targets and the Safe System Approach](#)

⁵ Brake, 2015. [The safe systems approach to road safety](#).

⁶ World Health Organization, 2004. [World Report on Road Traffic Injury Prevention](#).



Perception of Hazards

Research shows that travel at higher speeds reduces a driver's field of vision. At higher operating speeds, the driver is able to perceive and process a smaller portion of their view, as shown in the visualization in **Figure 1**. This diminished perception makes it more dangerous for a driver to operate at higher speeds.

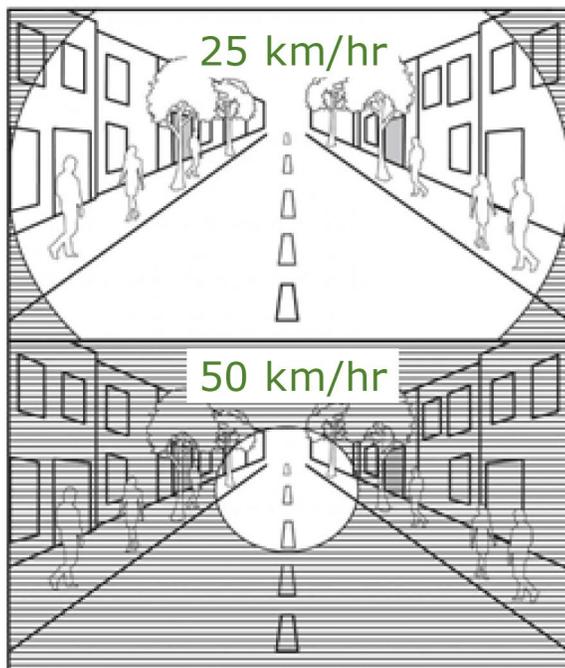


Figure 1: Visualization of the effect of speed on a driver's field of vision⁷

Stopping Distance

The stopping distance of a vehicle is proportional to the speed at which the vehicle is travelling. This means that at faster speeds, it takes longer to stop after initially perceiving an upcoming hazard. This relationship is illustrated in **Figure 2**, which demonstrates how the typical distance that a vehicle requires to fully stop increases with travel speed. When travelling at higher speeds, a driver is less likely to be able to stop in time to avoid a vulnerable road user ahead, even if that driver sees the other road user several metres in advance. Note that drivers will require even more distance in order to stop safely when roads are wet or icy.

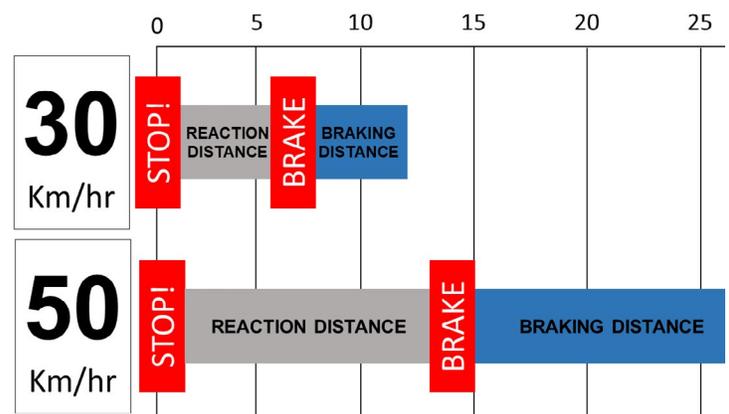


Figure 2: Relationship between speed and braking distance⁸

⁷ Reprinted from *Walkable City Rules: 101 Steps to Making Better Places*, Speck, J., 2018. Washington, DC: Island Press.

⁸ Adapted from *Playground Zones: Why 30?* City of Edmonton.



Reducing Consequences

Severity of Injury

Higher operating speeds also increase the severity of the injuries and risk of death that results from traffic collisions. **Figure 3** illustrates the dramatic relationship between vehicle speeds and the risk of pedestrian death.

Traffic collisions are most severe when they involve a vulnerable road user (e.g., a person walking or cycling). A pedestrian safety study conducted by the City of Vancouver showed that, between 2005 and 2011, pedestrians and cyclists were each involved in only 1 per cent of transportation-related collisions. However, in that same timeframe, pedestrians represented 45 per cent of all transportation-related fatalities in Vancouver, while cyclists represented 5 per cent.⁹

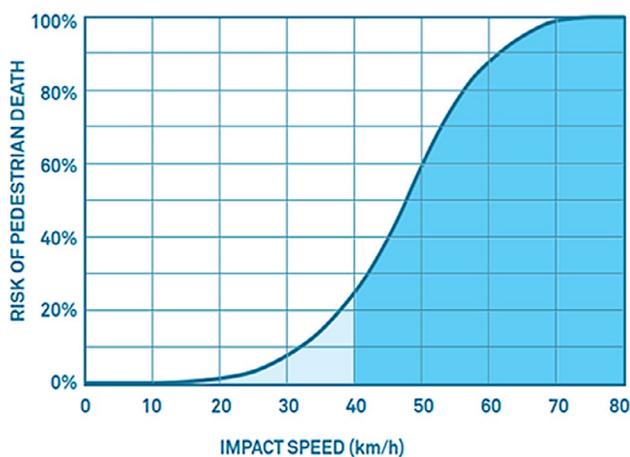


Figure 3: Relationship between impact speed and risk of pedestrian death¹⁰

⁹ City of Vancouver, 2012. [Pedestrian Safety Study, Final Report](#).

¹⁰ Reprinted from ["Safe Streets Save Lives"](#) Global Designing Cities Initiative.

Road Safety Trends

This section explores four important areas of focus in current discussions about road safety: Vision Zero, designing cycling facilities for all ages and abilities, street function and design, and intersection design.

Vision Zero

The Vision Zero philosophy was first introduced in Sweden in 1997. At that time, the Swedish government committed itself to a safe systems approach and pledged to eliminate death and serious injuries from its roads. The program proved to be extremely successful and attracted widespread attention when Sweden managed to cut its traffic-related death rate in half in just two decades. Today, the Vision Zero philosophy has been widely adopted around the globe, including in several municipalities in Canada.

Committing to Vision Zero means committing to not accepting any loss of life from transportation-related incidents and treating safe mobility as a human right. It also means that safety is paramount above all other transportation system-related decisions.

Road safety is affected by complex and diverse factors. Vision Zero is more of a philosophy, rather than a checklist. The philosophy acknowledges that there are no simple fixes that can address all road safety issues but it sets a goal for continuous improvement. Since active transportation users are disproportionately injured or killed in road incidents, many Vision Zero approaches focus on making the network safer for these users. The safe systems approach, discussed at the beginning of this paper, is the foundation for many Vision Zero initiatives.

Vision Zero aims to update the traditional perspective on transportation safety in a number of important ways, as outlined in **Table 1**.

Table 1: The Vision Zero mindset¹¹

x OLD STYLE THINKING	✓ NEW THINKING
Responsibility to prevent crashes, injuries, and deaths rests with individuals	Responsibility to prevent crashes, injuries, and deaths rests with system designers
Focuses on what causes accidents	Focuses on what causes safety
Allows individual errors to kill and harm	It is unethical to allow individual failures to lead to death or serious injury
90 per cent of the problem are errors made by people on foot and in personal vehicles	90 per cent of the solutions involve speed reductions, alternative approaches to road design, and advances in vehicle design
Studies the effects of single road safety interventions, one at a time	Understands that road safety interventions work best together or in bundles

¹¹ Reprinted from *The Safe Systems Approach for Road Safety*, Arason, N.

✗ OLD STYLE THINKING	✓ NEW THINKING
Can only justify making improvements based on a cost-benefit analysis	Understands that the default is to make the motor vehicle and the road system safe
Only works on problems with large numbers or high crash locations	Makes the system safe everywhere
Believes in the need for further “study” — waits for crashes and coroner reports to identify problems	Recognizes that the evidence to act already exists. Proactively takes actions using data, crash testing, simulations, physics, etc.
Ignores exposure to the motor vehicle as an injury risk factor	Embraces multi-modal transportation for better safety

Many jurisdictions around the world have adopted Vision Zero but very few jurisdictions have been able to achieve anything close to zero traffic-related serious injuries and fatalities. This leads to the obvious question – why bother aiming for something that is impossible?

There are several good reasons to aim for Vision Zero:

- 1. Vision Zero is a target** -Though achieving this target may not happen this year or even within the next decade, it serves as something to strive for. Any progress towards Vision Zero, no matter how small, will reduce the number of fatalities and serious injuries on a transportation network for a municipality.
- 2. It is the right thing to do** - From the perspective of transportation ethics and equity, striving for Vision Zero is the right thing to do. For a community, no death or serious injury should be an acceptable cost of daily transportation. Unjustly, traffic-related incidents often disproportionately affect members of more marginalized communities. For instance, a study conducted between 2008 and 2015 found that, in Ontario, children living in lowest-income areas had a 48 per cent higher rate of ending up in the emergency room due to being hit by a vehicle, when compared to those living in highest-income areas.¹² Any potential for safety improvements that are within the control of a municipality should be acted upon.
- 3. Small steps, meaningful change** - The philosophy can be applied to make small but powerful targeted improvements at a time. While achieving zero deaths may be a target for the far future, the adoption of the Vision Zero philosophy can be in the form of building upon more achievable objectives such as ‘Zero for one week’ or ‘Zero for one area’. These more digestible goals will result in smaller safety improvements while always moving the needle towards the ultimate target.

¹² SickKids, 2019. [Ontario children getting hit by cars less frequently, yet children in low-income areas are still at higher risk, study finds.](#)

Core Elements of Vision Zero¹³

Ethics: No death or serious injury is acceptable. Significant risks to life and health should not be the cost of using a transportation system.

Responsibility: The responsibility for road safety falls on everyone. Transportation departments of the various levels of government and law enforcement agencies have a responsibility to plan, design, and operate a transportation system that minimizes the risk of death or injury. Meanwhile, road users are responsible for following the basic rules of the road (e.g. obeying speed limits, driving unimpaired, making responsible driver decisions, etc.).

Safety Philosophy: Vision Zero is founded on two fundamental facts:

- Human beings make errors
- There is a critical limit beyond which survival and recovery from an injury are not possible

To account for these unchangeable truths, transportation systems should be designed to account for human error and to minimize impacts of such errors so that deaths and serious injuries can be avoided. Crashes and minor injuries can still be acceptable as long as the factors that lead to death and serious injuries are minimized or eliminated.

Creating Mechanisms for Change: From a perspective of human rights, Vision Zero supports each citizen's right to safe mobility - in essence, the right to survive each day while travelling in a complex modern transportation system. Each road user has an obligation to comply with the basic rules of road safety. However, governments - which include the designers, maintainers, and enforcers of transportation systems - are responsible for keeping their citizens safe. Therefore, government stakeholders must work together to enable safer transportation systems. This means implementing the appropriate network designs, street designs, policies, incentives, educational campaigns, enforcement, programs, and performance measures to support progress towards Vision Zero goals. These government mechanisms are necessary to drive change.

In practice, adopting a Vision Zero philosophy means that:

1. Interventions occur as early and as often as possible;
2. Safety input is given at earlier stages of the planning and design process;
3. Operating speeds and the tolerance for speeding are lower;
4. More disciplines and partners are being involved in transportation safety decisions;
5. Earlier education is provided about transportation safety;
6. There is greater public and institutional awareness and support for transportation safety
7. There is more funding, available for longer periods of time, for transportation safety improvements; and
8. Proven safety measures are implemented everywhere.

¹³ Adapted from World Health Organization, 2004. *World Report on Road Traffic Injury Prevention*.

Protecting Vulnerable Users

Streets have historically been designed primarily for vehicles, with minimal accommodation provided to all other travelers. As a result, the spaces that serve people who walk or cycle often do not meet the needs of the less physically able travellers or the less confident cyclists. Fortunately, design approaches and parameters are changing. Both the actual and perceived safety for active transportation users is being used to establish design parameters for both new and existing streets. Legislation such as the *Accessibility for Ontarians with Disabilities Act* (AODA) and professional organizations like the National Association of City Transportation Officials (NACTO) offer guidance to design streets that meet the needs of people with disabilities and vulnerable users.

Protecting those who Walk

The design of pedestrian infrastructure needs to follow a number of key design principles that relate to safety. Pedestrian infrastructure must:

- **Be accessible for people of all ages and abilities** - Sidewalks must be direct and unobstructed. They must also meet or exceed the width, grade, and cross-slow requirements that have been set out in the AODA Guidelines.
- **Be continuous** - A continuous network of sidewalks should exist throughout the city, allowing for a safe and consistent walking experience from any origin to any destination.

- **Have safe crossings for all** - Frequent, well-defined crossing locations; lower vehicular operating speeds; narrower street widths; adequate signal timing; and high-visibility lighting all contribute to the safety of the pedestrian network. Appropriate curb ramps and tactile walking surface indicators should be provided at all crossing locations.

Protecting those who Cycle

The term *cyclist* has historically referred to a traveller using any “human-powered” mode (excluding walking), such as bicycle, kick-scooter, and/or in-line skates. Users of these modes generally travel at speeds between 15 and 30 km/h and require a horizontal travel width of 1.2–1.5 metres (m), typically with an additional 0.6 m for passing space. These quantitative parameters are often used to design cycling facilities in North America. But the use of these parameters as average benchmarks misses the fact that some cyclists travel slower than others and are less able or less likely to hold a straight line of travel.

An popular industry typology¹⁴ divides cyclists into one of four groups:

- **Strong & Fearless** - people who are comfortable cycling on-street in any conditions.
- **Enthused & Confident** - people who are comfortable cycling in mixed traffic conditions but who would prefer dedicated facilities.
- **Interested but Concerned** - people who enjoy cycling and are curious about on-street cycling but who are nervous to do it in mixed traffic conditions.
- **No Way, No How** - people who are not interested in cycling at all.

¹⁴ Roger Geller, “Four Types of Cyclists” Portland Bureau of Transportation, 2009. <https://www.portlandoregon.gov/transportation/article/264746>

Typical design parameters of the past have led to streets that are comfortable for cyclists falling into the *Strong and Fearless* and the *Confident and Enthused* categories. But studies of different urban centres in North America have shown that only a small fraction of the population typically fall into those two types. Most people in North American cities tend to be potential cyclists who can be described as *Interested but Concerned*. To reach and support this group, cities have turned to adopting street design approaches intended to meet the needs of cyclists of all ages and abilities - in other words, All Ages and Abilities (AAA) infrastructure.

According to NACTO, an association of major North American cities and transit agencies, an essential strategy for cities that seek to improve traffic safety is to design streets that are safe and inviting for users of all ages and abilities. AAA cycling infrastructure must therefore meet the needs of cyclists ranging from school-age children to seniors, low-income riders, people with disabilities, and able-bodied cyclists of varying confidence levels. Presence of AAA infrastructure in all communities (including communities of traditionally marginalized people) also allows cities to address some safety and health concerns related to traffic congestion, air quality, and public health. Additionally, improvements to cycling infrastructure can bolster local economies by providing better and more equitable access to jobs and opportunities.¹⁵

Many elements go into designing a cycling route that is safe and comfortable for all ages and abilities. In its *Transportation Design Guidelines for All Ages and Abilities Cycling Routes*, the City of Vancouver provides 10 helpful general rules to consider when designing AAA facilities or designating safe cycling routes:¹⁶

- Rule #1: Build the types of cycling facilities that feel comfortable for all.
- Rule #2: Target motor vehicle volume to be fewer than 500 vehicles per day.
- Rule #3: Target motor vehicle speed to be below the 30 km/h median (below 40 km/h or the 95th percentile).
- Rule #4: Consider the interplay between parking and roadway width, so cyclists are able to pass an oncoming vehicle without feeling like they are being squeezed or entering into a door zone.
- Rule #5: Design bike lane width for the comfortable passing of fellow cyclists.
- Rule #6: Provide adequate lighting along the entire length of the route.
- Rule #7: Create designated and physically separated spaces for walking and cycling.
- Rule #8: Provide smooth, paved, and hard travel surfaces.
- Rule #9: Keep grades below 3 per cent, as much as possible.
- Rule #10: Design intersections thoughtfully to reduce conflicts, increase visibility, and provide clear direction of movement (fewer than 50 vehicles per peak hour).

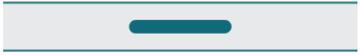
¹⁵ National Association of City Transportation Officials, 2017. [Designing for All Ages & Abilities: Contextual Guidance for High-Comfort Bicycle Facilities.](#)

¹⁶ City of Vancouver, 2017. [Transportation Design Guidelines: All Ages and Abilities Cycling Routes.](#)

A critical component of a safe transportation network is to intentionally design a street to match its intended function and integrate it with its surroundings. Vehicular operating speeds are more strongly influenced by changing street design features, which can be a primary contributor to actual speed reduction.

Today, many municipalities are considering implementing 40 km/h or even 30 km/h zones across wide swathes of their cities. However, studies have demonstrated that changing the posted speed limit without any additional speed reduction measures has a limited effect on lowering actual operating speeds or reducing the frequency or severity of collisions.^{19,20}

Examples of Traffic Calming Techniques

 <p>Median Medians create a pinchpoint for traffic in the center of the roadway and can reduce crossing distances.</p>	 <p>Pinchpoint Chokers or pinchpoints restrict motorists from operating at high speeds on local streets and significantly expand the sidewalk realm for people.</p>	 <p>Chicane Chicanes slow drivers by alternating parking or curb extensions along the corridor.</p>
 <p>Lane Shift A lane shift horizontally deflects a vehicle and may be designed with striping, curb extensions, or parking.</p>	 <p>Roundabout Roundabouts reduce traffic speeds at intersections by requiring drivers to move with caution through conflict points.</p>	 <p>Speed Hump Speed humps vertically deflect vehicles and may be combined with a mid-block crosswalk.</p>
	 <p>Diverter A traffic diverter breaks up the street grid while it maintains permeability for people on foot and on bikes.</p>	

Adapted from NACTO, [Speed Reduction Mechanisms](#).

¹⁹ Dillon Consulting Limited, 2013. Low Posted Speed Limit Study. Prepared for the Nova Scotia Transportation and Infrastructure Renewal. https://novascotia.ca/tran/publications/NSTIR_Speed_Zone_Study_-_Dillon_-_Final_Report_2013-11-15.pdf

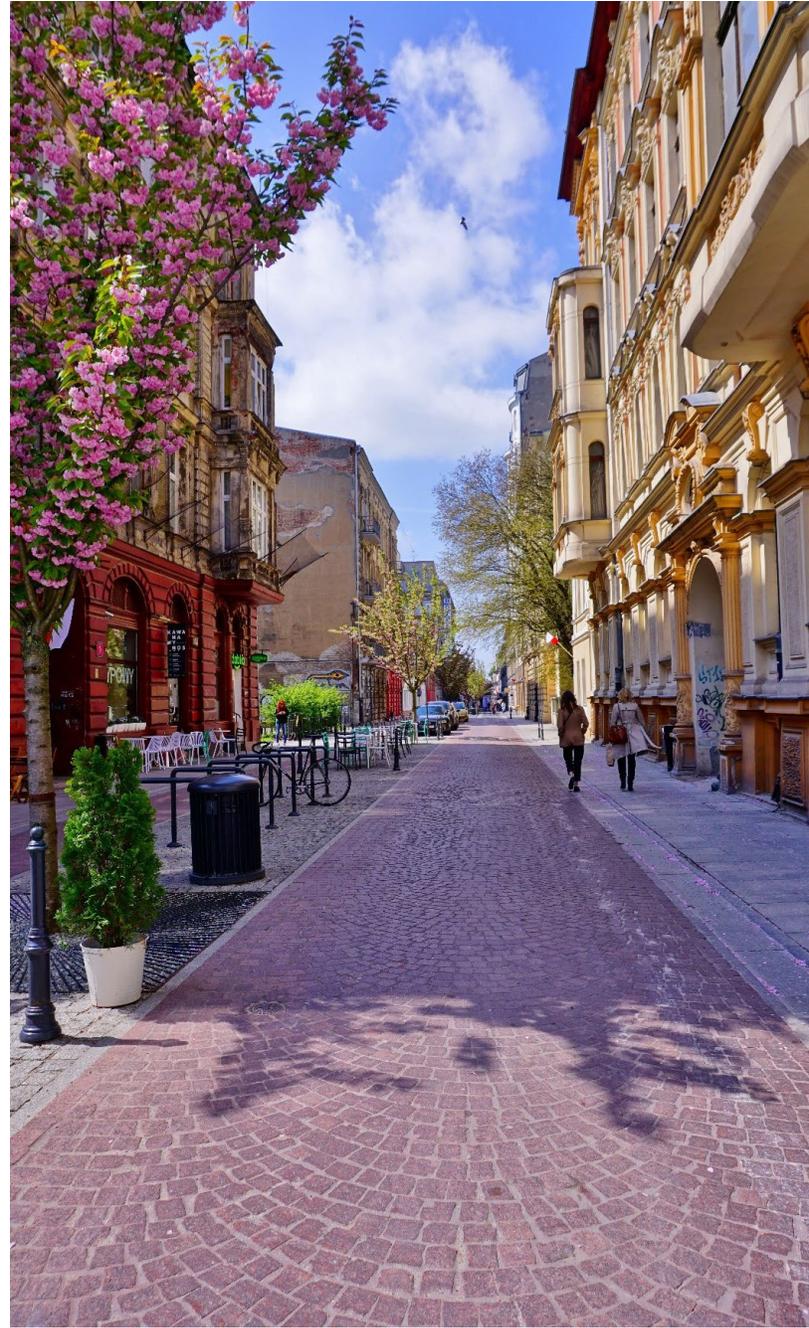
²⁰ US Department of Transportation, Federal Highway Administration, 1997. *Effects of Raising and Lowering Speed Limits on Selected Roadway Sections*. https://safety.fhwa.dot.gov/speedmgt/ref_mats/fhwasa1304/Resources3/33%20-%20Effects%20of%20Raising%20and%20Lowering%20Speed%20Limits%20on%20Selected%20Roadway%20Sections.pdf

Different street designs will result in different road user behaviour through various physical and perceptual cues. The speed at which a driver will operate a vehicle is highly influenced by the physical characteristics of the road, such as the number and width of lanes, intersection design, or the presence of street trees and furnishings.

Common speed mitigation strategies include horizontal (e.g., chicanes) and vertical (e.g., speed bumps) traffic-calming techniques, as well as more comprehensive road redesign to reduce the role of vehicles on a street (e.g., flexible streets, slow streets, living streets, home zones, woonerfs).



Methley's Home Zone in Leeds, UK. Image source: [Vision Zero Canada](#)



Woonerf, Lodz, Poland. Image source: [MirSiwy / Shutterstock.com](#).



Intersection Design

Conventional road intersection design prioritizes efficient vehicular movement by maximizing vehicle capacity and minimizing vehicle delay. This vehicle priority is often at the expense of safety and comfort for users who are not in vehicles. However, new intersection designs from the last 10 to 15 years have given more priority and provided a much greater degree of safety for more vulnerable road users. The following figures illustrate examples of these recent intersection design innovations.

Protected intersections, dedicated intersections, and minor street crossings with consideration for active transportation users are all examples of designs that minimize the potential conflicts between vulnerable road users and vehicles.

A protected intersection, in particular, can reduce the likelihood of high-speed vehicle turns, improve sightlines, and dramatically reduce the distance and time during which cyclists are exposed to conflicts. Traffic signal phasing can also be used as a feature to make intersections safer for active transportation users. These strategies and tools all promote three important outcomes to enhance safety at intersections: reducing turning speeds, making active transportation users more visible, and giving cyclists the right of way.²¹

It should be noted that some protected intersection designs pose challenges for navigation or access by larger vehicles, such as trucks, buses, and emergency service vehicles. The best intersection designs should be context-sensitive and balance the needs of all users.

²¹ National Association of City Transportation Officials, 2019. [Don't Give Up at the Intersection: Designing All Ages and Abilities Bicycle Crossings](#).

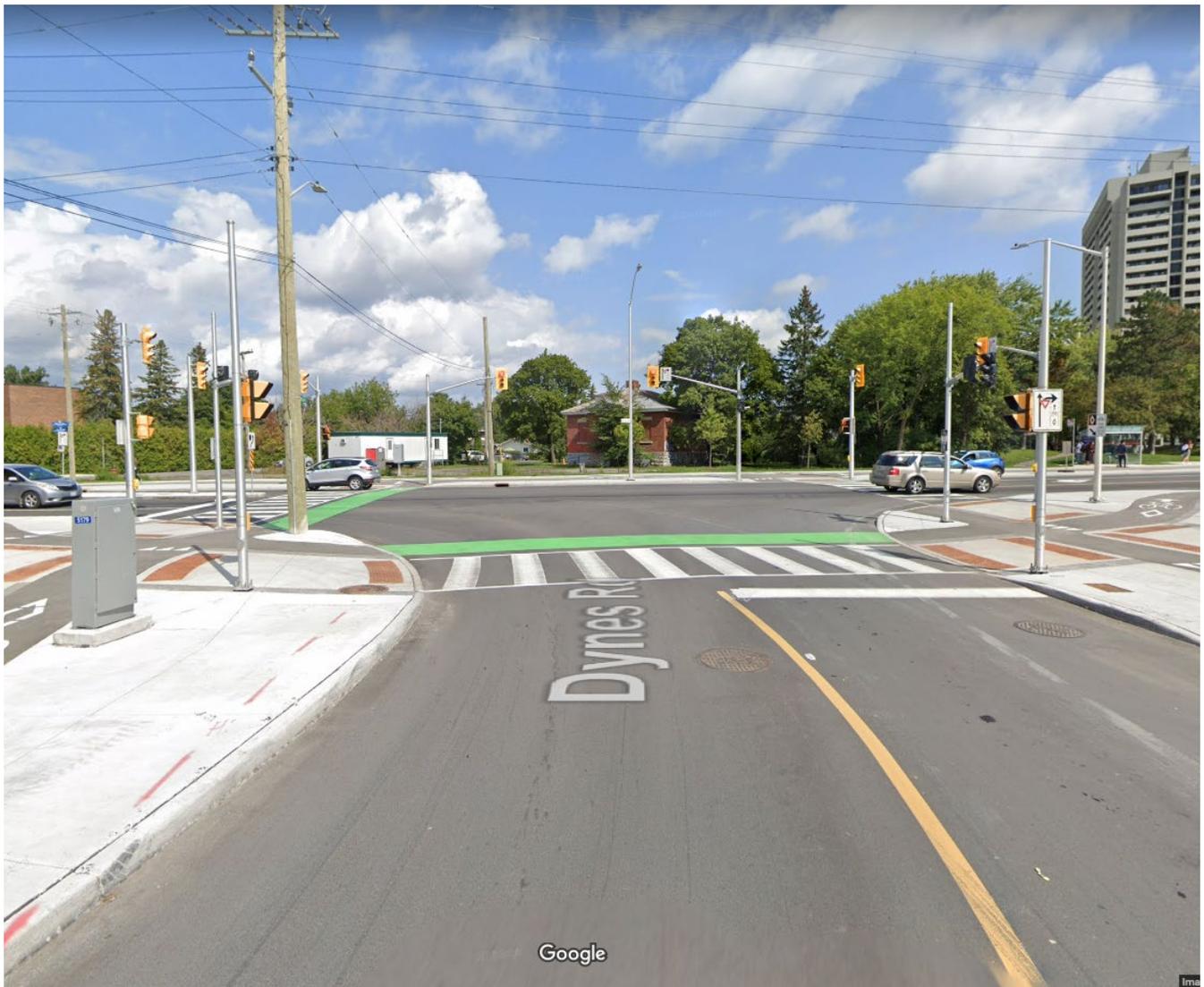


Figure 5: Protected intersection, Dynes Road and Prince of Wales Drive, Ottawa. Image source: Google

Protected Intersections: This design includes physically separated crossings where the bikeway is set back from parallel vehicular traffic, providing cyclists with a dedicated path through the intersection. Various design elements create shorter and simpler crossings, offer better visibility, and allow for more predictable movements for active transportation users (i.e., people on foot and on bikes).



Figure 6: Dedicated intersection crossing at Gordon Street and Stone Road, Guelph.
Image source: Morgan Boyco

Dedicated Intersections: This intersection provides cyclists with a dedicated path through an intersection, even where there is not enough space for a fully protected bike setback. Although dedicated intersections are an improvement to conventional bike lane intersections, they can be more challenging to use than a protected intersection and do not offer the same level of comfort.²²

²² National Association of City Transportation Officials, 2019. [*Don't Give Up at the Intersection: Designing All Ages and Abilities Bicycle Crossings.*](#)



Figure 7: Minor street crossing, Cawston Avenue and Ethel Street, Kelowna. Image source: Google

Minor Street Crossing: This example of a bikeway that crosses a minor street or driveway includes a design treatment that clearly indicates to all road users that people on foot and on bikes have the priority when crossing.

Road Safety in Guelph Today

Guelph has several programs, plans, and strategies already in place to improve the safety on the roads for its communities. These include established active transportation facilities, a dedicated intersection design treatment, and active management through a Neighbourhood Traffic Management program. The existing measures contribute to a safe systems approach.

Active Transportation Facilities

A large portion of Guelph's active transportation network is off-road and made up of multi-use pathways and trails. The City maintains over 110 km of off-road, active transportation connections that enable pedestrians or cyclists to travel in a completely vehicle-free environment. The off-road network also allows for active transportation connections that are not dependent on the length of a street block.

In 2020, most of Guelph's on-road active transportation network is not physically separated from mixed traffic, with the exception of some Multi-use Path Segments along Woodlawn Road West, Eastview Road, and York Road (for a total of 5.5 km of separated pathway). This on-road bike network consists of painted bike lanes, shared use lanes, and signed routes.

The City is also making progress in filling in the gaps in the pedestrian network that were identified in the 2016 *Guelph Sidewalk Needs Assessment Study*. City staff regularly publish progress reports on the state of the pedestrian network across the city.

Intersection Design

In 2018, Guelph's first dedicated crossing intersection was implemented at the intersection of Gordon Street and Stone Road. This intersection design, illustrated in **Figure 8**, uses corner waiting areas and cross-rides to enable cyclists to complete two-stage left turns in a way that mimics the intended movement of foot traffic across the intersection.

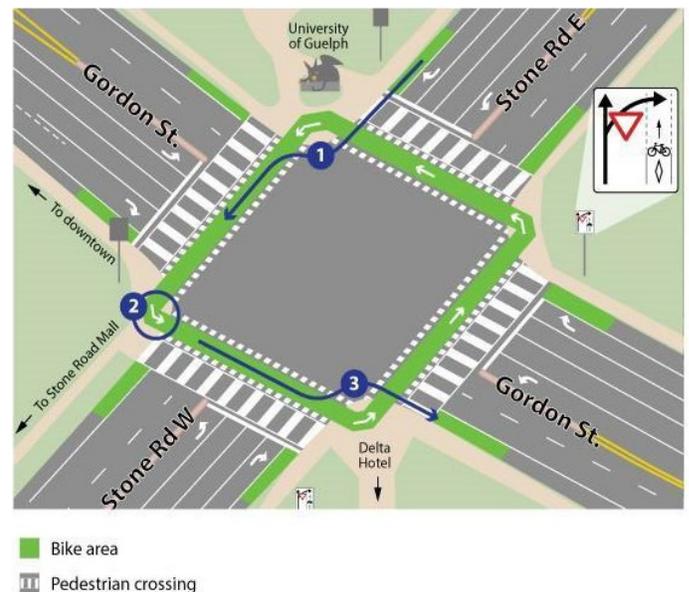


Figure 8: Dedicated intersection at Gordon Street and Stone Road

With the exception of this dedicated intersection, other intersections across the city follow a conventional design that requires cyclists to mix with vehicular traffic in order to cross them.

Active Management

The City actively manages road safety through a number of initiatives and programs. These initiatives and programs are briefly described below.



Community Road Safety Strategy

The City recently developed a *Community Road Safety Strategy* (CRSS), which provides a high-level road safety plan that outlines emphasis areas and appropriate mitigation strategies for safety. In the future, the CRSS will be the core of Guelph's *Active Road Safety Management Strategy*. The CRSS provides strategies to improve road safety for all users and is founded on three main principles:

- 1. Evidence-informed decision making:** using data-driven methods to identify and mitigate road safety issues
- 2. Equitable approach:** considering vulnerable and underserved populations when prioritizing road safety expenditures and effort
- 3. Continuous evaluation:** monitoring the effectiveness of strategies in the community and developing new techniques and initiatives by adding, removing, or revising strategies, as necessary.

Traffic Calming Program

The City's Traffic Calming Program collects safety concerns from the public and uses data to evaluate the need for (and if necessary, implement) mitigation measures. Mitigation measures typically include a combination of pavement markings, physical measures, signage, and

education campaigns. The City recently updated its Traffic Calming Policy, which was first adopted in 2005.

Community Speed Awareness Program

Established in 2018, the Community Speed Awareness Program installs temporary radar boards in residential neighbourhoods to raise awareness of speeding issues. Boards are installed in the spring and removed in the fall, as subject to staff resources.

Guelph Road Safety Coalition

The Guelph Road Safety Coalition (GRSC) coordinates and bolsters road safety efforts in the city through educating the public, raising awareness, building capacity, and sharing resources. The GRSC is a coalition of organizations that includes Guelph Engineering and Transportation Services, Guelph Junction Railway, Wellington-Dufferin Public Health, Guelph Police, University of Guelph Campus Police, and the Ministry of Transportation, Ontario.

Active and Safe Routes to School Committee

The Active and Safe Routes to School Committee, established in 2009, supports the development and assessment of safe routes to school. It is complemented by the Guelph Crossing Guard Program.

Moving Guelph Forward: Road Safety

Guelph's transportation planners, engineers, and policymakers can improve road safety through the design of our transportation network, implementation of supportive policies, and education and awareness programs for transportation users. While such interventions alone can't eliminate all risks associated with road safety, they play an important role in ensuring that all people enjoy a right to safe mobility. And as new best practices and studies emerge, there is continuous opportunity to further improve road safety in our community.

Based on the trends, best practices, and existing conditions outlined in this paper, the following is a list of key takeaways about road safety today:

- A safe systems approach is the best practice for road safety. It looks at road safety from all perspectives and requires safe road use, safe speeds, safe roads, and safe vehicles.
- Vision Zero is a commitment to completely eliminate transportation-related deaths and serious injuries from the transportation network. It is rooted in a safe systems approach. Many governments around the world are making Vision Zero commitments, including several municipalities in Canada.
- Speed is a key factor that affects the likelihood of a collision and the severity of the consequences. Victims of transportation-related injuries tend to disproportionately be more vulnerable transportation users: those of us walking or cycling.

- In the last few decades, new street and intersection designs have been developed to create comfortable and safe experiences for diverse users of varying levels of ability. These designs vary, but all seek to prioritize the experience of people walking and cycling.
- The City is building new or improving existing streets and intersections to create a safe and comfortable for all users. The City also has several road safety strategies, programs, and education campaigns to respond to road safety concerns. It is currently developing new tools to further improve road safety in Guelph.

What do you think?

What do you think about road safety? What are your concerns related to the safety of our streets in Guelph? How should our planners and policymakers respond to the latest thinking around road safety, and what are the opportunities to make our streets safer for all members of our community?

Please let us know! Visit guelph.ca/tmp to learn more about the transportation topics and trends informing the development of our TMP and to find out how you can have your say on Moving Guelph Forward.

Acknowledgements

City of Guelph

Jennifer Juste, Project Manager

With support from: Liraz Fridman

Consultant Team - Dillon Consulting Limited

Shawn Doyle, Project Manager

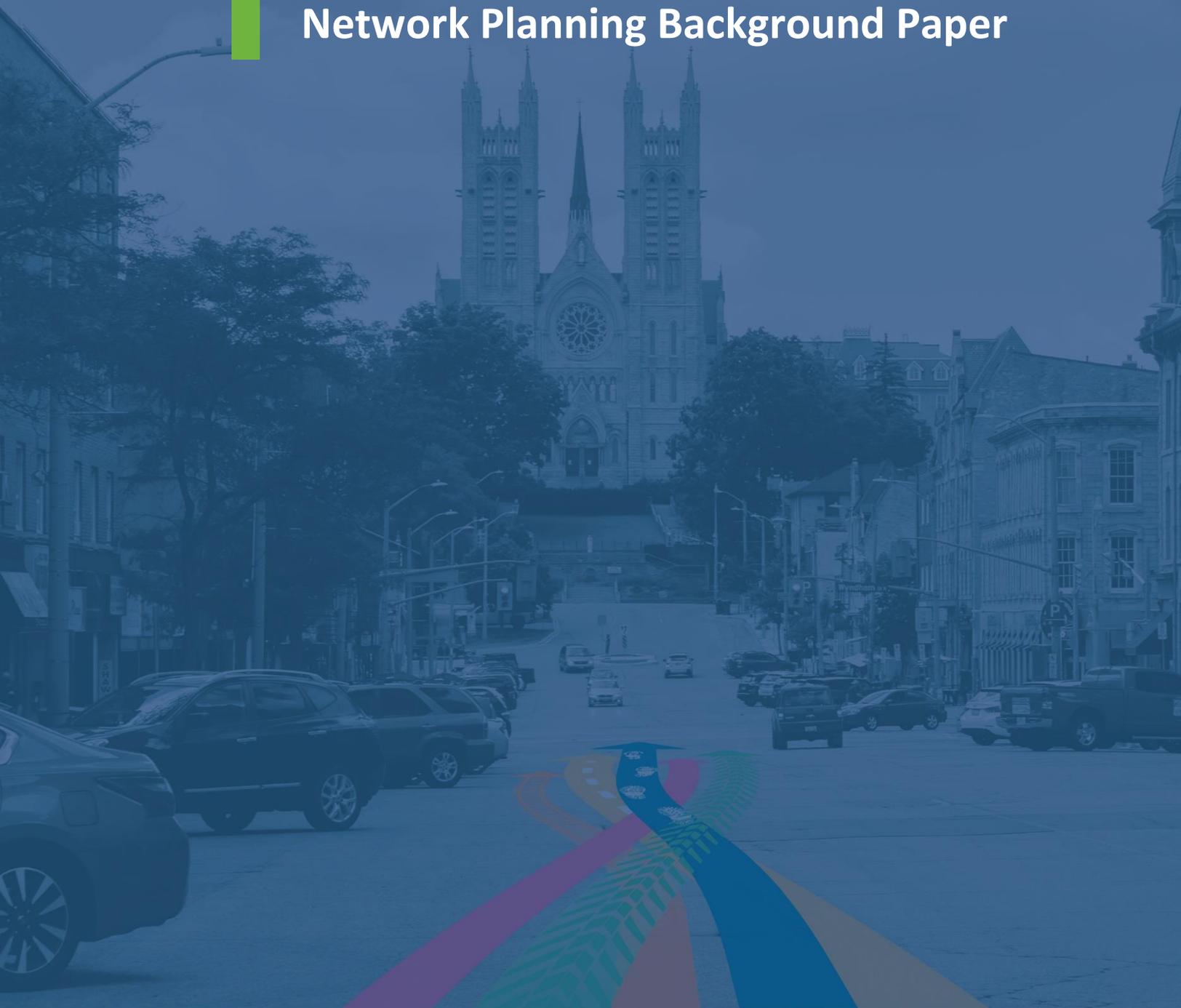
Mariam Bello, Project Coordinator/Primary Author

With support from: Jeff Axisa, Nicole Beuglet, Morgan Boyco, Amy Greenberg, Maria King, Adam Lanigan, and Kristin Lillyman



APPENDIX C5

Network Planning Background Paper



Network Planning

City of Guelph Transportation Master Plan
Background Paper Series



Guelph Transportation Master Plan

Moving Guelph Forward

Guelph is growing and how we move around our city is changing. As a result, we are exploring transportation options to make our city move better in every way. Through the Transportation Master Plan (TMP) update, we will review all of the ways we move: walking, cycling, riding transit, driving, trucking, and using trains. Our goal is to ensure that we offer diverse travel options, have appropriate transportation capacity, and maintain a high quality of life for both existing and future residents and workers.

The updated TMP will look at transportation planning in Guelph beyond 2031. The main objectives of this update are:

- To ensure that the new plan builds upon current policies, including the Official Plan and other master plans that have been approved since 2005;
- To recommend new policies and guidelines that reflect the vision for our community and balance mobility, environment, and efficiency, while prioritizing safety and access for all travellers; and
- To explore how new, evolving technologies and travel services will shape the future of transportation in Guelph.

This paper is part of a series of background papers intended to communicate information, key trends, and concepts. These will form the foundation of and set the strategic direction for our updated TMP. The papers are intended to support conversations in the community and within City Hall about how we plan for the future of mobility.

The series includes the following papers, which are all available at guelph.ca/tmp:

- **Transportation Technology and New Mobility Options**
- **The Changing Transportation System User**
- **Transportation and Building 21st Century Cities**
- **Road Safety**
- **Network Planning**
- **Transportation System Resilience**

Each of the background papers opens with an introductory primer on the topic before it examines key global trends, considers how these topics and trends are currently addressed in Guelph, and concludes with an analysis of the implications of that topic on planning Guelph's future transportation system.

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Network Planning: A Primer

The characteristics of a transportation network have significant influence on how people travel. As cars grew to dominate personal transportation over the last century, the network plans and street designs of cities that grew significantly during this time prioritized the efficient movement of cars above all other modes of travel. These decisions have left a lingering impact on the comfort and safety of other users who share the street with cars. They have also inadvertently discouraged travel by any mode other than cars.

But today, several emerging factors have led citizens and municipalities to rethink their approach to transportation network planning and to challenge the status quo.

These include:

- The growing awareness of the link between public health and use of active transportation;
- The movement towards more sustainable cities and the imperative to reduce greenhouse gas emissions; and
- The increasing demand for urban-centred living.

In response, a number of new approaches to transportation network planning have emerged. This paper discusses these approaches and the key trends for their implementation, with examples from across North America and around the world. It also outlines how Guelph is

already responding to these evolutions in thinking and concludes with general recommendations for how our updated TMP should consider network planning.

Complete Streets

Complete streets is a popular emerging philosophy that refers to the development of streets that are designed, planned, and maintained to have safe and comfortable facilities for travellers of all ages and abilities regardless of their chosen mode of transportation. The philosophy acknowledges that all travel modes are important but each mode is different from the other. This means that the infrastructure needed to facilitate comfortable, convenient, and safe movement for one mode is not the same as for another mode. Different modes of travel have different characteristics, vulnerabilities, and definitions of a

comfortable travel experience. Complete streets are important because creating streets that are comfortable and attractive for everyone - those who walk, cycle, take the bus, and drive - contributes to beautiful, vibrant, and functioning spaces within our neighbourhoods.

Complete streets contribute to efficiencies in moving a greater number of people rather than a greater number of cars. Encouraging more sustainable modes of travel, which take up considerably less space compared to cars, maximizes the carrying capacity of a street, as shown in **Figure 1**. Note that the number of cars in this illustration were calculated using an average vehicle occupancy rate of 1.51 people/vehicle. In practice, this average rate tends to be lower for car trips made in North America so the 33 cars in that space would probably accommodate less than 50 people.

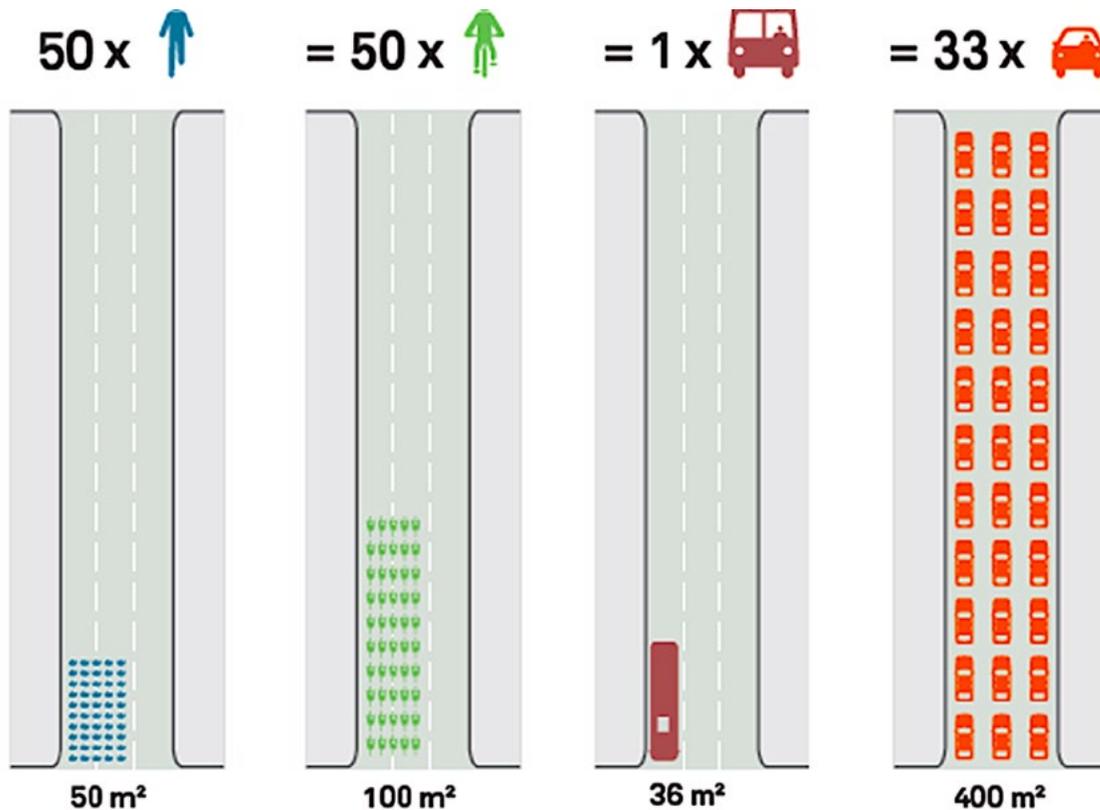


Figure 1: Space occupied by 50 people, using different modes¹

1 Reprinted from [Global Street Design Guide](#), Global Designing Cities Initiative.



A complete streets approach advocates for all modes of travel to safely co-exist on a street. But implementation of this approach can be difficult to achieve. Streets have limited right-of-way (ROW) space and widths of infrastructure required for different modes (i.e. sidewalks and pedestrian realm space, cycling facilities, bus-only lanes, parking lanes, and driving lanes) can add up quickly. Without unlimited space to widen streets, trade-offs and prioritization become unavoidable aspects of street planning and design. This gives cities opportunities to make prioritization decisions that align with the community's transportation vision, values, goals, and objectives.

Complete street reconstruction projects can require costly design and construction efforts. However, this is not the case for all streets. Depending on the surrounding context, streets may not require new permanent infrastructure that separates users of each mode (e.g. physically separated cycle tracks, boulevard-style sidewalks on all streets, dedicated transit lanes along all routes, etc.). Streets may already be complete or could achieve a complete streets "makeover" simply with additional signage and/or paint markings. For example, local streets tend to have lower operating speeds and lower traffic

volumes, which makes it more comfortable for people cycling to be in the roadway. These streets are thus essentially complete if there is also a sidewalk present for those who are walking. However, dedicated facilities for active transportation, transit, and/or goods movement may become necessary to make streets with higher traffic speeds and volumes complete.

Complete Networks

Isolated segments of complete streets cannot function well alone. They need to be connected in a way that allows people to safely and conveniently travel to their desired destinations by any mode of their choice. A complete network maximizes the influence and impact of complete streets by ensuring that all streets and their interconnections are consistently designed and operated for all modes of travel.

To achieve complete networks, there needs to be continuous infrastructure for different modes within a transportation network. Since networks for vehicles are essentially complete by default (i.e. roads are always planned and designed to connect to each other), network completion focuses on active transportation. The choice to complete a trip by walking or cycling

becomes more attractive when individuals can feel confident that their dedicated space on the street will not disappear midway through their trip, forcing them to traverse unsafe paths or to detour using inconvenient routes.

A key part of the approach to complete networks is the integration of individual modal networks. Looking at all of the modal networks overlaid on top of each other creates opportunities to identify areas of overlap where certain modes may require additional infrastructure for a safer and more comfortable experience.

Network Design

The street patterns of cities can differ depending on their time of development. Ancient cities with long histories that predate the twentieth century have complex street networks that were not intentionally designed to serve motorized vehicles. In these cities, streets are often narrower and tend to have increased levels of connectivity to enable travel by active transportation.

On the other hand, many cities in North America experienced their most significant growth and development following the introduction of the car. As a result, North American cities tend to have street networks that were developed specifically to accommodate travel by car. In North American urban centres, street networks are often based on some sort of grid design. Since the urban centres are usually among the oldest areas of the city, these grid designs represent a more historic approach to network design. As North American cities grew in the post-World War II era, low-density suburban communities became popular places for people to live. Transportation networks in suburban areas of North American cities were usually designed using curvilinear networks (which have a clearly differentiated street

hierarchy with the intended roles of streets obvious from their design) and cul-de-sacs. These design decisions were made in an effort to reduce speeding, minimize traffic infiltration, and to evoke a quiet, rural setting.

Grid networks can better enable walkability, cycling, and more efficient transit service. However, a typical suburban curvilinear road network has a number of unintended negative consequences. This network design creates disproportionate inconvenience for active transportation users. The lack of direct routes and street connections adds unnecessary delay to walking and cycling trips. It also often forces those walking or cycling to travel via circuitous or redundant routes. As a result, active transportation is not usually attractive or convenient in such communities for non-recreational trips, leading to a very low active transportation mode share even for short trips. This type of network design has been shown to foster car-dependent communities and has been a factor in public health issues such as the rise of obesity.²

Curvilinear networks can also make it difficult for transit to efficiently serve suburban communities. The redundancy and winding nature of streets in curvilinear networks is an additional challenge in low-density neighbourhoods where potential riders are already spaced far away from each other. Transit planning in suburban neighbourhoods often involves making trade-offs between placing stops within a reasonable walking distance of households and creating routes that are not overly long or inefficient, which would deter potential transit riders.

Street Classification

Mobility is safest and most efficient when streets within the network operate as they were planned and intended to do. Different

² Mackenbach, J., et al, 2014. *Obesogenic environments: A systematic review of the association between the physical environment and adult weight status*, the SPOTLIGHT project. BMC public health. 14:233.



streets are intended to serve different functions. Therefore, streets are typically divided into different categories based on a standard road or street classification system - also referred to as a road hierarchy.

Road hierarchies group streets based on their function within the network as a function of their capacity to carry vehicles. The classification system assists municipalities in determining what speed to set, infrastructure to build, operational procedure to implement, and maintenance schedule to develop for each street.

A traditional road hierarchy consists of the following street types, listed by their vehicle capacity from most to least:

- Expressways/Freeways/Highways
- Major Arterials
- Minor Arterials
- Collectors
- Local Roads

Each street typically branches into multiple streets with the subsequent classification on the hierarchy. For instance, a single Arterial connects to multiple Collectors and a single Collector connects to multiple Local roads.

The traditional road classification system is based primarily on the calculated vehicle capacity of each street. However, it does not take into account the neighbourhood context – the fact that streets are influenced by the characters of the areas they run through.

When relying on a traditional road hierarchy alone, an arterial road could be built the same in all parts of a city, regardless of the adjacent land use context. For example, that could mean that the cross-section of an arterial road in a low-density residential area or industrial zone would look exactly the same as an arterial running through the downtown core of a city. To address this, road hierarchies can be updated to integrate surrounding land use context.

Placemaking

Placemaking is the concept of using urban design to create vibrant public spaces that promote public health and well-being by strengthening the connection between people and places. With respect to transportation, placemaking focuses on developing streets that will become *places* people want to visit rather than mere linkages or corridors between destinations. The concept of *streets as places* seeks to utilize a city's largest public assets to create opportunities where people can spend time to sit and relax, to socialize, to eat, or to participate in an activity. Vibrant streets use elements like streetscaping, street furniture, and urban design to attract more people, especially those who walk and cycle.

Streets that feel less dominated by cars tend to function better as places. **Figure 2** shows a summary of Donald Appleyard's research about the relationship between vehicular traffic and the connection people felt to their street. Appleyard studied three comparable residential streets in San Francisco, California, that differed by the daily number of vehicles that travelled on them: Heavy Street saw approximately 16,000 vehicles per day, Medium Street saw 8,000, and Light Street saw 2,000. As shown in the figure, his research found that less vehicular traffic volume was related to more social interactions, gatherings, and friendships between neighbours.

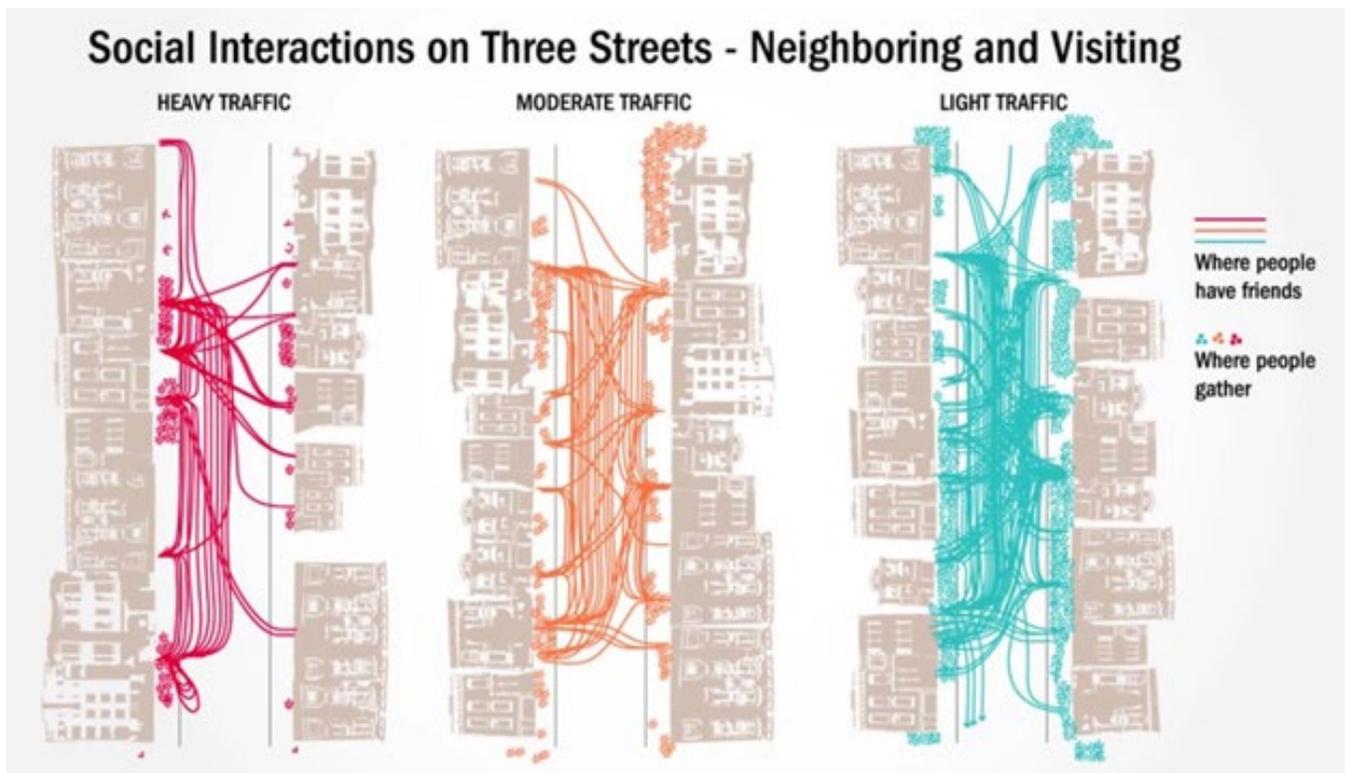


Figure 2: Social Interactions on Streets as a Function of Vehicular Traffic³

³ Reprinted from *Livable Streets*, Appleyard D. et al., 1982. Berkeley, CA: University of California Press.



Equity in Design

Equity in network planning refers to developing transportation networks that enable each traveller to have a safe and dignified trip, regardless of their mode of choice or of factors like ability, age, race, gender, or income. Striving for equitable networks challenges transportation professionals to consider factors such as:

- How different life experiences can change an individual's access to and/or experience travelling within a transportation network;
- How transportation infrastructure benefits and costs have historically been distributed across different communities within a city; and
- How certain network decisions can improve mobility for certain populations while providing no benefit (or even worsening the experience) for others.

Equity should be applied as a lens during the planning, design, evaluation, and prioritization of projects. Equity should also be included when considering participation of diverse stakeholders and community members in the decision-making process.

Achieving equity in transportation is challenging. It requires a focus on the diversity of users, careful balancing of different needs, and trade-offs based on a community's vision and values. Consider that while a complete street project can improve the comfort of users of different modes, a street cross-section design with a raised cycle track could create dangerous conditions for people who are visually impaired at locations where the cycle track intersects with a bus stop. Parking fees can be implemented to try to discourage people from driving to a certain destination in order to reduce traffic but they can also end up having disproportionate impacts on people who rely on their car to access economic opportunities because their home lacks good transit connections. On-demand transportation services can help connect communities on the fringes of city limits to the larger transportation network but reliance on these services can also inadvertently exclude those who do not own a data-enabled smartphone. Intentional and broad-based public engagement to better understand the needs and perspectives of the community is critical to making more equitable transportation network decisions.

Network Planning Trends

To improve mobility for their citizens, city-building professionals are constantly implementing new and emerging approaches to transportation network planning. This section outlines a number of the latest network planning trends from across Canada and around the world within the six previously introduced categories.

Complete Streets

Over the last decade, many local governments have started to include complete street policies and/or references to complete streets into their overarching planning documents such as Official Plans (OPs) or Transportation Master Plans (TMPs). In Canada, [Complete Streets for Canada](#) tracks municipalities and regions with complete streets policies. In the United States (US), the [National Complete Streets Coalition](#) does the same. While incorporation of complete street policies represents a commitment to complete streets, the policies vary in their effectiveness, enforcement, and level of integration into city planning processes.

Several municipalities have also developed guidelines and standards for constructing complete streets. In Canada, these include London, Edmonton, Calgary, Toronto, and Saskatoon. The National Association of City Transportation Officials (NACTO), an association of major North American cities and transit agencies, also provides guidance on complete street design using case studies and best practices from around the world.

Today, complete streets have been constructed and implemented across Canada and in numerous other countries. In Ontario, notable examples of complete streets include:

- Highway 7 in Vaughan;
- Dunlop Street East in Barrie;
- Dundas Street in the London; and
- King Street, Bloor Street, and Roncesvalles Avenue in Toronto.

Complete Networks

Along with references to complete streets, policymakers and city-builders are also making commitments to *complete networks* in transportation policies. For instance, the City of Vancouver acknowledged the importance of network considerations when designing complete streets in its *Complete Streets Policy Framework* report. The report stated that street design should recognize that transportation functions “within a broader system,” and that there is a “need to maintain coherent networks with sufficient capacity for transit and goods movement, as well as for people, walking, cycling, and driving.”

In 2019, the City of Ottawa completed a *Network Principles Study*, which provides guidance on best practices for network planning. The study report identified the following principles for network planning for different modes, in alignment with a complete networks philosophy:

- All modes should be provided the ability to navigate the city safely in a connected manner
 - All properties should be safely accessible by pedestrians before other modes.
 - Access for larger modes can be granted so long as safety for more vulnerable users is maintained



- Traffic flow and access are competing interests that are largely incompatible.
 - Optimal network design seeks to prioritize one or the other based on the environment
- The 'most appropriate' mode choice(s) for trip types (e.g. distances) should be identified and prioritized through network design.
 - Modes to be encouraged should be provided a more direct network (through time and/or distance) than competing modes.
- Network density and connectivity should be tied to a mode's sensitivity to distance.
 - While motor traffic can cope with increased distances with limited to no imposition on the user, increased distances in a cycle or pedestrian network have physical implications for the users
 - Increases in network density are positively correlated with an increase in accessibility.

- Transportation networks and infrastructure should seek to minimize negative externalities on their communities.

Network Design

More cities are recognizing how the nature of their street networks is encouraging car-dependence, even for short trips. This has led to a growing emphasis on improving network designs to support sustainable modes. For active transportation, this means constructing more trails, cut-throughs, and pedestrian- and cyclist-only connections to improve network porosity and connectivity between adjacent streets. For transit, this means designing networks in new communities that enable efficient movement of transit vehicles. Often, the utilization of some form of a grid pattern can help achieve networks that are supportive of sustainable modes.

Some cities are also formalizing their practices for modern network design through guidelines. In 2009, the City of Calgary developed a [Connectivity Handbook](#). The handbook provides guidance on network design that facilitates area connectivity for active transportation users, minimizes the need for mid-block

crossings, and improves safety. It also sets out a methodology for measuring connectivity in development areas and identifies context-sensitive connectivity targets for different areas of the city.

Street Classification

Cities are recognizing the limitations of a traditional road hierarchy. In response, many are creating new hierarchies to ensure that street classifications more accurately reflect each street's function, character, and surrounding land use. For instance, through its updated [Road Classification](#), the City of Calgary expanded its list of classifications to ensure that "roads are grouped according to the type of service they provide." The City's expanded road classification "assists in establishing road design features, land use planning policy, traffic density, mobility, safety and access requirements." Calgary's road classes include:

- Skeletal Roads
- Arterial Streets
- Industrial Arterials
- Urban Boulevards
- Parkways
- Neighbourhood Boulevard
- Primary Collector
- Activity Centre Street
- Collector
- Industrial Collector
- Residential

In a manner similar to Calgary, London, Ontario, also updated its street classification to include more classes. London's new street hierarchy appears its 2016 OP ([The London Plan](#)) and includes:

- Provincial Highway
- Expressway

- Urban Thoroughfare
- Rapid Transit Boulevard
- Civic Boulevard
- Main Street
- Neighbourhood Connector
- Rural Thoroughfare



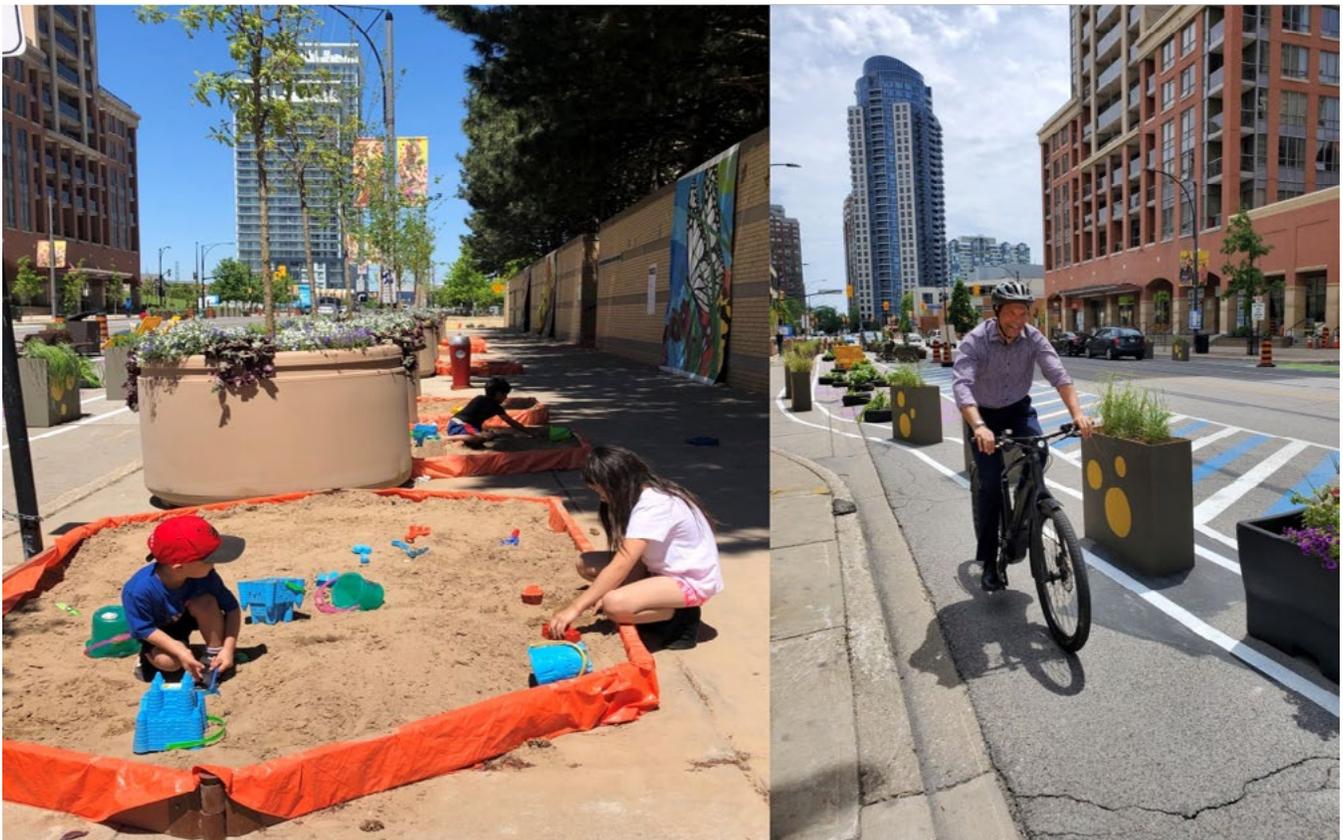
Placemaking

There are multiple examples of placemaking as it relates to streets from around the world, including many in Canada. Some examples stem from permanent street transformation projects while others are more short-term, such as temporary closures of streets to cars and pop-up interventions (often referred to as “tactical urbanism”) to demonstrate the potential of street transformation.

In Toronto, the addition of seating, public art, and music along the King Street corridor has helped enhance neighbourhood character and broadened the function of the street. In Mississauga, the tactical

urbanism pilot project on Living Arts Drive used simple, low-cost enhancements to try and improve safety and the enjoyment of public space. Many cities in Canada (including Toronto, Calgary, Regina, Montreal, and Vancouver) also participate in *PARK(ing) Day*, an annual international event that allows citizens, artists and designers to transform public parking stalls into temporary public spaces.

There are also efforts to ensure that placemaking is a key consideration in all street designs. Municipalities including Ottawa, Vaughan, and Toronto have all developed a set of urban design guidelines to support placemaking in their street networks.



Living Arts Drive tactical urbanism pilot project in Mississauga. Image credit: City of Mississauga.



Park(ing)Day 2016, Arlington County, VA. Image credit: <https://www.flickr.com/photos/arlingtondes>

Equity in Design

More cities across North America are starting to include equity as a core pillar of their transportation networks and strategies. In Berkeley, California, the ongoing update of the [Berkeley Pedestrian Master Plan](#) seeks to ensure that walking is safe, comfortable, and enjoyable for everyone by developing a public engagement program and targeted outreach campaign to hear from a variety of diverse perspectives from the community. The engagement for this plan uses translation and interpretation tools to make the project more accessible to Berkeley's diverse residents.

In Oakland, California, the 2019 [Let's Bike Oakland](#) cycling master plan proposed a number of measures to strive for cycling equity. The plan sought to undo historic and ongoing injustice and inequities related to cycling. Among its many actions and recommendations, Let's Bike Oakland recommends:

- Funding bicycle programs to educate, encourage, and create a safe biking environment for people of colour, who are largely unrepresented as cyclists;
- Prioritizing investments in historically underserved communities with large marginalized populations; and

- Collaborating with local neighborhoods and community leaders to plan, design, and implement community-driven ideas to build up a cycling culture, led by people of colour and youth.

In addition, many cities are developing and using an equity lens to evaluate transportation projects. The application of an equity lens helps measure the potential impact of projects on different communities and assess their potential to reach transportation equity goals. The City of Ottawa's [Equity and Inclusion Lens Handbook](#) provides guidance on how to better incorporate equity into planning projects. And in September 2019, the City of Toronto committed to developing a gender equity lens for city planning.



Network Planning in Guelph Today

Guelph has already been implementing and incorporating many of the practices from the previous sections into planning our city's transportation network. This section summarizes existing initiatives as they relate to the six factors of network planning discussed in this paper.

Complete Streets

In Ontario, the provincial *Growth Plan for the Greater Golden Horseshoe* directs municipalities in the Golden Horseshoe (which includes Guelph), to support future growth with a network of complete streets that enable travel by transit, cycling, and walking. As a strategic document, the Growth Plan does not provide specific design guidance.

The concept of complete streets is also a key philosophy of the *2014 Guelph Downtown Streetscape Manual and Built Form Standards*. This document adopts the approach of giving all modes of travel equal priority and provides guidelines for street

design in downtown based on complete streets principles.

Complete Networks

Guelph's pedestrian network is established through policies in the *Guelph Official Plan* (OP) and supporting strategic documents including the *2005 Guelph-Wellington Transportation Study*, the *2005 Guelph Trails Master Plan*, and the *2017 Guelph Active Transportation Network Study*. Gaps in the sidewalk network were identified in the *2016 Guelph Sidewalk Needs Assessment Study* report, which prioritized the gaps based on:

- Street classification;
- Proximity to schools;
- Existence of sidewalks on one side of the road;
- Location on a transit route;
- Adjacent land use;

- Existence of desire lines;
- Proximity to the active transportation network; and
- Proximity to pedestrian generators (i.e. Hospital, Library, Community Centre, Park, Sports Facility, Shopping Centre, Seniors Centre/Residence, and Grocery Store).

Guelph's cycling network is established through policies in the OP, the *2005 Guelph-Wellington Transportation Study*, the *2005 Guelph Trails Master Plan*, the *2012 Cycling Master Plan*, and the *2017 Guelph Active Transportation Network Study*. Gaps in the cycling network were identified in the *2012 Cycling Master Plan*, where they were prioritized based on:

- Existing connectivity to the larger network;
- Recommended facility type; and
- Engineering method.

Progress on filling these sidewalk and cycling facility gaps is reported regularly through the *Progress Report on Guelph's Cycling and Walking Programs*, with the most recent update in August 2019.

There are no physical gaps within the vehicular network. However, some communities are missing Arterial or Collector streets that would be expected with a traditional road hierarchy.

Network Design

The network pattern in Guelph's downtown is shaped by the alignment of the Speed River, the location of Gordon Street, and the intention of its original designer, John Galt. Guelph was originally intended to resemble a European city centre, complete with squares, broad main streets, and narrow side streets. This resulted in the variety of block sizes and shapes which are still in place in downtown today. The street plan was laid out to be a combination of

radial streets branching from downtown and a form of a grid pattern.

Just beyond downtown, the next neighbourhoods to be built were planned on grid road patterns, with small blocks and uniformity of road design. But as the city expanded outward and the prevalence of the car grew, development patterns and road networks in Guelph began to show the classic North American progression to a curvilinear street network.

More recently, neighbourhood design has returned to emphasizing a traditional grid-pattern, with small blocks and a greater level of service for active modes.

Road Classification

The primary existing street classification system in place in Guelph is traditional. It includes:

- Expressway
- Arterial
- Collector
- Local

Downtown Guelph has a unique hierarchy, as established through its *Secondary Plan* and *Downtown Guelph Streetscape Manual and Built Form Standards*. The street types in Guelph's downtown are customized to the type of mobility and the desired character of the downtown. They include:

- Primary Street (Arterial)
- Downtown Main Street (Flexible Street)
- Secondary Street
- Local Street

Guelph's OP also permits the designation of Main Streets in areas outside of downtown with existing or planned high density, including Intensification Corridors and Community Mixed-use Nodes. Main Streets are intended to provide a safe, functional, and attractive pedestrian,

cycling, and transit-oriented environment that is balanced with an acceptable level of motor vehicular traffic. The adjacent land use context of such streets must reflect their planned function as focal points for shopping, offices, and community interaction. With Main Streets, the City may accept a less than optimal level of service for vehicular traffic if that is necessary to enable a more pedestrian, cycling and transit-oriented environment. Main Streets permit on-street parking, where appropriate, and require a strong pedestrian realm in accordance with the City's urban design policies.

Placemaking

Guelph is committed to creating vibrant streets in key locations that are places in their own right, in addition to their roles as transportation corridors. Guelph's urban design vision for transportation corridors is presented in a number of guiding documents that build on each other:

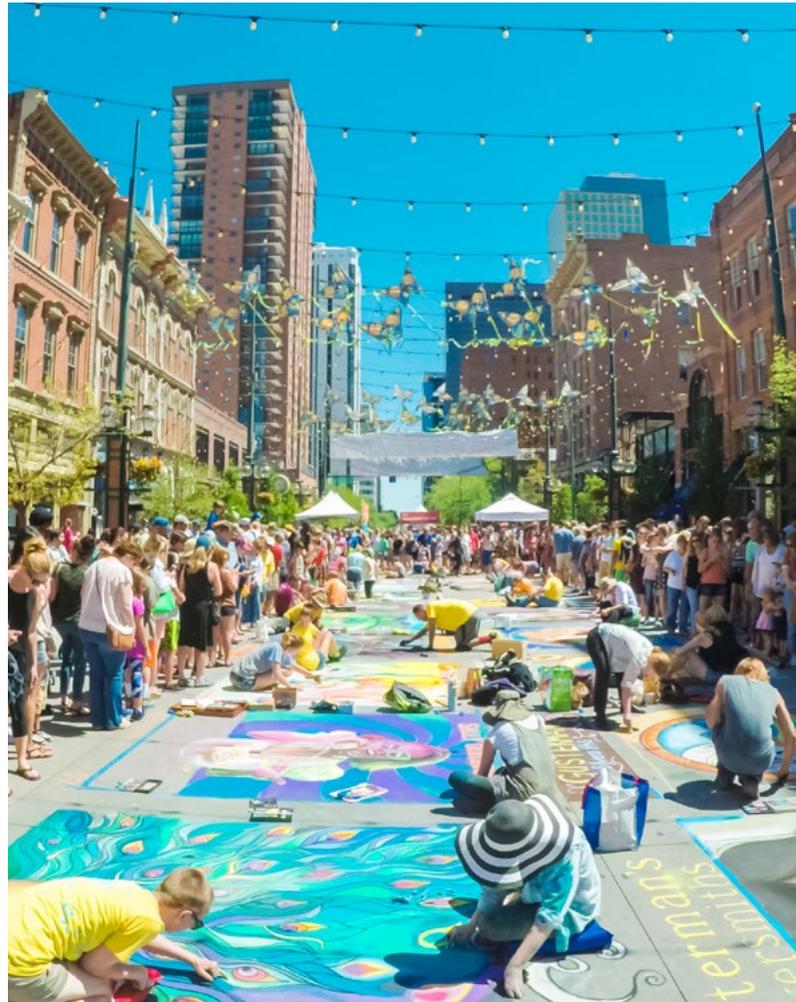
- *2014 Downtown Guelph Streetscape Manual, Built Form Standards and St. George's Square Concept*
- *2017 Urban Design Manual*
- *2016 Community Nodes Design Concept Plans*
- *2018 Gordon Street Intensification Corridor Concept Plan*

Placemaking in particular is a strategic direction in the *2017 Urban Design Manual*. Placemaking is also an objective of Guelph's OP. Tactical urbanism is also a tool for placemaking specified in the *Urban Design Manual* and the use of tactical urbanism is an action for priority in the *City's Downtown Implementation Strategy*.

Equity in Design

Inclusiveness is identified as one of the seven community values of the *2018 Guelph Community Plan*. The Plan affirms that everyone belongs in Guelph and that differences in the community are celebrated. The Plan also recognizes that decisions are strengthened when there is a diversity of voices and when different perspectives and experiences are considered.

Equity in design has not been explicitly formalized beyond these statements of support in strategic planning documents. Planning guidelines have not been updated to formally require the use of an equity lens. However, planning processes for a number of projects have included new engagement techniques to reach broader audiences.



Moving Guelph Forward: Network Planning

Decisions made at the network planning stage have long-lasting consequences on mobility in Guelph. The way networks were designed, the infrastructure that was prioritized, and the user experiences that were considered during the decision-making process all influenced how people make their daily trips today. As we come to better understand the long-term societal impacts of network planning decisions made decades ago, opportunities emerge to make more well-informed decisions that will support a transportation future that aligns with our community values.

Based on the trends, best practices, and existing conditions outlined in this paper, the following is a list of key takeaways about transportation network planning today:

- For the past several decades, the main goal of the network planning process was to move cars as efficiently as possible. This resulted in infrastructure deficiencies and gaps for all other modes of travel, which municipalities are working to fix today.
- Grid networks improve the experience of those walking and cycling and make transit more efficient. However, decades of designing curvilinear networks in low-density residential neighbourhoods have led to an overwhelming number of trips being made by car in these types of neighbourhoods, regardless of the trip length.
- The role of streets solely as corridors for movement is being re-examined. Some key streets are increasingly being

recognized as places for congregation and activity. The role of streets in supporting surrounding land use is also being acknowledged by some municipalities through an update of their road hierarchies.

- Today, the City is making choices that are based on modern best practices of network design. The City is also working on building a transportation network that supports all travellers, regardless of their mode of choice or socioeconomic status. This means emphasizing inclusivity as a core value for city-building and ensuring that the diversity of our residents' voices are being included in decision-making.

What do you think?

What do you think about network planning in Guelph? What should planners and policymakers do to plan for a transportation network that meets the needs of the future? How should we balance the transportation needs of the future with meeting our transportation needs today?

Let us know! Visit guelph.ca/tmp to learn more about the transportation topics and trends informing the development of our Transportation Master Plan and to find out how you can have your say on Moving Guelph Forward.

Acknowledgements

City of Guelph

Jennifer Juste, Project Manager

With support from: David de Groot, Tyson McMann, Rory Templeton, and Benita van Miltenburg

Consultant Team - Dillon Consulting Limited

Shawn Doyle, Project Manager

Mariam Bello, Project Coordinator/Primary Author

With support from: Jeff Axisa, Nicole Beuglet, Morgan Boyco, Maria King, Adam Lanigan, and Kristin Lillyman



APPENDIX C6

Transportation Resilience Background Paper

Transportation System Resilience

City of Guelph Transportation Master Plan

Background Paper Series



Guelph Transportation Master Plan

Moving Guelph Forward

Guelph is growing and how we move around our city is changing. As a result, we are exploring transportation options to make our city move better in every way. Through the Transportation Master Plan (TMP) update, we will review all of the ways we move: walking, cycling, riding transit, driving, trucking, and using trains. Our goal is to ensure that we offer diverse travel options, have appropriate transportation capacity, and maintain a high quality of life for both existing and future residents and workers.

The updated TMP will look at transportation planning in Guelph beyond 2031. The main objectives of this update are:

- To ensure that the new plan builds upon current policies, including the Official Plan and other master plans that have been approved since 2005;
- To recommend new policies and guidelines that reflect the vision for our community and balance mobility, environment, and efficiency, while prioritizing safety and access for all travellers; and
- To explore how new, evolving technologies and travel services will shape the future of transportation in Guelph.

This paper is part of a series of background papers intended to communicate information, key trends, and concepts. These will form the foundation of and set the strategic direction for our updated TMP. The papers are intended to support conversations in the community and within City Hall about how we plan for the future of mobility.

The series includes the following papers, which are all available at guelph.ca/tmp:

- **Transportation Technology and New Mobility Options**
- **The Changing Transportation System User**
- **Transportation and Building 21st Century Cities**
- **Road Safety**
- **Network Planning**
- **Transportation System Resilience**

Each of the background papers opens with an introductory primer on the topic before it examines key global trends, considers how these topics and trends are currently addressed in Guelph, and concludes with an analysis of the implications of that topic on planning Guelph's future transportation system.

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Transportation System Resilience: A Primer

In cities, resilience is the capacity of individuals, communities, institutions, businesses, and systems to survive, adapt, and grow in the face of *acute shocks* (short term disruptions) and *chronic stresses* (long term disruptions).¹ In essence, it is the ability of a city to constructively adapt and to thrive in the face of a challenge.

Transportation resilience is an increasingly important topic as the world faces the COVID-19 pandemic, an *acute shock* with a very significant impact. As lockdowns have been implemented in countries around the world, traffic volumes in urban centres dropped dramatically and transit systems have faced unprecedented drops in ridership. At the same time, demands for cycling and walking space have spiked.

COVID-19 is also generating *chronic stresses*, such as a deepening economic recession and potential long-term changes in travel behaviour. Entire economic sectors have been upended overnight, resulting in significantly reduced municipal revenues from taxes and user fees. At the same time, forced new habits like working from home and relying on online shopping are changing travel demand patterns in our communities.

As a result, transportation system resilience has never been more top of mind. Given that transportation networks make up such a significant proportion of the public realm, the ability to constructively adapt to the current shocks and long-term stresses in the transportation system will have a lasting and significant impact on our communities.

Transportation system resilience depends on four core elements:

1. **Diversity**, which means possessing a wide variety of elements with different functions to ensure that the system has different strengths to response to various shocks and stresses;
2. **Redundancy**, which means containing multiple components that can perform the same function and providing back-up systems when shocks and stresses affect the system;
3. **Flexibility and adaptive capacity**, which means possessing the ability to be easily modified in response to a disturbance caused by a shock or stress; and
4. **Capacity to reorganize**, which means having the ability to quickly adapt on its own, allowing the system to respond to shocks and stresses in real time.

This paper covers each of these core elements of resilience in more detail, starting with an explanation of what each element looks like in transportation within the following sections. The paper then covers best practices in resilient transportation planning from around the world, describes what aspects of transportation resilience exist in Guelph today, and concludes with some key takeaways about how to consider transportation resilience in Guelph in the future.

1 100 Resilient Cities, "What is Urban Resilience?" <http://100resilientcities.org/resources/#section-1>

Diversity

A transportation system is more resilient if it serves people with a range of characteristics using multiple modes. This means that a diverse system takes into account the wide range of traveller ages and abilities and provides appropriate infrastructure for all modes of travel. Having a transportation system that supports safe, affordable, and convenient travel by any mode helps satisfy the need for alternative transportation options in case a shock or disruption affects one or more modes.

Options are critical when circumstances change or unexpected disturbances arise, both for individual travellers (who may have physical disabilities or be experiencing financial hardship), and for the larger community (such as during a flood or major road closure).

Diversity in a transportation system is best supported by a land use pattern with a mix of land uses and densities that maximizes the opportunity for as many travellers as possible to meet their needs with short trips (i.e. within 2km or less). Short trips can usually be easily completed by users of any mode of transportation, presenting travellers with a broad range of mode choices to meet their needs.



Figure 1: A multimodal transportation system can provide the kind of transportation option diversity that characterizes a resilient system. Image Source: [Shared Use Mobility Centre](#)



Figure 2: Dunsmuir Street in Vancouver supports safe and comfortable travel by all modes. Image Source: [Paul Krueger](#).

Redundancy

A system with back-ups or parallel options for critical elements minimizes the impacts caused by failures or breaks. A redundant transportation system provides back-up linkages or alternate facilities for critical elements. Greater redundancy in a transportation system can be achieved by supporting multimodal streets. Providing reliable transportation alternatives means that residents will have more options available to access goods and services if one mode or a certain route is not available to them.

Redundancy can also be achieved by having multiple corridors that can connect parts of the city and multiple access points into communities. Grid road networks are redundant by nature since they create a system of parallel street and transit routes that are more resistant to localized network issues.

Redundancy of access is a critical consideration for emergency planning. When natural disasters like forest fires or floods engulf a community, having multiple routes for escape can be a matter of life or death. In communities with only one way out, residents can become trapped in the long queues formed by others fleeing the area or they may lack accessible options for escape.

Adding elements of redundancy may require some trade-offs with efficiency in a transportation system. However, prioritizing efficiency above all other attributes can leave a transportation system vulnerable to major disruptions if there is a major issue within the network.

Flexibility and Adaptive Capacity

A transportation system has flexibility and adaptive capacity when it can be easily adjusted by planners and decision-makers in response to stresses and longer term disruptive trends. This element of resilience is often most evident in the design of streets. Streets that can be used for multiple purposes and easily “rearranged” to serve different purposes are more resilient than streets that require costly transformation projects each time to achieve the same result. Street design based on the principles of flexibility and adaptive capacity typically minimizes the use of fixed barriers and boundaries. Elements of flexibility and adaptive capacity are also emphasized when municipalities plan streets for impending changes such as climate change and emerging technologies.

Tying transportation system budgets to the achievement of specific transportation objectives rather than to the completion of specific actions or projects could help municipalities maximize the potential benefits of flexibility and adaptive capacity in their transportation systems. This would allow municipalities to keep tweaking their transportation solutions until they achieve their objective. However, to be effective, this approach would require on-going monitoring and management of conditions so that municipalities could change their strategy and approach in response to travel demands and conditions over time.



Capacity to Reorganize

The capacity to reorganize is evident when the components of a transportation system have the ability to adapt on their own in real time to surrounding conditions. Street designs with non-permanent features where users behave collectively to allow different modes to co-exist in the same space are an example of the capacity to reorganize. Other examples include smart technology with “detect and adapt” capabilities (such as select traffic signal systems) and traveller information systems that empower travellers to decide which mode to use or when to start their trip.

As cities around the world are finding ways to respond to an increasing range of challenges such as growing populations, increased congestion, and climate change, many have prioritized ensuring transportation resilience. Embedding elements of resilience into the transportation system helps municipalities prepare, adapt, and transform in the face of adversity. This section identifies some trends and best practices from various communities as they relate to the four elements of resilience introduced in the previous section.

Diversity

A “complete streets” approach to street design is one way transportation planners and engineering are building diversity into transportation systems. Context-sensitive complete streets are designed to enable safe and convenient travel for users of all modes. The approach brings balance to the allocation of road space and serves a greater diversity of users in comparison to the car-oriented streets of the past.

Guidelines and standards for complete streets have become a common feature in many jurisdictions around the world, including London, Edmonton, Calgary, Toronto, and Saskatoon in Canada. The National Association of City Transportation

Trends in Transportation System Resilience

Officials (NACTO), an association of major North American cities and transit agencies, also provides guidance on complete street design using case studies and best practices from around the world.

And guidelines are taking the unique needs of different users into account more often. Increasingly, design guidelines for cycling facilities are recognizing that cycling facilities must serve more than seasoned commuter cyclists. In response, cities are developing guidelines for facilities that serve a broader group of cyclists, such as the City of Vancouver's [*All Ages and Abilities Cycling Routes Design Guidelines*](#).

The same principles also apply to pedestrian facilities. In Ontario, the *Accessibility for Ontarians with Disabilities Act (AODA)* contains provisions for requiring municipalities to build pedestrian facilities that accommodate a more diverse group of users, including those with physical disabilities and visual impairments.

Documents like multimodal level of service (MMLOS) guidelines are also ensuring that all modes are being considered in transportation planning, design, and operational decisions. In Canada, MMLOS guidelines are already in effect in Ottawa, Halifax, and York Region. A provincial set of MMLOS guidelines is expected to be published within the next 5 years to support all Ontario municipalities.

MMLOS guidelines support diversity by improving the level of service experienced by a broader range of travellers.

Transportation Demand Management (TDM) is another tool municipalities use to improve the diversity of modes in transportation. TDM is a series of educational programs, awareness campaigns, incentives, and disincentives to influence mode choice, spread out travel demands, reduce trip lengths, or eliminate trips altogether. Examples of TDM measures include:

- Encouraging work from home arrangements;
- Encouraging off-peak travel via flexible workday policies;
- Improving transit services to key employment nodes;
- Improving active transportation facilities to key employment nodes;
- Requiring site-specific TDM elements as a condition of development;
- Using fees to manage parking demand fees; and
- Implementing congestion pricing.

Most municipalities today have dedicated resources to TDM programming. Municipalities often partner with workplaces and other organizations to implement certain TMD measures.



Figure 3: Implementing measures like the King Street Transit Priority Corridor in Toronto helps improve transportation system resilience. Image Source: Vadim Rodnev / Shutterstock.com

The *diversity* of transportation options has also grown in recent years. Today, people in many cities have access to micromobility, microtransit, ride-hailing, shared mobility options, and more. Discussed in greater depth in the *Transportation Technology and New Mobility Options* background paper, these emerging forms of mobility contribute to a more diverse transportation system. However, decision-makers need to have appropriate policies and methods of enforcement to ensure safety, affordability, and accessibility for the users of these options.

Redundancy

Redundancy is a key feature in the transportation systems of many cities for both emergency preparedness and day-to-day operational issues. Redundancy is critical for emergency preparedness but it also offers alternative options for travellers when there is congestion, when their trip may be affected by a collision or

construction delay, or when their regular route is temporarily unavailable due to road closures. These more mundane events are an inevitable part of transportation and require mitigation to prevent daily network failures.

Redundancy in transportation systems is not always obvious at first glance. In New York City, subway lines have double tracks in order to accommodate local and express service. However, this design also provides redundancy if one track is incapacitated. In Vancouver, redundancy is built below the SkyTrain, with parallel bike paths running underneath the elevated tracks.

In Toronto, Highway 401 utilizes the Express-Collector Lane System. In this system, the collector and express lanes are separate from each other, providing a built-in alternative route if one set of lanes is closed due to an incident. There are also permanently marked exits onto secondary highways along Highway 401 as part of the Emergency Detour Route network.



Figure 4: Following an initial pilot project, Argyle Street in Halifax was permanently redesigned as a “flexible street.” The street remains open to traffic, but can be closed to allow for outdoor concerts, festivals, and other events. Image source: Paul McKinnon via Shutterstock.com.

And GO Train routes roughly paralleling Highway 401 offer an alternative mode of travel for people travelling between municipalities in the Greater Toronto Area (GTA).

Flexibility and Adaptive Capacity

Temporary measures to reallocate road space, often referred to as “tactical urbanism,” are one example of how communities can incorporate flexibility and adaptive capacity into their transportation networks. Tactical urbanism interventions are temporary and relatively inexpensive, allowing communities to experiment with potential street designs and identify the best solution for their specific challenges. The inexpensive and moveable materials used for tactical urbanism can also be used to respond to different needs over time. In Canada, many cities have implemented tactical urbanism interventions, including Vancouver, Toronto, Mississauga, Winnipeg, and Edmonton.

Flexibility and adaptive capacity is also evident in the design of the aptly named “flexible streets.” Flexible streets are streets that can be easily repurposed in response to different demands at different times of day or of the year. A common design for flexible streets has sidewalks on both sides of a roadway but no traditional curb, allowing the entire cross-section of the street to become a space only for active transportation users or pedestrians during special events.

Flexible streets have been popular in Europe prior to being more frequently utilized in North American design. Flexible streets are typically seen in urban cores or in “main street” environments. Today, there are several flexible streets in municipalities across Canada, including:

- Argyle Street in Halifax
- Saint-Catherine Street in Montreal
- Dundas Street in London
- Queens Quay in Toronto
- Stephen Avenue in Calgary



Figure 5: The recently reconstructed Dundas Place in London, Ontario, is an example of a “flexible street” that can be adapted quickly to different uses. Image Source: City of London.

The repurposed use of curbside space for patios or parkettes during the summer months is another example of incorporating flexibility into streets that is popular in many cities.

Many cities are also using flexibility and adaptive capacity to respond to the long-term disruptions imposed by climate change. Methods for this include:

- Prioritizing space and infrastructure for modes of transportation that produce low or no emissions;
- Increasing urban tree canopies; and
- Managing the effects that the growing number of impermeable surfaces have on water quality, flood potential, and groundwater recharge (particularly in light of increased frequency of major rainfall events).

With respect to water management in particular, municipalities across North America are increasingly implementing low impact development (LID) techniques to mimic natural processes and manage stormwater as close to its source as possible. These techniques help manage flooding, protect water quality, and protect aquatic habitats. Within the transportation network, LID techniques may appear within the right-of-way in the form of:

- permeable pavements;
- bio-retention swales or rain gardens;
- infiltrating trenches;
- tree box filters, which also support the urban forest; or
- use of native species for landscaping.

Preparing existing streets for the transition to electric and autonomous vehicles (EVs and AVs, respectively) is another example of flexibility and adaptive capacity. With anticipated widespread adoption of these technologies in the near future, many municipal, provincial, state, and federal governments are prioritizing the development of EV- and AV-supportive policies and infrastructure (such as on-route charging stations) in preparation for their arrival. To learn more about electric and autonomous vehicles, please refer to the *Transportation Technology and New Mobility Options* background paper.

Capacity to Reorganize

A transportation system's capacity to reorganize can be supported by infrastructure that allows the system to change in response to real-time conditions. "Slow streets" (or Woonerfs, as they are known in Dutch) are an example of a street design with a built-in capacity to reorganize.

These streets are shared by pedestrians, cyclists, and motorists with minimal physical separation through the combination of placemaking and speed management. Slow streets blur the boundary between pedestrian space and the roadway, allowing pedestrians and cyclists to use any part of the street. This environment forces cars to slow down to a "walking speed" and enables the entire street to become part of the public realm. The recently transformed Bear Street in Banff is an example of this street design.



Figure 6: This bioswale in the median of Grange Avenue in Greendale, Wisconsin, adds visual interest while also providing flood storage, filtering run-off, and supporting local pollinator populations. Source: [Aaron Volkening](#)



Figure 7: Bear Street, Banff, Alberta. Source: [City of Banff](#)

Innovative transportation technologies can also support a transportation system's capacity to reorganize traffic in response to real-time conditions. Traffic signal systems that update signal timing in response to real-time congestion are an example of this. Many cities today incorporate various elements of smart transportation system technologies that are self-adaptive to current conditions. Specific technologies and innovations are discussed in more detail in the *Transportation Technology and New Mobility Options* background paper.

Traveller information systems are another form of technology that supports a system's capacity to reorganize by enabling groups of people to make different decisions.

Widely used variable message signs on highways and signs indicating parking availability at entrances to parking lots are low-tech approaches that provide travellers with valuable information to help them make trip-related decisions. Services like Google Maps and Waze offer travellers in many communities around the world real-time information to help inform route choices, mode choices, departure time, and more. More transit systems are also offering real-time schedule information on status and arrival times through the use of GPS-enabled transit vehicles. All of these options enable the transportation system to react in real time.



Case Study: Technology, Big Data, and Transportation System Resilience

Numerous emerging smart cities technologies are poised to improve a street's capacity to reorganize, especially when it comes to highly demanded curb space. The high profile Sidewalk Labs proposal for the Quayside community on the eastern waterfront of Downtown Toronto was the most ambitious and expansive vision in Canada for smart city technology. Although the project proposal was withdrawn in May 2020 for a diverse variety of reasons, it offered a glimpse into the possibilities for a transportation system with a higher capacity to reorganize. Proposed plans for this community incorporated a vast array of sensors to collect enormous amounts of real-time data, which would feed into a mobility management system. In turn, the system would have coordinated travel modes, traffic signals and street infrastructure. Adaptive traffic signals would have had the ability to give intersection priority to pedestrians and cyclists who need more time to cross safely, or to transit vehicles running behind schedule. Dynamic curbs would offer flexible pick-up/drop-off zones that could provide ride-hail passenger loading zones during rush-hour and quickly become public spaces during low-traffic periods.²

Though the vision of Sidewalk Labs was never realized, some of the proposed concepts could be useful in improving the resilience of future transportation systems.

² Sidewalk Toronto, "Mobility." <https://www.sidewalktoronto.ca/innovations/mobility/>

Transportation System Resilience and the COVID-19 Pandemic

In March 2020, the World Health Organization officially declared the growing number of COVID-19 outbreaks as a pandemic. As a result, lockdowns, isolation requirements, and social distancing measures were implemented in communities around the world. Since then, many cities have experienced historically unprecedented levels of unemployment, abandonment of public spaces, and a dramatic reduction in commuting trips as more people began to work from home. The immediate impacts of COVID-19 on transportation systems were rapid and very consequential. Cities and countries around the world were challenged to adapt to the new reality while continuing to provide convenient mobility options and ensuring public safety.

But the longer-term impacts of the pandemic on transportation systems might also be significant. COVID-19 has the potential to permanently change commuting patterns and the future of transportation. This offers communities the opportunity to avoid reverting back to “normal.” Instead, cities could emerge from the pandemic with transformed transportation systems that are more resilient to shocks and stresses.

This section discusses general changes in driving, transit, cycling, and walking as a result of the pandemic that have been observed so far and the potential impacts these changes may have on the future of our cities.



Driving

Due to enforced lockdown measures, a shift to working from home for many workers, and significant disruptions to the economy, there has been a notable decrease in traffic congestion. Benefits of these changes include fewer car accidents, improved air quality, reduced noise pollution, and reduced greenhouse gas (GHG)

emission. Demands for parking space in employment centres and shopping areas has also declined, with many lots sitting empty. However, falling demand for parking has severely reduced municipal revenues from parking fees, which is likely to affect future municipal budgets, at least in the short-term future.

At the same time, demand for more deliveries (and thus for more short-term loading space along the curb) has increased as more people have had to rely on online shopping. The growing popularity of online shopping may last beyond the pandemic as more people become comfortable shopping online or grow accustomed to the convenience offered by online shopping. If this is true, the number of trips for retail purposes may not rebound to pre-COVID-19 levels.

Work from home arrangements are likely to continue for many months into the future as communities try to avoid subsequent waves of the virus while a vaccine is being developed. And as companies and employees become increasingly comfortable with working from home, these arrangements may become more permanent for a significant number of people who previously commuted to work.

Eliminating a portion of commutes from pre-pandemic levels could translate into reduced congestion and slower traffic growth, especially during the peak periods.

However, there is the potential that traffic could grow beyond pre-pandemic levels and vehicle ownership could rise. Public transit and shared mobility options, which were used by many as an alternative to driving a personal vehicle for longer trips, may become

less attractive as people remain concerned about potential exposure to the virus. In the long-term, this scenario could eliminate all of the short-term benefits gained from a drop in traffic volumes from the last several months.

Transit



With commuting at historically low levels and widespread fears of infection, transit has seen a significant decrease in ridership. This has also resulted in a significantly reduced farebox revenue, which has major implications for municipal budgets.

Throughout the pandemic, most transit agencies have continued to provide service for those who needed to travel, including many essential workers. Public transit systems around the world have taken significant measures to help make transit safe for both riders and operators, including:

- **Discouraging non-essential travel;**
- **Frequently disinfecting and cleaning vehicles, stations, and**

other high-contact areas;

- **Implementing staggered seat spacing policies and reducing the capacity of each transit vehicle;**
- **Constructing shields and barriers for operators;**
- **Enforcing rear door boarding and face covering policies for all passengers;**
- **Changing fare policies (which resulted in free transit in some cities) to minimize interactions between operators and customers; and**
- **Developing customer awareness about cleaning protocols and social distancing.**

The demands of the pandemics have significantly challenged transit system operations. Many systems have had to reduce service frequency on certain routes due to declining ridership. Some have even temporarily shut down transit service completely. At the same time, transit systems have had to increase frequencies on some routes despite declining ridership to maintain social distancing in each vehicle or to better serve essential workers traveling to their places of employment.

It is unclear when people will feel comfortable returning to transit. Returning to pre-pandemic ridership levels may take months or years, even after the pandemic subsides. But transit systems are continuing to struggle with the conflicting demands created by the pandemic. Low ridership means that operational budgets for transit have been significantly affected. At the same time, transit systems are sometimes having to increase operations to ensure the health and safety of all those on

board. In response to this conundrum, governments have recently been providing emergency funding to try and support struggling transit systems.

Cycling



Cycling has become a more popular activity during the pandemic. Stuck at home for long periods of time, many people have discovered cycling for the first time as a form of recreation that allows them to maintain social distancing. For some, cycling became a form of exercise during a time when fitness facilities and group sports were no longer available. For people without cars, cycling offered a more affordable way of completing essential trips that didn't require the use of transit.

In response to these demands, many cities around the world quickly implemented temporary measures to reallocate unused street space to cyclists. Temporary pop-up cycling lanes have been implemented in cities all over the world including in New York City, Denver, Paris, Berlin, Bogota, Milan, Winnipeg, Calgary, Vancouver, and Montreal. Due to their popularity, mayors and city planners in a number

of these cities have publicly committed to making these changes permanent, making the COVID-19 pandemic a turning point for urban transformation. In France, the government has even offered bicycle repair subsidies to encourage people to keep cycling post-lockdown.³

Considered an essential service in many jurisdictions, bike shops have remained open in many communities throughout the pandemic. Many have noted a sharp increase in bike sales during the pandemic, resulting in temporary bicycle “shortages.”⁴ These new behaviour patterns could influence how people move around cities in the future, especially if they have access to safe infrastructure for cycling.

Walking

Like cycling, walking became a common form of recreation during the pandemic-related lockdowns. With all non-essential travel discouraged, many people also grew to depend on walking to get to shops and services close to their homes.

In response, many cities have expanded their pedestrian spaces to accommodate more activity and allow for social distancing. Some have introduced one-way sidewalks to make social distancing easier while others have closed parking or traffic lanes and expanded the pedestrian realm into the roadway using temporary materials.

Several cities in North America, including Seattle, Halifax, Vancouver, and Montreal, have also implemented “slow streets” on several local streets in their network. Slow streets use temporary materials to create traffic calming measures and only permit local vehicle traffic in order to maintain a safe environment for active transportation users. Slow streets support social distancing by allowing pedestrians to walk on the roadway if sidewalk space is not sufficient to pass others safely.

As with cycling, having more travellers used to walking may result in long-term changes in how people choose to move through cities once the pandemic is over.



³ BBC News, April 30, 2020, “Coronavirus: France offers subsidy to tempt lockdown cyclists.” <https://www.bbc.com/news/world-europe-52483684>

⁴ CTV News, June 14, 2020, “Pandemic leads to a bicycle boom, and shortage, around world.” <https://www.ctvnews.ca/world/pandemic-leads-to-a-bicycle-boom-and-shortage-around-world-1.4983596>



Next Steps

Though the tragic consequences of the COVID-19 pandemic on our communities cannot be understated, there have been some positive transportation-related outcomes from the changes that the pandemic has forced on our cities. A dramatic reduction in driving and increased use of active transportation throughout the pandemic have improved air quality, reduced the number of transportation-related accidents, and encouraged healthier habits.

There are now opportunities to make some of these positive changes more permanent. Many temporary active transportation facilities have proven the value of investment in active transportation infrastructure. This could lead to more space being allocated for cycling and walking on more streets. As working from home is likely to become a new normal, cities could see a long-

term shift in commuting patterns, which may result in reduced vehicular traffic on our streets. Transit will continue to be challenged to balance the provision of adequate and reliable service with budget shortfalls from a dramatic loss of fare revenue. But transit must continue to be a key part of our transportation system since many people, including a significant portion of essential workers who have enabled our communities to get through the last several months, rely on transit to be able to participate in the economy.

With regards to transportation, COVID-19 has shown that cities can benefit from better data collection (especially real-time data) to be able to respond to changes in demand. The pandemic has also highlighted the need for flexibility and agility in transportation infrastructure as well as in the decision-making processes to allow cities to respond quickly to changing situations.



Figure 8: The Woolwich Street temporary bike lane project was an example of temporarily “rearranging” the street in Guelph. Image Source: Morgan Boyco

Transportation System Resilience in Guelph Today

Guelph actively incorporates elements of resilience into transportation planning. This section highlights examples of each core element of a resilient system that exist in our city’s transportation system today.

Diversity

Guelph has five modal transportation networks – a goods movement network, a road network for cars, a bus-based public transit network, a cycling network, and a pedestrian network. Guelph’s extensive trail system makes up portions of both the cycling and the pedestrian networks.

Guelph is incorporating complete street philosophies into our transportation

system. Complete streets design principles have been introduced into transportation planning in Guelph through the *2014 Guelph Downtown Streetscape Manual and Built Form Standards*. Recent improvements to the intersection of Gordon Street and Stone Road that provide a dedicated space for cyclists are an example of a design that better supports transportation diversity. The Guelph Official Plan also has a number of goals, objectives, and policies to direct transit-supportive development, ensuring that new growth in the city is not car-centric.

Guelph has a Transportation Demand Management (TDM) program that recommends TDM elements as a condition for new development, organizes

educational campaigns and promotions for sustainable transportation, and partners with employers and institutions to develop TDM programs.

Providing accessible service is also a key component of a resilient system that supports diversity. Guelph Transit offers Mobility Services, a specialized shared-ride service that offers accessible door-to-door service for eligible users within the city. Mobility Services use wheelchair-accessible buses and contracted taxi vehicles to serve its users. Guelph also provides guidance for the planning, design, and re-design of transportation infrastructure through the *City of Guelph Corporate Accessibility Policy and Procedure* and the *2015 Facility Accessibility Design Manual*.

Redundancy

A grid-based network of streets covers much of Guelph. Multiple bridge crossings and two access points to Highway 401 offer some redundancy of access into different parts of the city. However, some neighbourhoods have limited opportunities to access Guelph's arterial road network without having to cross or connect to a major highway, which may be affected by major congestion or delay on any given day.

Flexibility and Adaptive Capacity

Guelph has implemented tactical urbanism interventions in the past, including the temporary bike lanes on Woolwich Street, as shown in **Figure 8**.

Guelph's *2014 Guelph Downtown Streetscape Manual and Built Form Standards* designate several corridors in Downtown Guelph as Flexible Streets and provide standards for their re-design in the future.

These include Wyndham Street, Macdonell Street, Quebec Street, and Douglas Street. Carden Street is an existing example of flexible street design in Guelph.

In terms of street design that is resilient to climate change, the City was an early adopter of Low Impact Development (LID) techniques, recommending the use of LID Best Management Practices (BMPs) through the *2012 Stormwater Management Master Plan*.



Figure 9 - The Carden Street transformation in Guelph provided the street with opportunities for flexibility and adaptive capacity. The street is shown from 2009 on top and 2019 on the bottom. Image source: Google.



Additionally, the City of Guelph has a long history of environmental stewardship, including implementing concerted efforts to mitigate climate change by reducing greenhouse gas (GHG) emissions. The community's support for and the City's commitment to sustainability are evidenced through various high-level policies and strategies, including the City's *Strategic Plan*, *2018 Guelph Community Plan*, *2018 Official Plan*, and *Community Energy Initiative (CEI)*. Guelph's various commitments to electrification are discussed in the *Transportation Technology and New Mobility Options* background paper.

Capacity to Reorganize

Guelph Transit currently offers real-time trip planning through Google Maps, which uses data from buses equipped with GPS.

Guelph Transit is also developing an in-house trip planner for its customers.

The City's traffic engineering group is currently organizing pilot programs to review data collection products that could enable the city to make better informed real-time operational decisions. If the pilots are successful, the City may proceed with a wider-scale implementation of these technologies.

Real-time footage from traffic cameras of intersections in Guelph's vicinity is available to the public, but only on provincial highways. The feed from these cameras is managed by the Ministry of Transportation of Ontario.

Moving Guelph Forward: Transportation System Resilience

In light of the global COVID-19 pandemic, ensuring resilience in our communities is more important than ever. A resilient transportation system is able to adapt and thrive in the face of both short- and long-term disruptions. To do this, the transportation system needs to incorporate elements of diversity, redundancy, flexibility, adaptive capacity, and the capacity to reorganize.

Significant challenges like growing populations, increasing congestion, and climate change will continue to test our transportation systems long after an effective vaccine for COVID-19 has been developed. It is important to prepare for this inevitability by implementing solutions that will improve the resilience of transportation systems while also meeting the specific needs of our communities.

Based on the trends, best practices, and existing conditions outlined in this paper, the following is a list of key takeaways about transportation resilience in practice:

- Cities that prioritize multimodalism and consider the needs of a wide variety of users create more resilient transportation systems. These transportation systems tend to be more diverse and flexible to shocks or stresses than car-centric ones.
- Providing redundancy in a transportation system is critical for emergency preparedness as well as for

offering everyday travellers a back-up option in case of day-to-day operational issues.

- Resilient streets are those that are designed to be flexible in purpose and adaptable to anticipated future challenges like climate change or emerging technologies. Luckily, with creative solutions that often use temporary materials, many existing streets of all kinds have the capacity to adapt to new conditions.
- Resilient transportation systems can self-adapt and rearrange themselves with the right designs and technologies. Access to accurate real-time data allows systems to respond to changes in current conditions.
- The COVID-19 pandemic has both acted as an acute shock and generated chronic stresses on our transportation systems. Many people have changed their transportation habits in response to the pandemic. As things slowly go back to normal, cities have an opportunity to make some of the positive pandemic-related changes that improve transportation resilience a more permanent part of their transportation systems.



What do you think?

What future challenges might affect Guelph's transportation system? What does a resilient transportation system look like to you? What should Guelph do to ensure transportation resilience in our city for years to come?

Let us know! Visit guelph.ca/tmp to learn more about the transportation topics and trends informing the development of our Transportation Master Plan and to find out how you can have your say on Moving Guelph Forward.

Acknowledgements

City of Guelph Engineering and Transportation Services Staff

Jennifer Juste, Project Manager

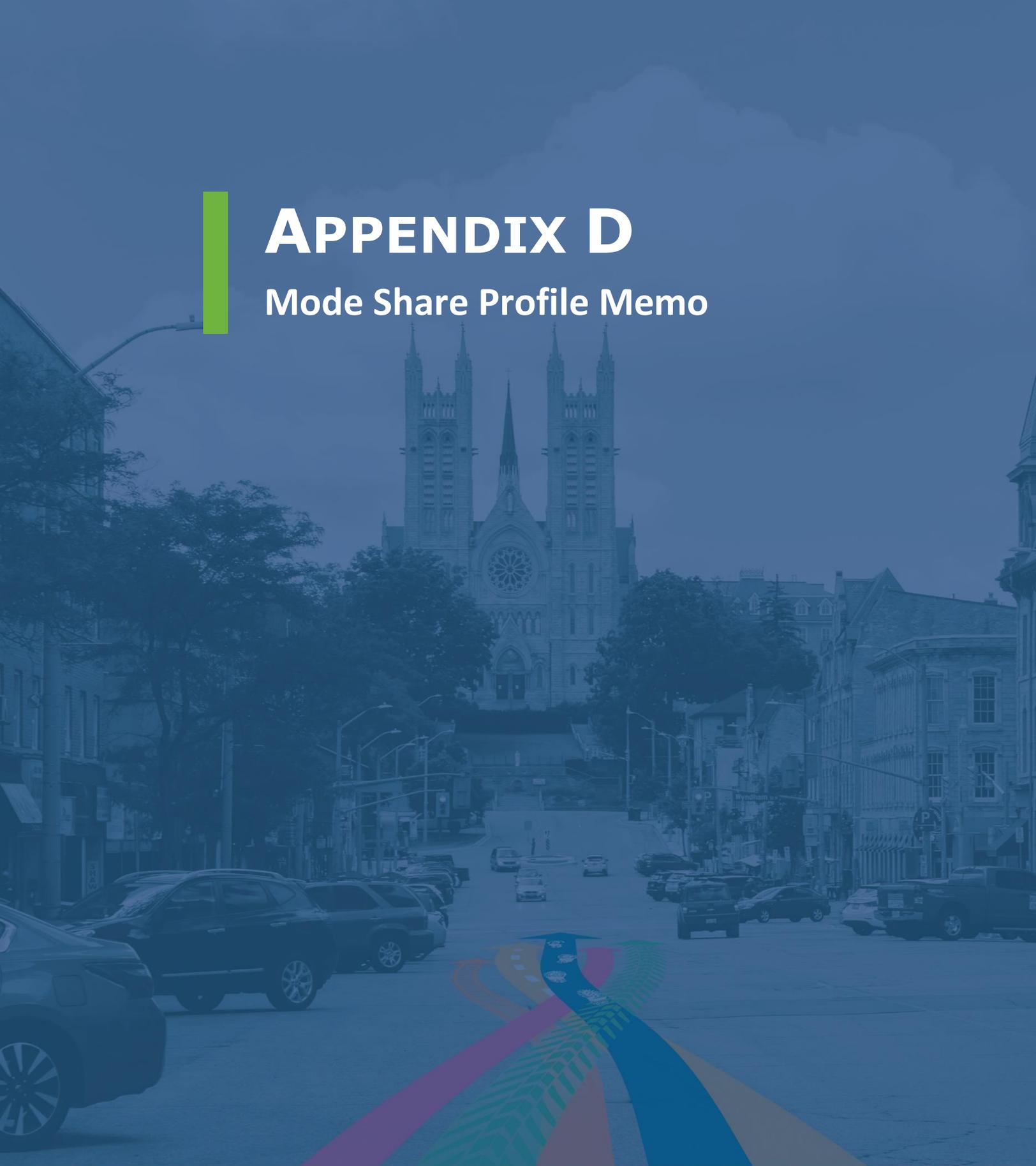
With support from: David de Groot, Tiffany Hanna, Andrea Harvie, Rory Templeton

Consultant Team – Dillon Consulting Limited

Shawn Doyle, Project Manager

Mariam Bello, Project Coordinator/Primary Author

With support from: Jeff Axisa, Nicole Beuglet, Morgan Boyco, Maria King, Adam Lanigan, and Kristin Lillyman



APPENDIX D

Mode Share Profile Memo

Memo



To: Jennifer Juste, City of Guelph
From: Shawn Doyle, Dillon Consulting Limited
cc: Gwen Zhang, City of Guelph
Adam Lanigan, Dillon Consulting Limited
Mariam Bello, Dillon Consulting Limited
Date: June 30, 2020
Subject: Guelph Mode Share Profile
Our File: File #18-8919

1. Introduction

This memo presents the proposed planning mode share targets for the Guelph Sustainable Transportation Master Plan (TMP), presented in the form of a Mode Share Profile. The memo outlines the methodology and data sources used in the development of the Mode Share Profile and identifies a number of implications of these targets on the recommended future networks.

What is Mode Share Profile?

A Mode Share Profile identifies planning mode share targets for sub-areas (typically neighbourhoods or collections of adjacent neighbourhoods) of a city. A Mode Share Profile is the intersection of top-down goals and bottom-up realities: it identifies the localized mode shares required to meet the overall community-wide transportation goals while considering the individual characteristics of each sub-area (like land use type and form, existing travel obstacles, and mode share shift potentials/opportunities). A Mode Share Profile allows for the identification of required shifts in mode share within smaller sub-zones of a city and, when combined with mapping of travel patterns between zones, will be used to identify key elements of a city's priority networks and transportation programs.

Rationale for Developing a Mode Share Profile

A Sustainable TMP is mode-share driven rather than corridor-capacity driven. At its core, the differentiating characteristic of a Sustainable TMP is that it identifies mode share targets for the future and develops the plan to achieve them. To do this right, a Sustainable TMP requires a detailed approach to setting mode share targets not just at a global city-wide level but at an individual sub-area level.

Additionally, Sustainable TMPs are founded on a philosophy of Complete Streets. They ultimately result in plans to change right-of-way allocations in major street corridors. This enables safe accommodation of a wider range of modes and provides city-wide equitable access to all modes of travel. This shift is made in response to community values rather than measured existing demands (which would reflect a priority for vehicular travel), putting strong upward pressure on sustainable mode shares to mirror the

design of the network. A detailed Mode Share Profile acts as the foundation to understanding the opportunities that can enable these shifts.

How Does the Mode Share Profile Fit into the Guelph Sustainable TMP?

The outputs of the Mode Share Profile are the mode share target inputs into the City’s transportation model, providing the necessary information to forecast future demands. In this way, the Mode Share Profile does not differ from the traditional approach to TMP development though the information it provides is a result of considering many more pieces of data.

With a traditional approach to TMP modelling, a city-wide mode share target calculates the number of non-auto trips that are essentially “globally” removed from further calculations without accounting for the nuances of travel between different parts of a city. The mode share targets set as a result of a Mode Share Profile allow for a refined reduction of trips originating in each smaller sub-area within the city.

2. Methodology

Guelph’s Mode Share Profile was developed by combining a “top-down” and a “bottom-up” approach to setting mode share targets. It considered three layers of analysis of mode share performance and mode share potential. The layers of analysis were completed in sequence. The first two layers represent the “top-down” nature of the approach while the last one is a “bottom-up” check of the final targets.

Note that Guelph’s traffic zones and neighbourhoods were subdivided into 16 representative Districts, which represent the most refined level of mode share targets. These Districts are defined and further explained in Chapter 4 of this memo.

The three layers of analysis are summarized in **Table 1**.

Table 1: Layers of Analysis used to Develop Guelph's Mode Share Profile

Layer #	Layer Name	What’s Included in Layer
1	<i>Global</i>	This layer established the overall mode share target for the entire city based on existing mode shares and existing policy targets from strategic planning documents.
2	<i>Character</i>	This layer assigned mode share targets to different District types that together, enable for the achievement of the <i>Global</i> mode share target. This layer accounts for the number of trips from each District type and considers each District’s <i>character</i> - the dominant land use and form, development density, street layout, etc.

Layer #	Layer Name	What's Included in Layer
3	District	<p>The final layer looked at the targets assigned to each <i>District</i> (a predefined sub-area of Guelph) as a result of their <i>Character</i> and makes adjustments to account for local variations in mode share due to aspects like:</p> <ul style="list-style-type: none"> ○ location within the city ○ land use mix (e.g., schools and/or specialty schools, shopping, hospitals office buildings, etc.) ○ travel distance profile for the <i>Districts</i> ○ strong relationships to the other <i>Districts</i> <p>This layer concluded with a final check to make sure that with the adjusted <i>District</i>-level mode share targets, the <i>Global</i> target was still achievable.</p>

The final results of the Mode Share Profile represent mode shares for trips originating in each District.

Data Sources

The following sets of data fed into the development of Guelph's Mode Share Profile (note that different data was used at different levels of mode share refinement):

- 2016 TTS Daily Mode Shares
- 2016 Daily Census Mode Shares
- City of Guelph's Guelph Official Plan Mode Share Targets
- Streetlight Data Origin-Destination data
- City of Guelph's GIS layers

The data obtained from Streetlight Data ('Streetlight') is a relatively new "big data" source. This presents a user-friendly approach to mining big data sources (i.e., persistent GPS and cellphone tracking data) with billions of observations for a large portion of the travelling public from a data stream that is anonymized and aggregated. The two data sources provide Streetlight with an approximate 25% sample of the population (dependent on the size of area and location) observed 24 hours a day and seven days a week since January 2016. This provides a persistent and high quality set of data that can be queried for any time period for any size of area and with sufficient control to be useful in examining local and city-wide issues related to mobility. As the data is persistent and collected over a very long period, it is possible to track the true "average" condition or break the data down into very specific periods (e.g., average weekday afternoons in the summer, typical Wednesday AM peak hour) to observe how things change through the day, week, month, or year. Using the data associated with this (origin/destination, path, speed, time), Streetlight is able to use algorithms to pull out any number of breakdowns of data and combine that with demographics and other data sources.

For use in this analysis, origin/destination data was extracted from Streetlight that describes the movement patterns for residents in Guelph. The initial extraction of data matched the 207 internal

Transportation Tomorrow Survey zones that make up Guelph, as well as 25 external “regional” zones that describe travel to areas outside of the city. This provided a fine extraction of long term observations of movement patterns. The internal zones were subsequently summarized into the 16 districts that make up Guelph to allow for examination of trends / similarities / differences between the different areas of the city – to create an examination of travel behaviour, how it varies throughout the city, and how it can change in the future. The specifics of how the data was applied are described in greater detail in the pertinent sections below.

3. Layer One - Global

A city-wide, *Global* mode share target is the starting point for setting more detailed targets for individual sub-areas as well as for influencing and managing future travel choices. Traditionally, the *Global* target is set by strategic planning documents. They are thus usually just aspirations that reflect directionality of change from existing mode shares and community values. However, in this analysis, the aspirational mode shares were checked against existing mode share data. Additionally, a “mode share potential” was created based on existing travel demands and trip lengths. Each of these steps is discussed below.

Layer Methodology

This step included a review of:

- The 2016 Transportation Tomorrow Survey for Guelph’s daily mode share;
- The 2016 Census data for Guelph’s daily mode share;
- The Guelph Official Plan (OP) for the future mode share targets; and
- Factors Impacting Global Mode Share Targets

Existing Mode Shares

Table 2 summarizes the existing mode share for daily trips in Guelph from the 2016 TTS survey and the 2016 Census.

Table 2: Existing Mode Shares in Guelph

Travel Mode	Existing Daily Mode Share by Data Source	
	Census	TTS
Walking	5.9%	6.4%
Cycling	1.6%	2.1%
Transit	7.1%	8.0%
Auto	84.5%	83.4%

Global Mode Share Targets for Planning Horizon

Guelph’s strategic planning mode share target for 2031 is defined in the City’s OP. In general, the OP direction for transportation is to shift away from auto trips, as evidenced by the following excerpts:

“The City’s transportation system will be planned and managed to...

...offer a balance of transportation choices that reduces reliance upon any single mode and promotes, cycling, and walking;

...offer multi-modal access to jobs, housing, schools, cultural and recreational opportunities and goods and services...”

The OP also lays out a specific target for mode share at a city-wide level:

“The City will plan, implement and maintain a transportation system to facilitate:

- i) increasing non-auto mode shares for average daily trips to 15% for transit, 15% for walking and 3% for cycling”*

Table 3 shows the existing mode shares compared to the Official Plan targets for 2031.

Table 3: Official Plan Mode Share Targets

Travel Mode	Existing Daily Mode Share by Data Source		Strategic Document 2031 Target
	Census	TTS	Official Plan
Walking	5.9%	6.4%	15%
Cycling	1.6%	2.1%	3%
Transit	7.1%	8.0%	15%
Auto	84.5%	83.4%	67%

Factors Impacting Global Mode Share Targets

Analysis of Trip Distances - Active Mode Potential

One of the major sources of travel demand data for the Guelph Sustainable TMP has been information provided by Streetlight. As described earlier, Streetlight is a ‘big data’ provider that processes anonymous cell phone and GPS tracking data to allow for analysis of long term travel patterns, speeds, volumes, and more within a given Study Area. Information from Streetlight provides a fine-grained understanding of movement through Guelph and allows us to query and breakdown the data in any number of ways. In this case, Streetlight allowed for examination the trip length for residents in Guelph as a proxy for the potential attractiveness of the various travel modes, as shown in **Figure 1**.

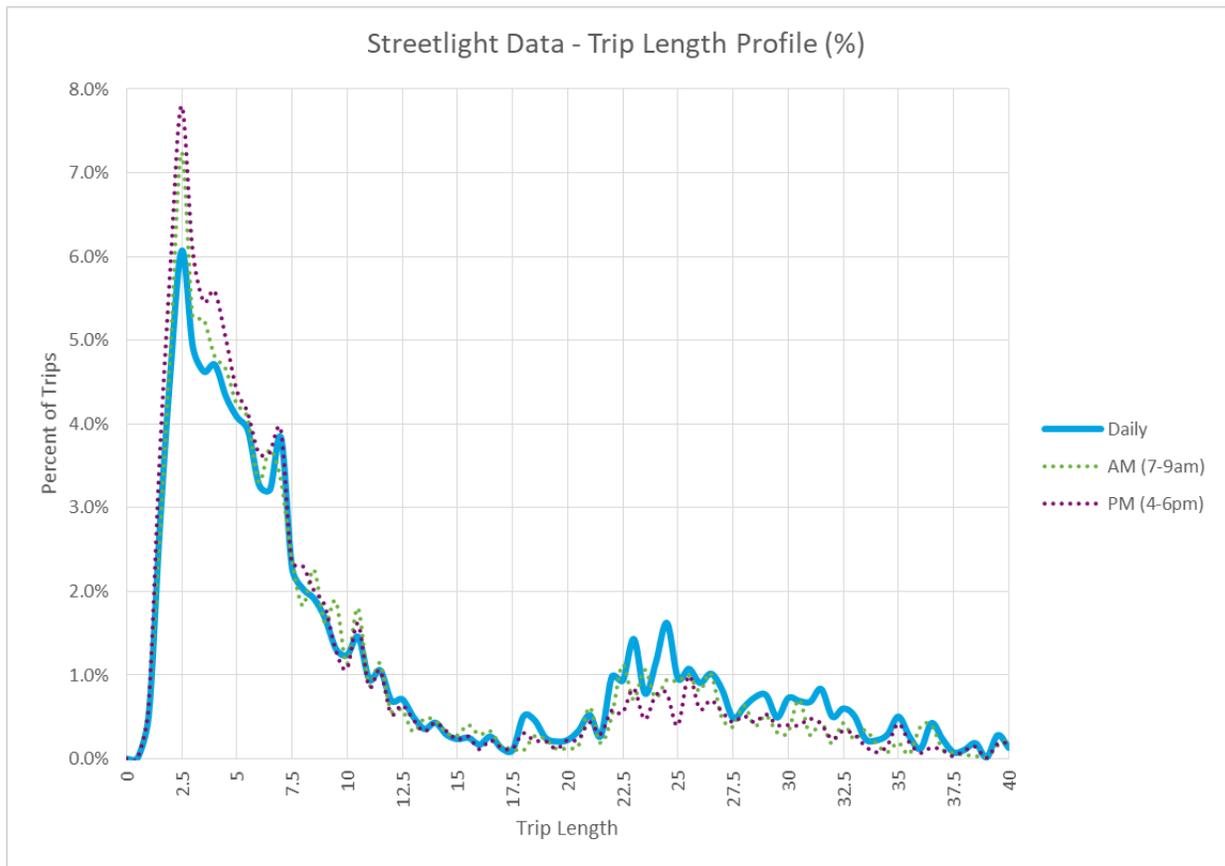


Figure 1: Trip Length Profile for Guelph (Streetlight Data)

Note that the graph has been capped at a maximum trip length of 40km to improve the resolution in the graph for local trips. Approximately 6-8% of trips leaving from or heading to Guelph have a distance of longer than 40km depending on the observed time period. These trips are accounted for in the subsequent discussion.

For the purposes of discussing the potential for changes to mode share, the trips can be sorted into five different distance categories. These categories represent the likely maximum practical distance for commuting trips. Recreation, shopping, and other trips may be shorter, but these distances provided a reasonable maximum for examining the larger potential. Note that Streetlight tracks the actual travel distance for the device from origin to destination.

Table 4 – Representative Travel Distances

Walk	0 - 2.5 km	At an average walking speed of 5km/h, 2.5km is a 30-minute walk*
Cycle	2.5 – 7.5km	At an average cycling speed of 15km/h, 7.5km is a 30-minute bike ride*
Local Transit	7.5 - 15km	Guelph is 15km end-to-end at its longest point, so this represents a reasonable maximum distance for a local transit trip
Drive / Regional Transit	15km+	Trips of this length would require a car or connections to regional transit service

**Walking/rolling and cycling travel speeds and distances will naturally vary by age and ability, but these are typical averages.*

Classifying trips from the trip length profile within these distance ranges allows for an understanding of the “potential” mode share for each mode (when all else is considered equal). The analysis considers only distance; there are many other factors that go into people’s daily mode choices. However, even with that limitation, **Figure 1** illustrates the significant potential for increases in mode share for sustainable modes.

Table 5 extracts the percentage breakdown of potential by mode from the graph into the categories described in **Table 4**.

Table 5 – Mode Share Potential by Distance

Mode	AM (7-9am)	PM (4-6pm)	Daily
Walk (0-2.5km)	15%	18%	14%
Cycle (2.5-7.5km)	41%	44%	39%
Transit (7.5-15km)	18%	17%	17%
Drive / Regional Transit (15km+)	26%	21%	29%

Note that in the table that the method applied in calculating the percentages excludes trips with shorter distances from the “higher” modes, which will not necessarily be the case in reality. That is, in reality, cycling would be practical for any trip from 0 to 7.5km in length, transit may be attractive for trips from 0 to 15km, and cars can be used for a trip of any length. Adopting this “cumulative” approach provides a wider window of potential for each mode. For example, cycling during the AM peak hour could be seen as practical for 41% to 56% (41% + 15%) of Guelph residents based on their current trip lengths, as trips that are of a practical distance for walking could also be accomplished on a bike.

The most dramatic observation from the Guelph trip length profile is the potential for cycling. Whereas the Census and TTS estimate that cycling makes up approximately 1.5-2% of all daily trips, the actual

distances travelled by people in Guelph on a daily basis mean that about 40% of daily trips could potentially be accomplished by cycling. During the peak travel hours, this potential approaches 45%.

Also of note in the graph is that the total percentage of trips under 15km (which are all trips that can stay completely within Guelph) over the full day is about 75%. This means that under ideal conditions, the maximum sustainable transportation mode share that can be achieved in Guelph is 75%. And during the peak hours, this potential reaches about 85%, which is approximately equivalent to the current percentage of people who drive.

The values here, as noted, relate potential mode choice solely to the distance travelled, which is a simplistic view, but shows the significant potential for sustainable modes in Guelph. In reality, many other factors including weather, trip purpose, grades, comfort, physical ability, and personal attitudes will also play into the final mode choice. These values present the *theoretical maximums* that could be achieved. Placed alongside the mode share targets of the Official Plan, these demonstrate the *potential* to achieve or exceed these goals. To tap into this potential, it will be necessary that Guelph remove any barriers over which it has control, which means investment in safe, comfortable, and connected active transportation infrastructure and reliable and convenient transit service.

Carbon Reduction Targets

Calculation of specific reductions required to meet the GHG reduction targets from the transportation sector are not included in this analysis or in the scope for the Guelph Sustainable TMP. However, note that Guelph's Community Energy Initiative sets a goal for the entire community to be net-zero on carbon by 2050. Transportation is a major source of greenhouse gas (GHG) emissions - in Canada, it accounts for 25% of all national emissions. And when broken down, vehicular travel accounts for about 13.5% of all Canadian GHG emissions according to 2018 data from Environment and Climate Change Canada.¹ These realities create additional pressures to reduce auto travel wherever possible.

Proposed Global Mode Share Targets

Based on the input of the previous sections, we've established city-wide mode share targets for the Sustainable TMP horizon year. These are summarized in **Table 6**.

¹ <https://www.canada.ca/en/environment-climate-change/services/environmental-indicators/greenhouse-gas-emissions.html>

Table 6: Existing Mode Share and Ultimate Global Mode Share Targets

Travel Mode	Existing Daily Mode Share by Data Source		Strategic Document 2031 Target	Proposed Global Daily Target for 2031
	Census	TTS	Official Plan	
Walking	5.9%	6.4%	15%	15%
Cycling	1.6%	2.1%	3%	10%
Transit	7.1%	8.0%	15%	15%
Auto	84.5%	83.4%	67%	60%

Implications of the Global Mode Share

The proposed 2031 Global targets are not significantly different from the targets outlined in the OP. They consider the potential for additional cycling activity, in line with the Streetlight analysis. Some of the auto mode share is redistributed to cycling in the future as a result.

To meet the Global mode share targets, the proportion of daily trips made by sustainable modes (i.e. walking, cycling, and transit) will have to more than double or triple the current levels (depending on the mode), while the auto mode share shrinks.

Taken with growth in overall travel activity as the City grows, this means an even greater overall increase in the **number** of people walking, cycling, and using transit.

4. Layer Two - Character

In this layer of analysis, the *character* of different sub-areas of Guelph was used to determine mode share targets for these areas. These more refined targets took general land use form, function, and mix into consideration and distributed the burden of mode share shift required to reach the overall *Global* targets.

Layer Methodology

Layer two is another part of the “top-down” approach. It takes the *Global* goals and uses them to set context-sensitive mode share targets for different types of sub-areas in Guelph. Together, the targets for the sub-areas add up to the overall *Global* targets.

In this exercise, a typology of six distinct area types was developed based on general land use form, function, and mix. Each type of area was defined as the *Character* of the area. Next, Guelph was split into 16 Districts - sub-area of similar contexts, constraints, and potentials for mode shift. Each District contains one or more neighbourhoods; put together, the 16 Districts encompass all 207 of the smaller TTS traffic zones from Guelph’s city-wide travel demand forecasting model. Each of these Districts were then classified to one of six *Character* types.

Initially, the same mode share targets were applied to all *Character* types. These were then refined and adjusted based on the land use form, function, and mix of each *Character* type. The final modified targets were also checked to ensure that when accounting for the number trips that each mode share would be applied to, the final answer still added up to the daily *Global* mode shares that were set in the previous step.

Character Types

Six *Character* types were identified. Individual character types were established based on consistent land uses and landforms. **Table 7** summarizes the *Character* typology and **Figure 2** illustrates the allocation of the *Character* types to the 16 Districts. Note that as shown in **Figure 2**, the residential areas become generally less dense as they move further out from the downtown core and cross significant barriers (e.g. the Hanlon Expressway, etc.)

Table 7: Character Typology

Character Type	Description
Downtown	This is the urban core of the city, generally the oldest part of town with the most diverse mix of land uses developed around a tight, walkable block pattern.
Older Built-up Area	These inner residential areas generally exist adjacent to the downtown and have a walkable road network, some commercial land use, and a more defined focus on residential uses of varying densities.

Character Type	Description
Suburban Guelph	These areas lie further from the downtown and exhibit generally lower population densities and few land uses outside of residential. The housing in these areas is primarily single family detached dwellings with some townhouses. Where commercial land uses exist, they are typically suburban mall complexes along major arterials.
Rural/ Future Development Areas	These areas currently exhibit a generally rural character with low densities for any land use. Residential uses are generally sparse and focused almost solely on single family detached dwellings.
Industrial	There are specific concentrations of industrial employment and commercial lands in the north and south of Guelph. These have been developed to accommodate the warehousing and light industrial uses with larger lot sizes and fewer accommodations for walking, cycling, and transit.
University	The University of Guelph presents a unique environment within the city. University students are far more likely to walk, cycle, and use transit, so have different needs with respect to accommodation for sustainable travel.

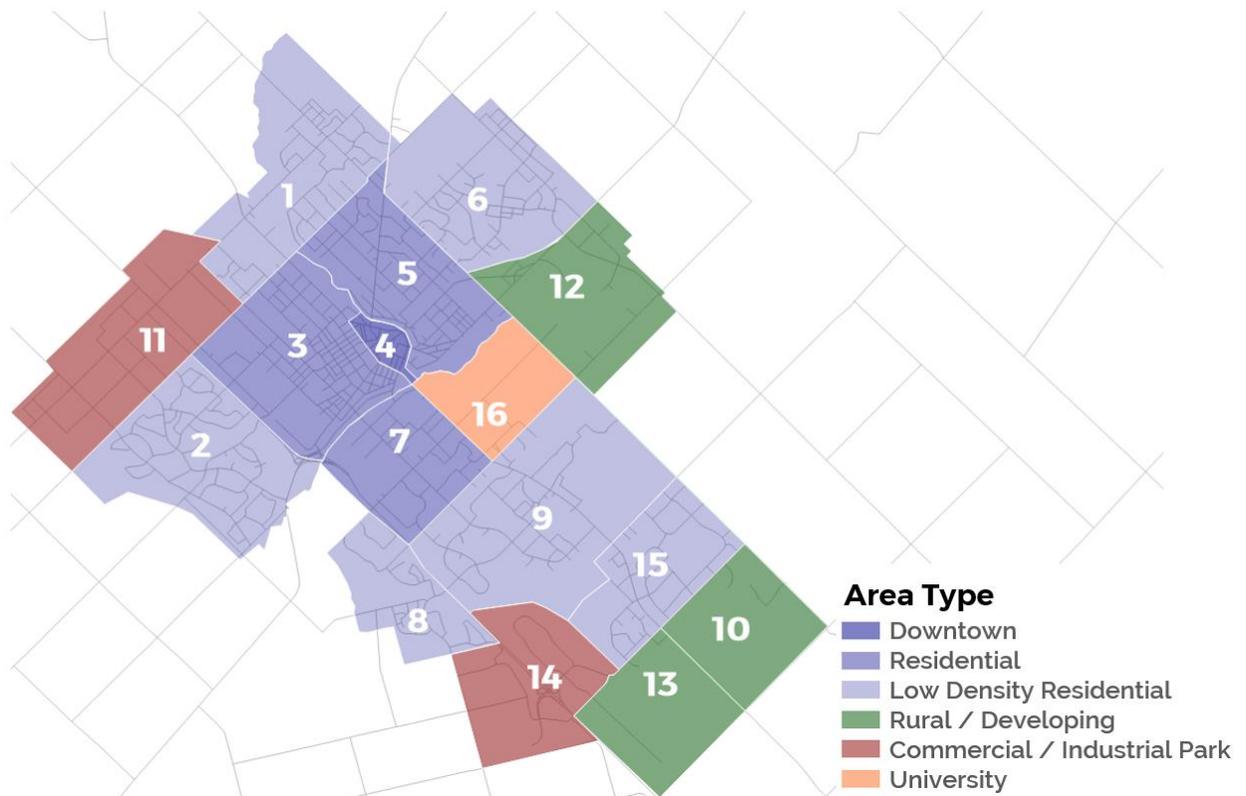


Figure 2: Guelph Districts and Area Types

Existing Mode Share by District Area Type

The TTS contains information on existing mode shares at a traffic zone level, which was used to determine District-level existing mode shares, as shown in **Table 8**.

Table 8: Existing Mode Share by District

District			Existing Mode Share			
District	Character Type	Name	Walk	Cycle	Transit	Car
4	Downtown	Downtown	13%	6%	7%	74%
3	Older Built-up Area	NW of Downtown	14%	6%	6%	75%
5	Older Built-up Area	NE of Downtown	15%	4%	4%	77%
7	Older Built-up Area	S of Downtown	12%	7%	5%	76%
	Average		13%	6%	5%	76%
1	Suburban Guelph	NE Residential	9%	1%	7%	84%
2	Suburban Guelph	W Residential	5%	1%	6%	88%
6	Suburban Guelph	N Residential	7%	0%	3%	90%
8	Suburban Guelph	S Residential	8%	3%	2%	86%
9	Suburban Guelph	E Residential	5%	5%	8%	82%
15	Suburban Guelph	SE Residential	4%	1%	4%	90%
	Average		6%	2%	5%	87%
10	Rural / Future Development Area	Clair-Maltby	3%	0%	0%	97%
12	Rural / Future Development Area	Innovation District	0%	0%	6%	94%
13	Rural / Future Development Area	Clair-Maltby	4%	0%	4%	92%
	Average		2%	0%	3%	94%
11	Industrial	NW	1%	2%	6%	91%
14	Industrial	Hanlon	0%	0%	7%	93%
	Average		0%	1%	7%	92%
16	University	University	11%	8%	29%	51%

Some clear trends can be seen through the blue and green area types (Downtown, Residential, Suburban Guelph, and Rural/Developing), where auto use generally increases with distance from Downtown and walking, cycling, and transit use decrease. The University and Commercial/Industrial Park area types also exhibit some unique characteristics. University shows the lowest automobile use such that essentially half of all trips to and from the university are made using sustainable modes. On the other hand, Commercial/Industrial Park area types show predictably low proportions for walking and cycling.

Future Mode Share by Character Type

Future mode share targets were set by considering the existing mode shares, the *Global* targets, and the trip length profiles for Districts within the same *Character* type (refer to **Appendix A** for more detailed results and discussion for each District).

The first step taken in determining future mode shares was to review the active transportation mode share potential for each *Character* to determine a reasonable reduction for auto mode shares and reasonable walking and cycling growth. With reference to **Figure 1** in **Chapter 3** of this memo, note that about 65% of all trips in Guelph are 7.5km or shorter, so 65% represents the active transportation potential for all of Guelph under ideal conditions. Mode choices consider more than just trip distance, but the trip distance analysis shows great potential for active transportation growth.

The second step taken was to establish targets for transit growth. Transit was adjusted to grow to about two- or three-times the existing mode share, depending on the expected active transportation growth for that *Character* type (i.e. the more active transportation increased, the more transit increased).

The final step was to calculate the auto-mode share to enable the *Character* mode shares to sum up correctly and a check was completed to ensure that the *Global* targets were met. The resulting daily mode share targets are presented in **Table 9**.

Table 9: Future Share Targets by District Character

District Character	Existing Mode Shares by District Character				Future Mode Shares Targets by District Character			
	Walk	Cycle	Transit	Car	Walk	Cycle	Transit	Car
Downtown	13%	6%	7%	74%	25%	15%	20%	40%
Older Built-up Area	14%	5%	5%	76%	20%	15%	15%	50%
Suburban Guelph	6%	2%	5%	87%	10%	7%	13%	70%
Rural/ Future Development Area	2%	0%	3%	94%	2%	2%	6%	90%
Industrial	0%	1%	7%	92%	3%	2%	15%	80%
University	11%	8%	29%	51%	15%	10%	35%	40%

Note that these are origin-based mode shares. Origin-based shares were used because the mode share choice that is made when a person leaves their origin is typically the same mode that they use to return.

Implications of Character Mode Share

The implications of this set of mode share targets differ by *Character* type. Therefore, the following discussion is divided to reflect this.

Note that although the mode share targets are origin-based, the implications listed below affect both trips originating in and destined to the various Districts. This is because the vast majority of trips are return trips rather than one-way trips and most of the time, travel modes stay the same for the pair of trips in a return in a trip.

Downtown

Trips originating from Downtown represent approximately 6% of all daily trip origins and destinations. The average trip length for someone originating from downtown is 4.9km within Guelph, or 8.7km overall when considering destinations outside of the city. The strongest relationships for travel to and from Downtown are from the adjacent districts (3, 5, and 7).

In Downtown, the sustainable transportation mode share would need to see a substantial increase of 34 points, from 26% today to 60% in the future. Proportionally, the most significant of these increases will be for transit and walking. To see an increased uptake in travel by walking, cycling, or transit, the City would need to consider solutions such as:

- Flexible streets/car-free streets;
- Physical transit priority measures and transit service changes;
- Wide sidewalks;
- More frequent active transportation crossings;
- Additional active transportation connections across barriers;
- Improved cycling facilities on streets with high vehicular speeds (i.e. over 30kph) and/or high traffic volumes;
- Transportation Demand Management (TDM) programs and partnerships;
- Limits to parking for both residential and employment land uses; and
- Potential adjustments to supply and costs of long-term parking to manage demand.

Older Built-up Areas

Districts in the older built-up areas in Guelph account for 32% of all daily trip origins and destinations. This makes addressing the issues in this *Character* type critical to future success of the Sustainable TMP.

Districts falling under this *Character* type would need to see a substantial increase in sustainable transportation modes of 21 points, from 24% today to 45% in the future. The most significant increases will be for cycling and transit. To see an increased uptake in travel by cycling and transit, the City would need to consider solutions such as:

- Connections across physical barriers (such as the rivers, the rail tracks, etc.);
- Widened sidewalks (more comfortable and attractive for walking, indicate priority of walking in the area);
- Implementation of AAA cycling facilities;
- Facilitating access to e-bikes/pedal assist devices;
- Physical transit priority measures and transit service changes;
- Transportation Demand Management (TDM) programs and partnerships

Suburban Guelph

The districts in Suburban Guelph account for the most trip origins and destinations within Guelph - 44% of all daily trips. This makes addressing the issues in this *Character* type critical to future success of the Sustainable TMP. Of these, 26% of trips originate in the northern Suburban Guelph Districts (Districts 1, 2, and 6) while 15% of trips originate in the southern Suburban Guelph Districts (Districts 8, 9, and 15).

Districts falling under this *Character* type would need to see a moderate overall increase in sustainable transportation modes of 7 points - from 13% today to 20% in the future. The most significant increases will be for walking, cycling, and transit. To see an increased uptake in travel by active transportation and transit, the City would need to consider solutions such as:

- Connections across physical barriers (such as the Hanlon Expressway);
- Improved active transportation facilities for cyclists and pedestrians along busy arterials;
- Implementation of AAA cycling facilities;
- Facilitating access to e-bikes/pedal assist devices;
- Solutions to improve active transportation connectivity within local curvilinear road networks (cut throughs, short cuts, trail connections);
- Physical transit priority measures and transit service changes; and
- Transportation Demand Management (TDM) programs and partnerships.

Rural/ Future Development Areas

Trips related to the Rural/Developing areas represent approximately 4% of all daily trip origins and destinations.

Rural areas would need to see a small increase in the sustainable transportation mode share by 4 points, from 6% today to 10% in the future, focused on increasing cycling and transit usage. This small increase acknowledges the unique challenges of Rural/Developing areas, including dispersed origins and destinations and low densities. To see an increased uptake in travel by cycling and transit, the City would need to consider solutions such as:

- Improved cycling facilities in Rural areas;
- Facilitating access to e-bikes/pedal assist devices; and

- Development policies that support quality AT and transit infrastructure (e.g. secondary plans, block plans, approved plans of subdivision, zoning bylaws).

University

Trips originating from University represent approximately 3% of all daily trip origins and destinations. The strongest relationships for the University are within the campus and between Districts 7 and 9, which indicate that students generally live very close to campus.

University would need to see a moderate increase in the sustainable transportation mode share by 11 points, from 49% today to 60% in the future, with roughly the same increases in the usage of all three modes. To see an increased uptake in travel by walking, cycling, or transit, the City would need to consider solutions such as:

- Improved cycling facility connections to the University;
- Facilitating access to e-bikes/pedal assist devices;
- Improved transit connections to the University; and
- TDM partnerships with the University.

Industrial

Trips related to the Industrial areas represent approximately **11%** of all daily trip origins and destinations.

With the mode share target, these areas would need to see a moderate sustainable transportation mode share increase of 12% , from 8% today to 20% in the future, with the most significant uptakes expected for walking and transit usage. Commercial/Industrial Park areas can be challenging for mode share shifts. Therefore, to see an increased uptake in travel by walking, cycling, or transit, the City would need to consider solutions such as:

- Adding more sidewalks (especially to connect to existing transit stops);
- Implementing AAA cycling facilities;
- Facilitating access to e-bikes/pedal assist devices;
- Improving transit service to these areas (especially for key O-D pair zones); and
- Improved active transportation connections (e.g. trails, etc.) to adjacent residential Districts where employees of these areas may be living.

5. Layer Three - District

The final and most detailed layer of analysis for Guelph's Mode Share Profile is a refinement of mode share targets for each individual District.

Layer Methodology

With an understanding of the base mode share targets for each area type based on their *Character*, the last step was to complete a “bottom-up” refinement of the mode share targets for each *District*. This refinement was based on a detailed review of the local conditions, opportunities and challenges within each District representing local opportunities and challenges for mode share shift within each District. Specifically, in each *District*, the factors that were considered were:

- Location of the District within the city
- Land use mix in the District (e.g. schools and/or specialty schools, shopping, hospitals office buildings, etc.)
- Standard trip length for trips originating in the District

The existing mode shares were also reviewed within each District to understand the magnitude of the shift that would be required to meet the targets.

In essence, the methodology for the refinement is the same as what was done in Layer Two of the analysis. However, here, it was done with the specific local context within each individual District in mind. Note that not all District-level mode shares were refined from the *Character*-level targets. Refinements were completed on a District-to-District basis.

Appendix A contains 3-page profiles of each of the 16 Districts, including each of the considered elements from the list above. These profiles were essential in customizing the mode share targets for the individual Districts. The profiles in **Appendix A** include Travel Distance Profiles (introduced in **Chapter 3** of this memo - refer to **Figure 1**) for each District.

Final District-Level Mode Share Targets

Table 8 summarizes the existing and proposed future mode share targets for each District. As at the *Character* level of analysis, the targets in this table are daily, origin-based mode share. Additionally, in the table, W= Walking, B= Bicycles, T=Transit, and C=Cars.

Table 10: Final Adjusted Mode Share Targets by District

District			Existing Mode Share				Final 2031 Mode Share Targets			
District	Character Type	Name	W	B	T	C	W	B	T	C
1	Suburban Guelph	NE Residential	9%	1%	7%	84%	10%	7%	13%	70%
2	Suburban Guelph	W Residential	5%	1%	6%	88%	10%	7%	13%	70%
3	Older Built-up Area	NW of Downtown	14%	6%	6%	75%	22%	17%	16%	45%

District			Existing Mode Share				Final 2031 Mode Share Targets			
District	Character Type	Name	W	B	T	C	W	B	T	C
4	Downtown	Downtown	13%	6%	7%	74%	25%	10%	25%	40%
5	Older Built-up Area	NE of Downtown	15%	4%	4%	77%	20%	15%	15%	50%
6	Suburban Guelph	N Residential	7%	0%	3%	90%	10%	6%	10%	74%
7	Older Built-up Area	S of Downtown	12%	7%	5%	76%	12%	18%	15%	55%
8	Suburban Guelph	S Residential	8%	3%	2%	86%	11%	9%	11%	70%
9	Suburban Guelph	E Residential	5%	5%	8%	82%	10%	7%	13%	70%
10	Rural / Future Development Area*	Clair-Maltby	3%	0%	0%	97%	10%	7%	13%	70%
11	Commercial/Industrial Park	NW	1%	2%	6%	91%	3%	2%	15%	80%
12	Rural / Future Development Area*	Innovation District	0%	0%	6%	94%	10%	7%	13%	70%
13	Rural / Future Development Area*	Clair-Maltby	4%	0%	4%	92%	10%	7%	13%	70%
14	Commercial/Industrial Park	Hanlon	0%	0%	7%	93%	2%	1%	12%	85%
15	Suburban Guelph	SE Residential	4%	1%	4%	90%	8%	7%	12%	73%
16	University	University	11%	8%	29%	51%	15%	10%	35%	40%

**Direction obtained from Staff relative to the future character of the existing Rural / Future Development Areas (Districts 10, 12, and 13) was to apply the Suburban Guelph character. These areas are assumed to be developed by 2031.*

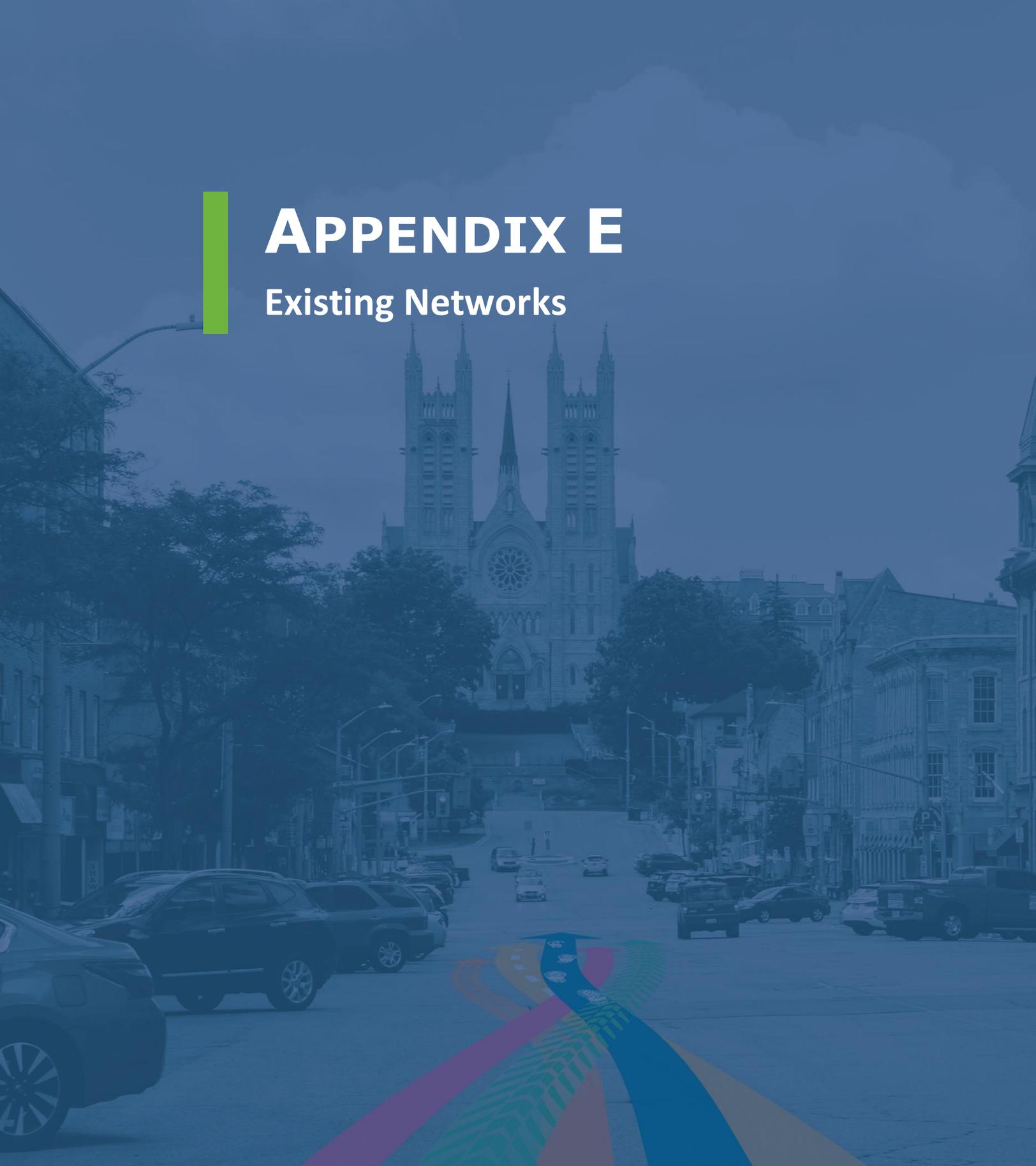
Note that District-level refinements did not account for the implications of future Mixed-Use Nodes and Intensification Corridors that are planned in several of the 16 Districts. The mode share targets developed in this Mode Share Profile are targeting the 2031 horizon year and many of the aforementioned Nodes and Corridors are not expected to be fully built-out by then. However, their construction will further shift the mode shares within their District towards sustainable modes. Therefore, the targets set in **Table 8** can be considered conservative.

6. Next Steps

The next steps for this exercise will be to dig into the implications of the District-level mode share targets in more detail and identify key corridors for investment to achieve these targets. This final and most data-intensive stage of this exercise will incorporate an understanding of how the various areas of the city relate to each other, how many people move between them, and what transportation solutions are most effective.

The implications of mode share targets on a District level will be very specific, very local issues that will influence mode choice. They will be different for each District but may include things like physical barriers that impeded connectivity (e.g. rivers, highways, rail tracks, etc.), curvilinear street patterns, lack of active transportation crossings, abundance of busy arterial roads, lack of frequent transit service, etc. Understanding the implications at a District-level will be a key component of the network recommendations and the implementation plan for the Sustainable TMP.

Once the targets in Guelph's Mode Share Profile are finalized, they will also serve as inputs into the City's model to understand the implications of the mode shares on the network.



APPENDIX E

Existing Networks

Existing Networks

Guelph's transportation network consists of multiple priority networks which represent the combination of streets (or corridors) for each mode where that mode was provided with high quality infrastructure and/or service. Although travel by different modes was possible along any corridor, the level of service varied based on which mode was given priority. The following section provides an overview of the following transportation networks:

1. Pedestrian Network;
2. Cycling Network;
3. Transit Network;
4. Car network; and,
5. Goods Movement Network.

Walking Today

Today, about 8 percent of all daily person-trips in Guelph are made by walking.

The walking experience was largely influenced by access to appropriate facilities and connectivity. The more pedestrian infrastructure there was and the more opportunities for crossings (which allow for a more direct route), the more comfortable it was for people who are walking.



There are approximately 821 kilometres (km) of pedestrian facilities (i.e. sidewalks and trails) in Guelph, the vast majority of which are sidewalks.



About **505km (92%)** of our streets, excluding the highways, have at least a sidewalk on one side of the street; the **remaining 8% have no sidewalk at all.** Most of these streets are located in our industrial parks and developing areas.



Source: Icon designed by Freepik from Flaticon

Pedestrian facilities are not equally distributed across the city. About 86 percent of transit stops are connected to the larger pedestrian network with sidewalks. Along the major streets - arterials and collectors - which have wider cross-sections, about 63 per cent of the streets have sidewalks on both sides.

Guelph's a city of rivers and rail lines. The Speed and Eramosa Rivers provide significant opportunities for recreation and active transportation travel along the well-established trail networks, add to the beauty of the community and define the character of the city. Guelph's rail lines play a big role in Guelph's economy and the movement of Guelphites. Through the Guelph Junction Railway (GJR), Canadian National Railway (CN), Canadian Pacific Railway (CP) and GO rail, Guelph is connected to crucial passenger and freight corridors.



The rivers and rail lines are important landmarks and fixtures of our community. However, they also limit options for pedestrian crossing, can require the construction of expensive infrastructure to cross and may act as long “impassable barriers” that particularly affect north-south travel and east-west travel in the north half of the city.

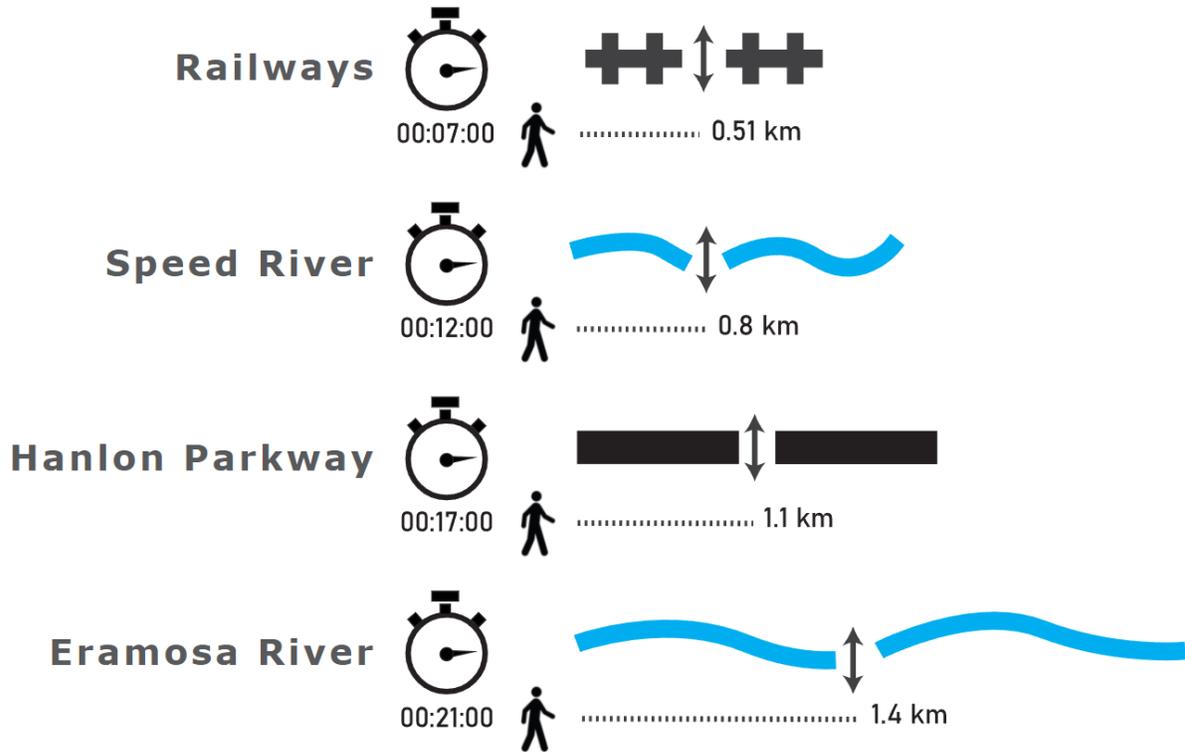
For pedestrians, the average distance between formal crossings of the....

Railways is a 0.5 km or about an 8-minute walk

Speed River is 0.8 km or about a 12-minute walk

Hanlon Parkway is 1.1 km or about a 17-minute walk

Eramosa River is 1.4 km or about a 21-minute walk



Crossing these physical barriers also poses additional challenges. For instance, crossing the Hanlon Parkway can be very uncomfortable for pedestrians, even at designated crossings, and crossing railways can add even more time to a pedestrian trip if a train is passing by when they reach a crossing.

People walking can also experience challenges in crossing the street. Today, only 10 percent of intersections where trails cross streets are signaled.

The existing pedestrian network in Guelph is shown below.

Cycling Today

Today, 3 percent of all daily person-trips in Guelph are made by cycling.

There are approximately 130 centreline km of facilities and streets that have cycling facilities along either one or both sides of the street. Centreline means that the length of a street with cycling facilities on both sides would only be counted once.

These fall into the following categories:



41% (53 km) are streets with bike lanes right next to car lanes



40% (52 km) are off-road bike routes



4% (5 km) are in-boulevard multi-use pathways



11% (14 km) are signed routes with no additional physical infrastructure for cycling



4% (6 km) are streets with buffered bike lanes, which have additional space between cycling and car lanes but no physical barrier

In total, nearly 39 percent (or 65.6 km) of existing cycling infrastructure physically separates (using a curb, bollard, or other physical barrier) cyclists from vehicles. However, cycling infrastructure does not have a “one-size-fits-all” approach.

For example, local streets in neighbourhoods that do not see large car volumes or high speeds may not register as formally having “cycling facilities” but they may be comfortable for a majority of people to cycle on in their current shared traffic configuration.



Physical separation became more important in environments with many fast-moving cars or trucks.



About **31% - or 61 km** - of arterial and collector streets have cycling infrastructure.



About **42% of transit stops** are directly connected to the cycling network.

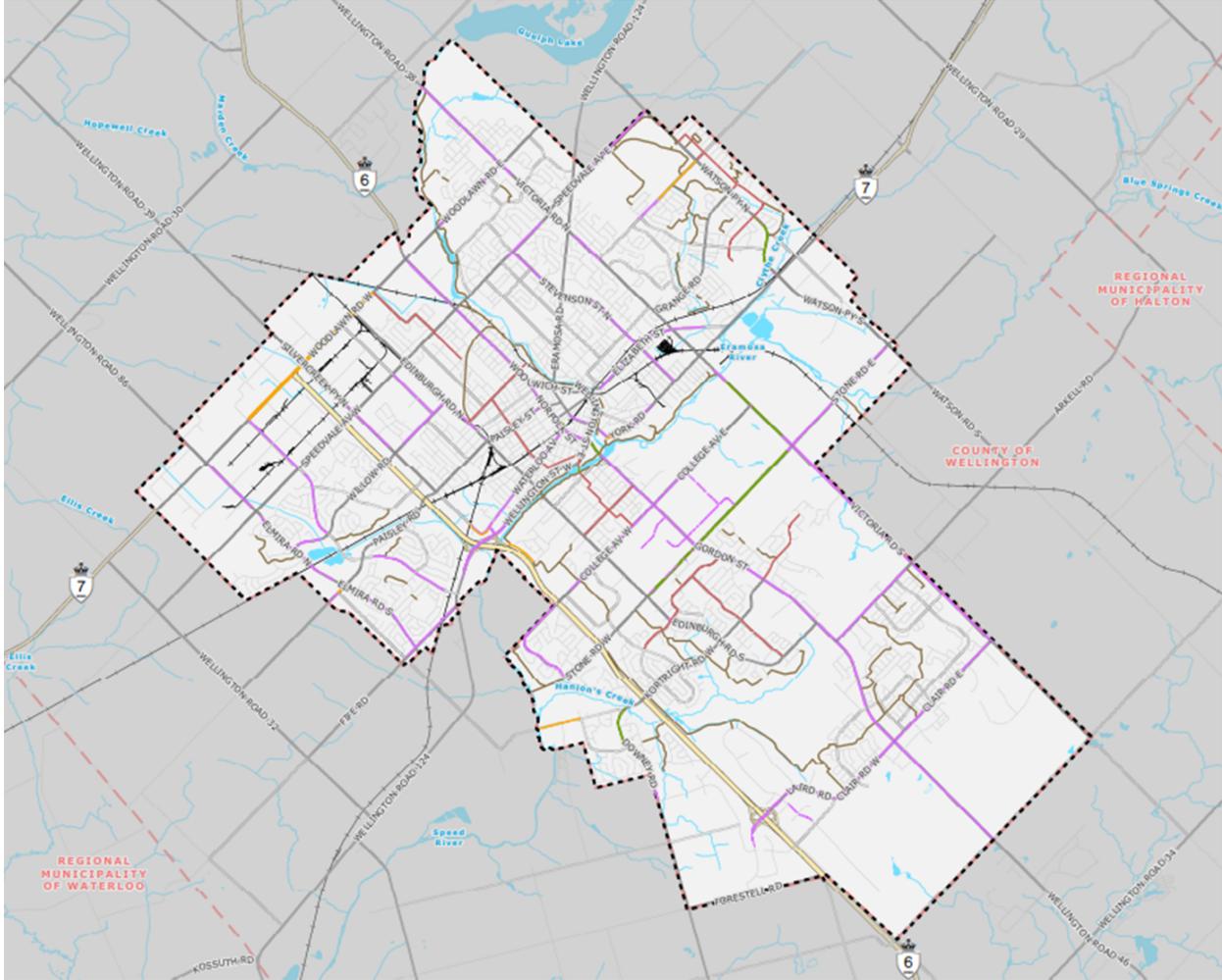
Source: Icon designed by Freepik from Flaticon

The convenience associated with cycling depends on connectivity, just like for walking. Long distances between crossings for streets, rivers and rail lines is a major barrier to cycling.

Guelph's physical geography affects the appeal of cycling. Though much of the city is relatively flat, the widespread presence of small hills – or drumlins - across the city can pose challenges for cycling among less able-bodied travelers.



The existing cycling network in Guelph is shown below.



Transit Today

Today, about 7 percent of all daily person-trips in Guelph are made by transit.



Guelph Transit provides local bus service in Guelph. Guelph also offers inter-regional transit connections via GO Transit (by bus and train), Greyhound (bus) and Kasper Transportation (bus). Additionally, residents of Wellington County connect to Guelph via the County's on-demand RIDE WELL ridesharing transit service.

Guelph Transit operates 30 fixed routes (seven of which are seasonal routes to the University of Guelph that are only in service from September to April) and a flexible Community Bus service through Downtown Guelph and surrounding areas.



There are currently **568 bus stops** in our transit network, with **82% of them considered “accessible”** (i.e. they have a hard surface and are connected to a sidewalk).

Source: Icon designed by Freepik from Flaticon

The transit network was largely radial around two hubs. This meant that the majority of the routes pass through, start, and/or end in downtown and the university. The benefit of this approach was that residential areas often get direct connections to some of the most popular employment and education hubs like downtown and the university during the peak periods. However, this approach was not convenient for people who are destined elsewhere. This approach can result in cross-city trips being required to travel through downtown, even if that adds extra travel time to someone who isn't going downtown.

On average, when compared to driving, it takes:



2.3 times

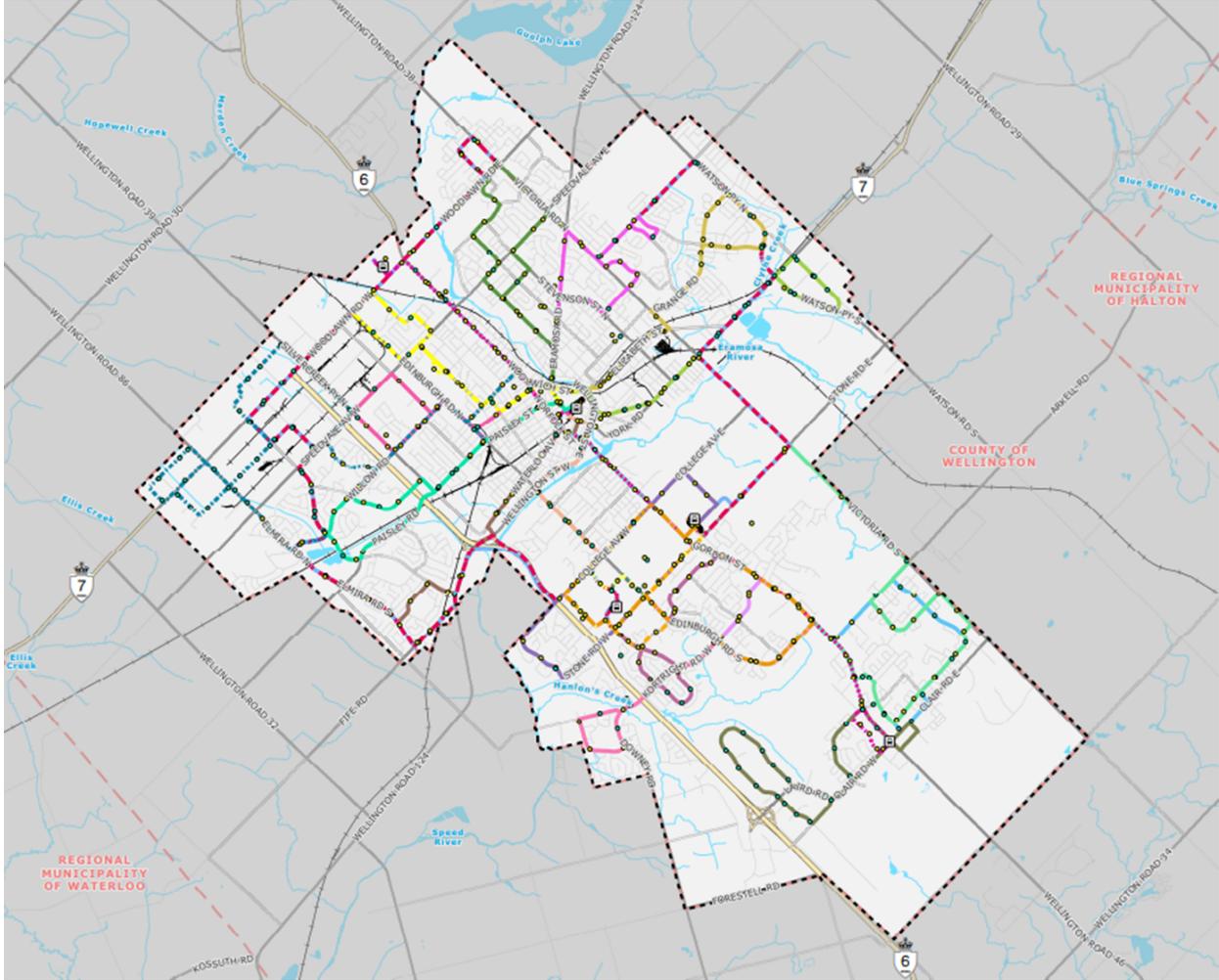
longer to travel by bus from various parts of the city to major retail activity hubs, including Downtown, Woodlawn SmartCentres NC and Clair and Gordon



2.8 times

longer to travel by bus from various parts of the city to any major activity or employment hub

The existing transit network in Guelph is shown below.



- City of Guelph
 - Railway
 - Expressway / Highway
 - Ramp
 - Arterial
 - Collector
 - Local
 - Watercourse
 - Waterbody
 - Municipal Boundary
 - Bus Stop - with hard surface
 - Bus Stop - without hard surface
 - Guelph Transit - Main Transfer Point
- Guelph Transit Routes**
- 1 - Edinburgh College
 - 2 - College Edinburgh
 - 3 - Westmount
 - 4 - York
 - 5 - Goodwin
 - 6 - Harvard Ironwood
 - 7 - Kortright Downey
 - 8 - Stone Road Mall
 - 9 - Waterloo
 - 10 - Imperial
 - 11 - Willow West
 - 12 - General Hospital
 - 13 - Victoria Road Recreation Centre
 - 14 - Grange
 - 15 - University College
 - 16 - Southgate
 - 17 - Woodlawn Watson
 - 18 - Watson Woodlawn
 - 20 - Northwest Industrial
 - 40 - Scottsdale Express
 - 41 - Downtown-University Express
 - 50 U - Stone
 - 51 U - Janefield
 - 52 U - Kortright
 - 56 U - Colonial
 - 57 U - Ironwood
 - 58 U - Edinburgh
 - 99 - Mainline

Cars Today

Today, 79 percent of all daily person-trips in Guelph are made by car.



Guelph's streets define the shape of the city and also occupy much of the developed land. The size of the roadways (along with the speed and volume of the vehicles that use them) also defined how easy it was for people who are not in cars to travel through the city.

With so many local and collector streets, the vast majority of streets in Guelph - 89 per cent - have posted speed limits of 50km/h or lower.

Guelph has approximately 550 km of streets:



63% (or 345km) local streets

Streets that are directly connected to most residential dwellings



12% (or 69 km) collector streets

Streets that connect local streets to the major street system



23% (or 124 km) arterial streets

The main spines of a city



2% (or 11 km) highways

Highways fall under Provincial jurisdiction

Source: Icon designed by Freepik from Flaticon

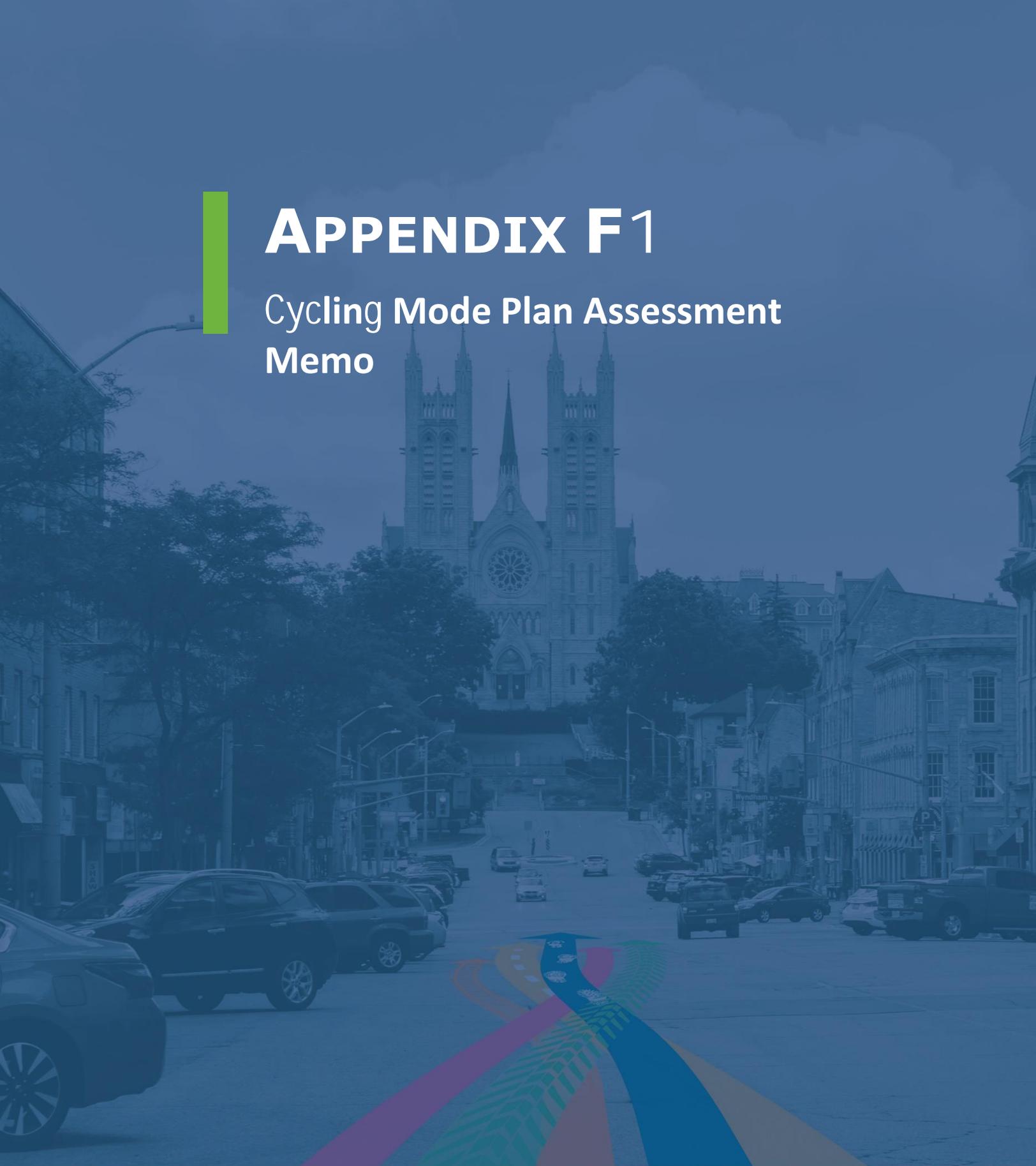
The existing streets network in Guelph is shown below.

Freight Today

Because of Guelph's location, freight plays a key part of the city's transportation system and economic prosperity. Guelph's location puts it at the heart of the Toronto to Waterloo Region Innovation Corridor, just north of Highway 401, within an hour's drive of three major international airports and within three hours' drive of four Canada-US border crossings. Approximately 40 percent of North America's population can be made within a day's drive of Guelph. As a result, a lot of freight has been moved to and from our industrial parks, with Guelph acting as an origin, stop or destination along the supply chain.

There's a total of approximately 89 km of permissive truck routes in Guelph, with an additional 5 km planned for the future. Two sections of the permissive truck route network only permit trucks between 6:00 am and 8:00 pm daily. Some segments of the truck route network are also subject to spring weight restrictions.





APPENDIX F1

Cycling Mode Plan Assessment Memo

Memo



To: Terry Gayman, City of Guelph
Gwen Zhang, City of Guelph

From: Brian Patterson, Urban Systems

cc: Sarah Freigang, Urban Systems
Shawn Doyle, Dillon Consulting Limited
Mariam Bello, Dillon Consulting Limited
Jennifer Juste, City of Guelph

Date: May 26, 2021

Subject: Assessment of Mode Plans - Cycling

Our File: 18-8919

1 Introduction

1.1 Purpose

This memo assesses the alignment of the existing plans and networks for cycling with the goals and objectives for cycling in the Guelph Transportation Master Plan (TMP). This memo achieves this by:

- Identifying existing and planned directions for the cycling mode in Guelph;
- Presenting the existing cycling network;
- Summarizing the policies and programs that currently guides the cycling mode;
- Reviewing mode-specific problems and opportunities in alignment with the updated TMP policy framework; and,
- Ultimately presenting recommendations for Guelph’s future cycling network, policies, and programs.

1.2 Background

Cycling is an important and growing mobility option in Guelph for both commuting and recreational purposes. Cycling is not only a practical way to get around the City but is also a healthy activity that is cost effective and good for the community and the environment. Enabling cycling can help communities move towards a more balanced transportation system that encourages healthy and active living, creates a more livable community, and results in cost-effective and efficient solutions in terms of a community’s infrastructure investments.

Cycling is already a popular recreational activity in Guelph, due to the City’s compact size, natural beauty, abundant green spaces, and well established network of bicycle routes and off-street trails and pathways, many of which follow the Speed and Eramosa Rivers and provide significant opportunities for both recreation and active transportation. However, cycling only accounts for approximately 2% of all daily trips made by Guelph residents.

There is significant potential for increasing cycling in Guelph, specifically by focusing on short- to medium-distance trips, as described in further detail below. Encouraging more residents and visitors to use their bicycles for short- to medium-distance trips will require developing a safe and comprehensive bicycle network in Guelph, with infrastructure and programs that help cycling become more time-competitive with other modes. Promoting cycling as an attractive and viable transportation choice encourages healthier lifestyles and reduces greenhouse gas emissions and pollution with a relatively small infrastructure investment.

There are 130 centreline km of existing bicycle routes in Guelph, including off-street pathways and on-street facilities such as bicycle lanes and paved shoulders. The breakdown of these facilities is summarized in **Table 1**. While the city has made progress in adding bicycle infrastructure in key areas, there are still several challenges for cycling in Guelph, including several gaps in the bicycle network, major barriers, challenging grades, and uncomfortable bicycle facilities on many streets.

Table 1: Existing Bicycle Network

Facility Type	Approximate Distance (centreline km)
Signed Routes	14
Bicycle Lanes	53
Buffered Bicycle Lanes	6
In-Boulevards Multi-Use Trail	5
Off-Road Trail	52

2 Existing and Planned Conditions

This section identifies the existing and planned conditions for Guelph's cycling mode plan as identified in strategic plans, network plans, policies, and programs.

2.1 Strategic Plans

The Cycling Master Plan is intended to support the City's Official Plan vision and update and integrate the directions from the 2005 Guelph Trail Master Plan, 2012 Cycling Master Plan, and 2017 Active Transportation Network Design Guidelines and Feasibility Study

Guelph Trail Master Plan (2005)

The Guelph Trail Master Plan (GTMP) was developed in 2005 and provides a vision to “develop a cohesive city wide trail system that will connect people and places through a network that is off-road wherever possible and supported by on-road links where necessary.” The primary objectives that need to be met to achieve this goal are to:

1. Develop a City Wide Trail Master Plan that is consistent with the vision articulated in other important long term City of Guelph planning documents.
2. Develop an understanding of the needs and desires of trail users in Guelph.
3. Develop an implementation plan that describes trail routes and construction methods, priorities, and costs.
4. Create a data management tool that can be updated and adapted as the trail system evolves over time.
5. Develop strategies to generate public interest in transit and increase public use of the trail system.

The GTMP is envisioned as a 20-year initiative that is designed to be complementary to other planning initiatives in the city. It will be implemented by the City through its own efforts and through partnerships with a variety of organizations that share an interest in trails. It goes beyond just identifying routes and will guide the development and maintenance of trail infrastructure and programs. It will also provide the steps and tools necessary for the City and its partners to implement the plan while remaining flexible so that it can evolve over time.

The City is currently updating the GTMP, including developing innovative trail design guidelines, revising routes, creating new trail facilities, and promoting trail use in the community

Cycling Master Plan – Bicycle-friendly Guelph (2012)

The City's 2012 Cycling Master Plan – Bicycle-Friendly Guelph is a transportation planning document intended to guide the development of a cycling network throughout Guelph. Developed around feedback from cyclists and based on best practices in cycling-friendly communities, the City of Guelph developed a vision for the Bicycle-Friendly Guelph Initiative that guides the objectives and actions of this Plan. The vision is indicated below.

The City of Guelph envisions:

A **well-connected network** of on- and off-road cycling facilities

Cyclists who feel **safe and confident** riding their bicycles

Cycling will be perceived as an **efficient and enjoyable** mode

Visitors and residents can easily cycle around Guelph

Injuries and fatalities will be **reduced** to a minimum

Cyclists and cycle-friendly partners will be **rewarded**

The City of Guelph aims to:

Provide a **safe, attractive, and practical** cycling environment

Triple the number of daily trips by 2018

Integrate **the 5Es**: Engineering, Education, Encouragement, Enforcement, and Evaluation

Work collaboratively, cooperatively, and constructively with community & partners

Monitor and **measure progress** on a regular basis

Become one of **Canada's most bicycle-friendly communities**

The plan includes a target to increase to mode share of cycling trips to 3% along with recommendations organized around the Five Es, beginning with the engineering and physical infrastructure recommendations, and followed by social infrastructure elements that include education and encouragement, enforcement and evaluation. The plan includes a cycling network plan that identified a City-wide network of bicycle facilities, including painted bicycle lanes, physically separated bicycle lanes, shared use lanes, signed routes, and off-street trails.

Active Transportation Network Design Guidelines and Feasibility Study (2017)

The Active Transportation Network Design Guidelines and Feasibility Study (ATN Study) was developed in 2017 and complements and builds upon other key policy plans regarding trails, cycling and active

transportation in the city, in particular the Guelph Trails Master Plan (GTMP, 2005), and the Cycling Master Plan (2012). The study focuses on a portion of the overall off-road trail network. Specifically, it assesses the feasibility of upgrading just over 45km of existing and proposed main / primary trails in the city for the purpose of improving all-season, off-road, destination-based active transportation corridors throughout Guelph.

The trail routes examined in the ATN Study are contained in the GTMP or have been identified by other planning studies or land development processes since the time the Trails Master Plan was completed in 2005.

The trail routes identified in the ATN Study complement the on-road network in Bicycle Friendly Guelph. On-road routes proposed in the Guelph Cycling Master Plan were assumed as noted in that master plan, and only on-road connectors considered critical to the connectivity of the ATN route are identified in this study.

2013 City of Guelph Cycling Master Plan

The vision established in the Cycling Master Plan is to “become one of Canada’s most bicycle-friendly cities by providing a safe, attractive, and practical cycling environment.” Tripling the city-wide cycling modal share by improving the cycling network, enhancing road safety, fostering a better understanding among cyclists and motorists about sharing the road is one of the Plan’s key objectives.

The City of Guelph vision includes:

- More people cycling: tripling the number of daily trips by bicycle city-wide in ten years
- Safer and more connected network: fewer accidents, better cycling and driving practices
- Strong culture of cycling: events and rewards for cycling, general satisfaction with cycling provisions
- Measured improvements: monitoring and tracking progress in achieving the City’s cycling targets

The City of Guelph aims to connect the City from north to south and east to west by 2027 using Active Transportation network. This network is specifically designed to be accessible to people of all ages and abilities.

The Cycling Master Plan sets out 22 recommended objectives / actions related to both physical and social infrastructure organized under the five umbrellas of:

- Engineering: enhancing the Bikeway Network
- Education and Encouragement: promoting a bicycle-friendly community
- Enforcement: Protecting a cycling-friendly environment
- Evaluation: monitoring progress in achieving goals and targets; and
- Implementation: successfully implementing the Cycling Master Plan.

Infrastructure improvements to the cycling environment are described through various types of facilities that comprise a comprehensive network, and this is supported by the recommended city-wide cycling network which illustrates cycling routes and recommended infrastructure on those routes. The ATN

Study supports the physical infrastructure objectives (Engineering) aimed at enhancing and improving the bikeway network by maximizing cycling connections and reducing barriers to cycling, and is part of the overall picture to provide a comprehensive cycling network in Guelph.

The Plan also provides a suite of performance indicators that can be used to measure progress and success in the implementation of the Master Plan.

2007 Community Energy Initiative

The Community Energy Initiative identifies significant reductions in energy use for transportation, which is currently responsible for one-third of energy use in the City and an even larger share of Greenhouse Gas (GHG) emissions. This will require an energy reduction of 25%, representing a 69% reduction in kilometres travelled per person by car from 'business as usual' in 2031. The Community Energy Initiative proposes three primary reduction strategies, first of which is to shift people's choice of **transportation mode**.

2.2 Networks

The existing network of cycling facilities is shown in **Figure 1**.

2.3 Policies and Programs

City of Guelph Official Plan (2018 Consolidation)

The City supports cycling as priorities when designing the transportation system with a focus on connecting land uses to meet the community's mobility needs. The City supports the ongoing enhancement of a bicycle system that is convenient, safe, and pleasant, serves both commuter and recreational purposes and provides access throughout the city. Active transportation measures will be promoted in accordance with the following provisions:

- Ensure that streets, spaces and public facilities are designed to be safe and comfortable for pedestrians and cyclists;
- Require, provide and maintain infrastructure that maximizes safe and convenient passage for cyclists through the city;
- Ensure that bikeways are integrated into and designed as part of new road and other infrastructure projects in the City. Special consideration will be given to matters such as bike lanes, physically separated bikeways and provisions for a comfortable pedestrian environment which may include shade trees, street furniture, bicycle racks, lighting, signed and safe street crossings and other traffic controls;
- Require minimum provisions for on-site parking and storage for bicycles and other personal transportation devices in the Zoning Bylaw for uses such as employment and commercial, schools, high and medium density residential development and transportation terminals;
- Implement design and maintenance standards which can reduce the risk of collisions and injuries; and,
- Provide linkages between intensification areas, adjacent neighbourhoods, and transit stations.

The City will prepare a Bicycle Transportation Plan that will identify a Bicycle Network of off-road and on-road bicycle facilities as well as other network improvements. The City will implement the Bicycle Transportation Plan through the development process as well as City projects and will give further consideration to the incorporation of improvements and expansions to the Bicycle Network when undertaking road infrastructure works or when development proposals are being considered.

If rail lines within the city become abandoned or opportunities for multiple use of rail corridors become available, the City will actively promote the provision of bicycle paths along these corridors, where appropriate.

2016 Downtown Secondary Plan

One of the focus areas of this Plan is to encourage cycling for trips within Downtown. The plan notes that all streets Downtown shall be designed for the safety, comfort, and convenience of cyclists.

Bicycle parking facilities shall be provided at all major public destinations Downtown, including Guelph Central Station, City Hall, the existing and proposed main library, parks, schools, cultural facilities, other public institutions, and retail streets. A sheltered bicycle lock-up facility should be provided within Guelph Central Station

All office and apartment buildings shall include secure, indoor private bicycle parking and storage facilities. The Zoning By-law shall establish minimum requirements for bicycle parking. Major office developments shall be encouraged to include change rooms, showers, and lockers for bicycle commuters.

It is the City's objective to provide a continuous active transportation trail interrupted only by streets, along the west side of the river's edge between Royal City Park and Goldie's Mill Park, and on the east side of the river, south of the Guelph Junction Railway. To this end, the City shall acquire land for such purposes through the dedication of parkland at the time of development, public easements or other methods of acquisition including outright purchase. In addition, or alternatively, the City may incorporate portions of the trail within street right of ways.

3 TMP Update Directions for Cycling

This section documents the *vision, values, and goals* that were developed for the policy framework of the ongoing Guelph TMP update. It also documents the *objectives* related to cycling. Note that all of the policy framework components presented in this section were finalized as part of an earlier stage of the TMP update.

3.1 Vision

The TMP update established the following *vision*:

“Transportation in Guelph will be safe, equitable, sustainable, complete, affordable, and supportive of land use.”

This vision means that Guelph provides **safe** transportation networks for people to walk, wheel, and use vehicular transportation through all corners of the city. Transportation is geographically **equitable** – people can complete their trips comfortably and in a reasonable time, regardless of if they own a vehicle, which part of Guelph they are coming from, and which part of Guelph they are going to. Most people travel **sustainably**, minimizing the negative impacts of their trip on the environment. This is possible because the network for each mode of travel is **complete**, enabling continuous multimodal travel throughout our city. We accomplish these things in a way that is **affordable** for the user and makes the most financially efficient use of our investments. Finally, our transportation network is **supportive of land use**, meaning that we design our streets to be context-sensitive to support the growth of our community.

3.2 Values

The following transportation *values* for transportation in Guelph combine principles of the community values of the 2019 Guelph Community Plan with the values identified in the transportation vision of Guelph’s 2018 OP. The transportation values include:

- Safe
- Equitable
- Complete
- Sustainable
- Affordable
- Supportive of Land Use

Safe

Safe means a transportation network where users of all modes can expect to travel hazard-free and complete trips without fatal or serious injury.

In making decisions regarding safety, the most vulnerable users will be prioritized first. Decisions affecting the transportation network must first and foremost ensure the safety of pedestrians and

cyclists, as these are the users who are at the greatest risk. Next, the safety of the transit mode, a vehicular mode which carries many users and is sometimes treated with animosity by other vehicular modes, and then other vehicular modes.

Equitable

Equitable transportation speaks to a network that provides people with the ability to complete trips comfortably, safely, with dignity, and in a reasonable time, whether or not they own a vehicle. This applies throughout Guelph's geography, to all origins and destinations within the city. Additionally, by focusing on transportation equity, the City is seeking to ensure that members of marginalized communities have the same access/opportunities in finding and retaining employment.

Equity is closely linked to making streets in Guelph complete so that people are free to move regardless of their financial means, accessibility requirements, or other needs.

Complete

A complete - or a connected - network is one that treats all modes of travel as equal in importance. In essence, a multimodal network allows anyone to viably complete their trip by any mode of their choice. A complete network also ensures connectivity **within and between** networks for all modes. This means smooth continuous travel is possible without network gaps for users of any mode and that the transportation system is interconnected and reflects modern forms of mobility, allowing users to seamlessly transfer between modes for various portions of their trip. And in a complete transportation network, all parts of the city are connected via the various modal networks. This enables Guelph to feel as one community rather than separate pieces.

Sustainable

A sustainable transportation network is one that promotes **healthy lifestyles** and **environmental stewardship**. To promote healthy lifestyles and environmental sustainability, Guelph will encourage a shift towards active transportation modes (i.e. cycling and walking) and transit. The transportation system will reflect these modal priorities.

Affordable

An affordable transportation network is one where investment decisions are made while keeping in mind the lifecycle costs of the decision. This means that both the capital and the operation/maintenance costs are considered. In an affordable transportation network, cost effective solutions are valued above ones that provide the same value but cost exponentially more. An affordable transportation network is also one that considers the user costs associated with each trip.

To offset maintenance and operations costs, an affordable system looks for opportunities to maximize revenue generation from transportation network by exploring new revenue generation opportunities.

Supportive of Land Use

A transportation system that is supportive of land use creates context-sensitive transportation links and enables the development of healthy high- and medium-density mixed use communities. Such communities have strong active transportation connections but also enable their residents to travel via any mode of their choice. A land use supportive transportation network also ensured that all people are well connected to their places of work by multimodal transportation.

3.3 Goals

The TMP update set seven goals, based on the previously presented *vision* and *values*:

1. People of all ages and physical ability will be able to travel safely using any transportation mode that they choose
2. Guelph's transportation system will be easy-to-use, reliable and give people and businesses the options they want when they need them.
3. Transit service will provide travel times and traveler convenience at levels that are competitive with travel by car
4. The carbon footprint from the transportation sector will aim for net zero by 2050
5. Guelph's streets, trails, and rail networks will align with the City's land use objectives
6. Investment decisions will be made considering the asset lifecycle costs
7. Guelph's transportation system will plan for the changes of tomorrow, while delivering great service today

3.4 Objectives

Stemming from the seven *goals*, **Table 2** identifies the *objectives* from the TMP update that relate to Cycling.

Table 2: Cycling-Related Guelph TMP Objectives and Accompanying Actions

#	Objective	Action
O1	Increase walking and cycling mode shares for school trips	Include school connections in the recommended All Ages and Abilities (AAA) cycling network
		Include schools in the <i>TDM</i> Program Charter
O2	Increase safety provisions in planning, design, and operational decisions.	Develop Multi-modal Level of Service (MMLOS) Guidelines that include safety analysis for links and intersections
		Include vulnerable users in the <i>Road Safety</i> program charter
		Include monitoring of at-grade rail crossings in the <i>Road Safety</i> program charter
		Assess implications of Metrolinx downtown grade-separation proposal in the TMP
O3	Design new and transform existing streets and pathways to meet AAA guidelines for vulnerable users	Prepare a recommended AAA bike network
		Review (and if necessary, update) street classifications for Guelph’s city-wide network with consideration for AAA routes
		Update standard cross-sections to include AAA facilities
		Identify AAA design priorities across Guelph’s network
		Identify typical intersections including AAA facilities in the CSDG
		Update Transit Stop Guidelines to include accessible amenities as post-TMP action
		Develop a policy that indicates requirement to connect all bus stops to active transportation network
		Review the city-wide sidewalk snow plowing strategy for Active Transportation facilities to improve alignment with GSTMP goals
		Identify multi-modal winter network within the draft AAA cycling network
Review the city-wide sidewalk snow plowing strategy for Active Transportation facilities to improve alignment with GTMP goals		

#	Objective	Action
O4	Increase city-wide walking, cycling, and transit mode shares	<p>Confirm (and if necessary, update) Guelph's transit priority network</p> <p>Identify sustainable transportation design priorities across Guelph's network</p> <p>Review (and if necessary, update) street classifications for Guelph's city-wide network with consideration for sustainable transportation users</p> <p>Review (and if necessary, update) the Sidewalk Gaps Elimination program</p> <p>Develop Complete Streets connections to all employment areas with AAA AT infrastructure</p> <p>Develop Complete Streets networks in employment areas with AAA AT infrastructure</p>
O5	Manage demands to reflect capacity provided for each mode	<p>Develop a formalized TDM program charter for Guelph</p> <p>Recommend updated and new TDM policies</p>
O8	Make transportation in Guelph sustainable	Develop policy to evaluate transportation projects based on projected GHG emissions
O13	Create new tools and expand existing ones to promote and facilitate sustainable transportation modes	<p>Develop Multi-modal Level of Service (MMLOS) Guideline to evaluate multi-modal performance of streets</p> <p>Review (and if necessary, update) the City's Downtown parking strategy</p> <p>Develop a TDM checklist for development applications</p> <p>Update Guelph's TIA guidelines to include TDM strategy requirements for new developments of a certain size</p> <p>Develop Multi-modal Level of Service (MMLOS) Guideline to evaluate multi-modal performance of streets</p>

3.5 Global Mode Share Targets

The ongoing Guelph TMP update is taking a sustainable approach. A sustainable TMP is mode-share driven rather than corridor-capacity driven. At its core, the differentiating characteristic of a sustainable TMP is that it identifies mode share targets for the future and develops the plan to achieve them. Sustainable TMPs are founded on a philosophy of Complete Streets; they ultimately result in plans to change right-of-way allocations in major street corridors to accommodate a wider range of modes and provides city-wide equitable access to all modes of travel. This shift is made in response to community values rather than measured existing demands (which would reflect a priority for vehicular travel), putting strong upward pressure on sustainable mode shares to mirror the design of the network.

Previous analysis identified the proportion of trips in Guelph based on trip distance. The results of this analysis are shown in **Table 3**. The table also suggests a range of trip lengths that could be comfortably completed by that mode given ideal infrastructure.

Table 3: Mode Share Potential by Distance

Trip Distance	AM (7-9am)	PM (4-6pm)	Daily
0-2.5km <i>(Comfortable for Walking)</i>	15%	18%	14%
2.5-7.5km <i>(Comfortable for Cycling)</i>	41%	44%	39%
7.5-15km <i>(Comfortable for Transit)</i>	18%	17%	17%
15km+ <i>(Comfortable for Driving/Regional Transit)</i>	26%	21%	29%

Note that in the table that the method applied in calculating the percentages excludes trips with shorter distances from the “higher” modes, which will not necessarily be the case in reality. That is, in reality, cycling would be practical for any trip from 0 to 7.5km in length, transit may be attractive for trips from 0 to 15km, and cars can be used for a trip of any length. Adopting this “cumulative” approach provides a wider window of potential for each mode. For example, cycling during the AM peak hour could be seen as practical for 41% to 56% (41% + 15%) of Guelph residents based on their current trip lengths, as trips that are of a practical distance for walking could also be accomplished on a bike.

With the majority of the City accessible by bicycle, there is significant latent potential to shift some short- and medium-distance trips to cycling. Trip profiles developed for the TMP have found that over half (53%) of all daily trips in Guelph are less than 7.5 kilometres in length. Whereas the Census and TTS estimate that cycling makes up approximately 2% of all daily trips, the actual distances travelled by

people in Guelph on a daily basis mean that about 53% of daily trips could potentially be accomplished by cycling. This potential approaches 56% in the AM peak and 62% in the PM peak.

Previous work on the TMP update also set *Global* mode share targets for the city. A city-wide *Global* mode share target is the starting point for influencing and managing future travel choices. Traditionally, the *Global* target is set by strategic planning documents. They are usually just aspirations that reflect directionality of change from existing mode shares and community values. However, in this analysis, the aspirational mode shares were checked against existing mode share data and reviewed through a “mode share potential” lens based on existing travel demands and trip lengths. **Table 4** presents the resulting *Global* mode share targets.

Table 4: Existing Mode Share and Ultimate Global Mode Share

Travel Mode	Existing Daily Mode Share by Data Source		Strategic 2031 Target	Proposed Global Daily Target for 2031
	Census	TTS	Official Plan	
Walking	5.9%	6.4%	15%	15%
Cycling	1.6%	2.1%	3%	10%
Transit	7.1%	8.0%	15%	15%
Auto	84.5%	83.4%	67%	60%

Note that the proposed 2031 *Global* targets are not significantly different from the targets outlined in the 2018 OP. The differences stem from consideration of the potential for additional cycling activity based on observed trip lengths; some of the auto mode share was redistributed to cycling in the future as a result.

3.6 Summary

Based on a review of policy directions and mode share targets, to meet the Guelph TMP Goals, the TMP-aligned strategy for cycling would have to:

- significantly increase cycling mode share;
- increase the safety provisions in planning, design and operations;
- design cycling infrastructure for vulnerable users;
- manage demands to reflect capacity for cycling; and,
- create new and expand existing tools to promote and facilitate cycling.

4 Problems and Opportunities

Based on the established directions from the ongoing TMP update, this section summarizes the problems and opportunities for the cycling mode plan.

To ensure alignment with the policy framework, the importance of which was discussed in the *TMP Vision and Values* paper, the problems and opportunities for the cycling mode are broken down by transportation *goals* from **Section 3.3**. Note that the section is organized so that the appropriate problem or opportunity statements are listed below the corresponding *goal*.

Goal 1 - People of all ages and physical ability will be able to travel safely using any transportation mode that they choose

- Guelph's on-street cycling network does not include AAA facilities; it is designed for confident cyclists
- Typical cross-sections for Arterials and Collectors do not have options that include AAA facilities; therefore, reconstruction or existing or construction of new streets will not include AAA facilities
- Typical approaches to intersection design do not include AAA cycling facilities, and often do not include designated cycling facilities at all
- Planning and analysis tools for streets and intersections do not allow for the assessment of cyclist safety

Goal 2 – Guelph's transportation system will be easy-to-use, reliable and give people and businesses the options they want when they need them.

- The networks are not fully connected – there are gaps in the pedestrian and cycling networks
- The connections/ intersections between the pathway system and the street network are not great
- The distance between crossings of barriers exceeds desirable distances in places
- The bicycle network needs better wayfinding and clearer markings
- More bike lanes are needed in the downtown core, and along main transportation routes;
- More bike parking is needed
- Ensure community amenities, employment areas, and retail and services can be safely accessed by bike
- Add public bike repair stations throughout the bike network
- Implement a Bike Share for Guelph
- Winter maintenance practices for bike network do not clear snow and ice from bike lanes in a timely manner

Goal 3 – Transit service will provide travel times and traveler convenience at levels that are competitive with travel by car

- All transit stops and hubs need to be connected to the cycling network

Goal 4 – The carbon footprint from the transportation sector will aim for net zero by 2020

- Mode share for cycling needs to significantly increase; active management of mode share will be required

Goal 5 – Guelph’s streets, trails, and rail networks will align with the City’s land use objectives

- Existing hierarchy and cross-sections do not support the Active Transportation infrastructure needed to intensification
- Existing hierarchy and cross-sections do not align with needs of residential communities

Goal 6 – Investment decisions will be made considering the asset lifecycle costs

- Implementation of Complete Streets in existing corridors with limited ROW has resulted in cross-sections that place utilities under sidewalks, increasing the cost of maintenance

Goal 7 – Guelph’s transportation system will plan for the changes of tomorrow while delivering great service today

- Facilitate access to e-bikes/pedal assist devices

5 Recommended Future Cycling Network, Policies, and Programs

This final section of this memo presents the recommended cycling mode network, policies, and programs for Guelph in response to the existing conditions, problems, and opportunities identified earlier in the memo. Note that the recommendations for the cycling mode in this section consider the cycling mode plan in isolation of other modes. Trade-offs between different modes required for an integrated mobility solution for Guelph will be discussed and mitigated at a future stage.

The proposed cycling plan includes three inter-related strategies:

- **Strategy 1: Provide a complete, comfortable, and connected bicycle network (Networks)** that places all residents and businesses within close proximity of a bicycle route.
- **Strategy 2: Provide support facilities (Policies and Programs)** to make cycling a more attractive and convenient transportation choice.
- **Strategy 3: Develop support programs and initiatives (Policies and Programs)** to educate, create awareness, and help bolster cycling activity, in addition to infrastructure improvements.

5.1 Networks

Developing a complete and connected network of cycling facilities for all users is an important component of encouraging more cycling. A well-designed cycling network needs to be visible, intuitive, and provide connections between destinations and neighbourhoods. Ideally, a cycling network serves all users, offering practical route options for those who are interested in cycling, but who may not be comfortable riding on busy streets with high traffic volumes and/or speeds.

To make cycling a safe and comfortable transportation option for people of all ages and abilities, the TMP proposes developing a complete bicycle network connecting key destinations throughout the city. Principles that have guided the development of the cycling network plan include:

- **A Comfortable Network.** The cycling network focuses primarily on facilities that are safe and comfortable for people of all ages and abilities (AAA). The network will be designed to focus primarily on facilities that are either physically separated from motor vehicles on busy streets, creating shared spaces on quiet streets that have been designed to slow vehicle speeds and reduce motor volumes, and off-street pathways.
- **A Complete Network.** The cycling network plan establishes a city-wide ‘minimum grid’ network of bicycle routes. The plan ensures that bicycle routes are regularly spaced to ensure all residents have access to a bicycle route within a short cycling distance. A complete bicycle network in Guelph would ideally place all residents and businesses within 400 metres (or four-to-five blocks) of a AAA bicycle facility within the Older Built Up Areas of the city, and within 800 metres elsewhere.
- **A Connected Network.** It is critical that bicycle routes be direct and provide connections to key destinations to promote a convenient experience and to support bicycle travel times that are competitive with automobiles. Recognizing this, the cycling network plan ensures connections to

all key destinations in the city, including the downtown core, University of Guelph, urban centres, and schools, parks, and community facilities such as libraries and community centres.

Spine Network

A key component of the proposed cycling network is identifying a network of 'Network Spines' that connect all major destinations throughout the City. Network Spines are All Ages and Abilities cycling facilities that provide high quality and direct connections to all major destinations in the city, such as major commercial areas, parks, and schools. The intent of the City Spine network is to connect to the various growth centres and nodes in the city including urban growth centres, city nodes, community nodes, and neighbourhood nodes as defined in the Official Plan. The 'Network Spines' are spaced in closest proximity in the areas of highest cycling potential based on mode share and trip distance as noted above. This includes a denser network spacing in the Downtown and the Older Built-Up Areas. Outside these areas, Network Spines are spaced further apart, but ensure connections to all major destinations.

The Network Spines have been developed by reviewing and updating the proposed cycling networks from the Guelph Trails Master Plan, Cycling Master Plan, and Active Transportation Network Study. The conceptual spine network is shown in **Figure 2**. Network coverage is shown in **Figure 3**, illustrating that all areas of the City will be located within close proximity to a Network Spine once the network is completed.

- Proposed Classification
- Network Spine
 - Downtown Grid
 - Schools
 - Parks

- Conceptual Major Destinations
- Downtown
 - Built Up Area
 - Primary Destination
 - Secondary Destination

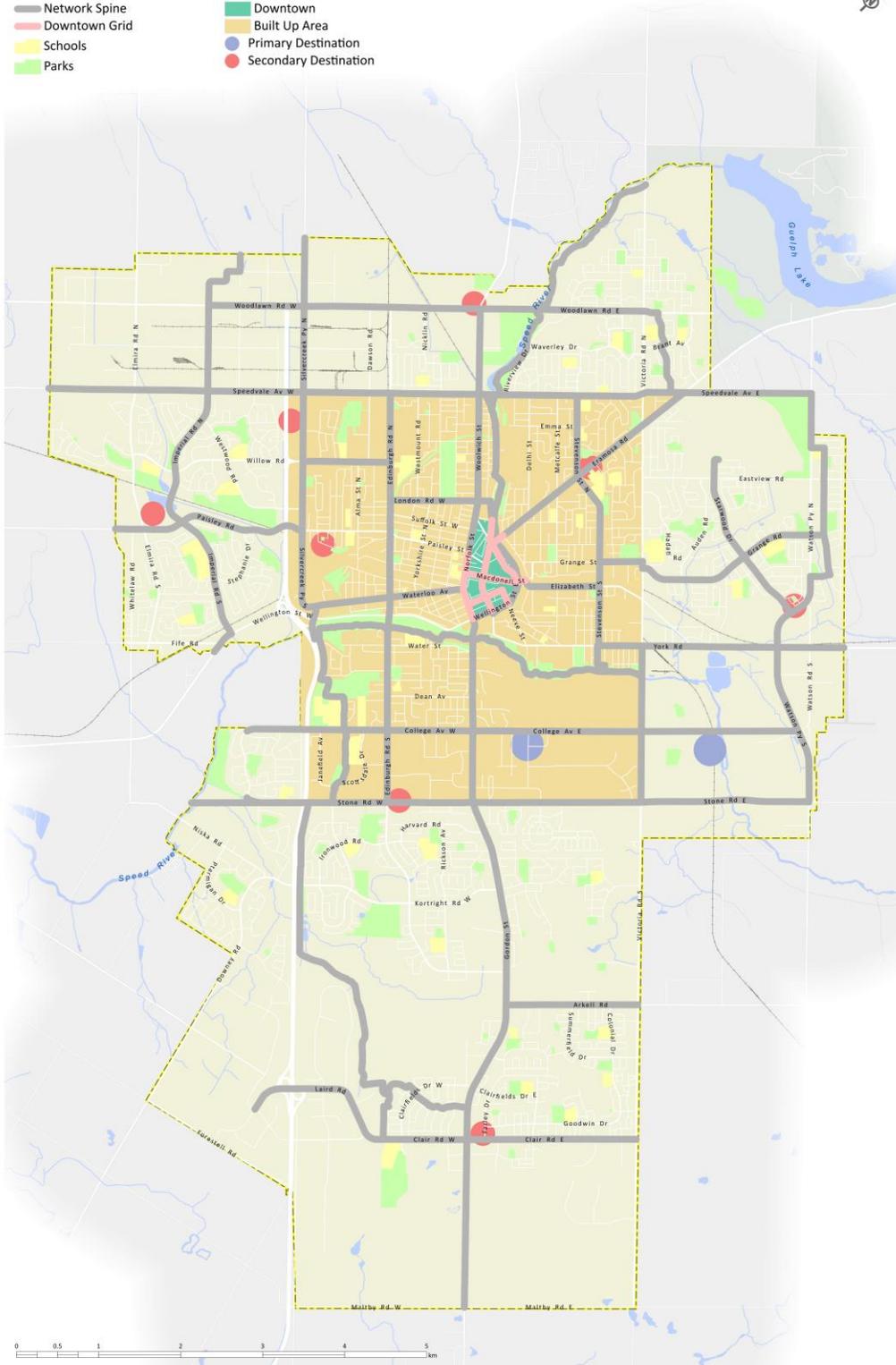
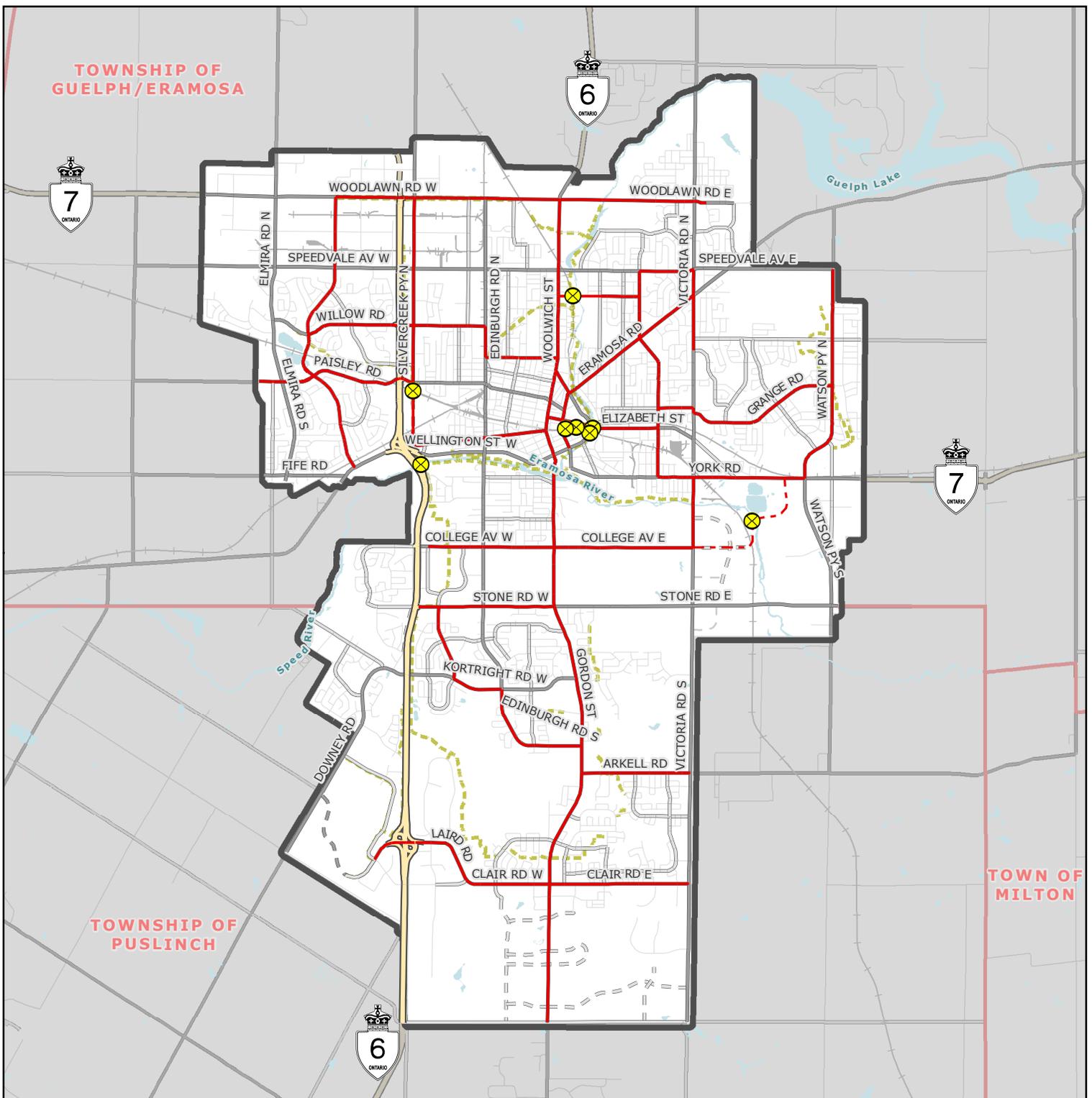


Figure 2: Conceptual Spine Network

Complimentary Network

These facilities compliment and support the AAA network. These facilities may be less comfortable to ride on because they do not include physical separation from motor vehicle traffic. Complimentary bicycle facilities are typically less expensive and are useful for expanding and connecting the overall bicycle network.

Figure 4 shows the total future recommended network (combining both the Spine and Complimentary Networks). The figure also identifies which pieces of the AAA network already exist or are planned, and which are brand new proposals.



CYCLING SPINE NETWORK

- Recommended Barrier Crossings Walking/Cycling
- On-Street Spine Cycling Network
- Future Spine Connection Route (to be determined)

BASE DATA

- Municipal Boundaries
- Active Transportation Network
- Expressway (MTO)
- Arterial Road
- Collector Road
- Local Road

- Approved Expressway (MTO) (OP)
- Approved Arterial Road (OP)
- Approved Collector Road (OP)
- Approved Local Road (OP)
- Railway
- Waterbody

Figure 4: Recommend Network - Cycling Spine Network



MAP DRAWING INFORMATION:
DATA PROVIDED BY CITY OF GUELPH 2019,
MNR 2019

MAP CREATED BY: GAM/LMM
MAP CHECKED BY: SD
MAP PROJECTION: NAD 1983 UTM Zone 17N



SCALE 1:80,000

0 0.75 1.5 KM

PROJECT: 18-8919

STATUS: DRAFT

DATE: 2022-02-25

Cycling Facilities

Although Guelph has an extensive cycling and trail network, the City's existing on-street bicycle network, and the proposed network from the 2005 Guelph Trails Master Plan and 2012 Cycling Master Plan, is made up primarily of painted bicycle lanes, signed routes, and paved shoulders. Research from across North America has found that these types of bicycle facilities are only comfortable for a small segment of the population, often referred to as "Strong and Fearless" people who are comfortable riding on major roads, regardless of motor vehicle volumes and speeds

The cycling network is made up of the following types of facilities:

Spine Network

- **Off-Street Trails** are off-street facilities that are physically separated from motor vehicles and are part of the Active transportation Network. They provide sufficient width to be used by people walking, cycling, and other forms of active transportation such as in-line skating and jogging. Multi-use trails can have paved or unpaved surfaces. Paved or firm surfaces are often preferable for people cycling and people with mobility aids or strollers. Multi-use pathways are an effective facility on roads or off-street locations where right-of-way is available. They can be installed parallel to a major roadway, sometimes referred to as Boulevard Multi-use Trails, within a park, or along a utility corridor or rail line.
- **Separated bicycle lanes** are physically separated from motor vehicle travel lanes but are located on-street within the roadway surface. Separated bicycle lanes combine the benefits of increased comfort offered by multi-use pathways due to their separation from motor vehicle traffic, with the benefits of route directness provided by on-street facilities. They also provide separation between people walking and people cycling. There are many types of separated bicycle lanes, offering varying types of treatments to provide protection. Types of physical separation include concrete barriers, curbs, planters, bollards, and other types of horizontal separation. On-street parking can also be used to provide physical separation if the separated bicycle lane is located between the sidewalk and the on-street parking lane. Separated bicycle lanes can also be elevated to sidewalk level. The increased comfort offered by separated bicycle lanes plays a significant role in increasing bicycle ridership, particularly among the 'interested but concerned' demographic. Separated bicycle lanes are generally appropriate on street with higher motor vehicle volumes (greater than 4,000 vehicles per day) and high motor vehicle speeds (greater than 50 km/h).
- **Neighbourhood bikeways** are shared bicycle routes on streets with low motor vehicles volumes (less than 1,500 vehicles per day) and low motor vehicle speeds (30 km/h or less). These streets have been optimized to varying degrees to prioritize bicycle traffic. Local street bikeways are often found on low volume streets that run parallel to major roads or within neighbourhoods on residential streets connecting existing trails. In cases where the existing streets have relatively low motor vehicle volumes and speeds, the only improvements required may be signage and pavement markings identifying the road as a bicycle route, and enhancements to crossings where the local street bikeway intersects with major roads. However, they can and should be

further enhanced with traffic calming measures such as traffic circles and traffic diverters if volumes and speeds are higher. The critical locations on local street bikeways are where these facilities intersect major roads. Crossing treatments such as traffic signals at arterial roads crossings can be used to assist cyclists, pedestrians, and others in crossing major roads, and to minimize potential conflicts with motor vehicles.

The detailed spine network is shown in **Figure 5**.

Complimentary Network

- **Painted bicycle lanes** are designated exclusively for bicycle travel. Bicycle lanes help to define the road space for cyclists and motorists. Bicycle lanes are generally suitable on streets with moderate traffic volumes. Bicycle lanes can also have a painted buffer, which can be located between the bicycle lane and other traffic lanes or parking lanes. Buffered bicycle lanes are more comfortable than conventional painted bicycle lanes as there is a spatial separation between people cycling and adjacent traffic lanes. Buffered bicycle lanes are distinguished from separated bicycle lanes, as the former do not provide a physical barrier, such as bollards, curbs or planters.
- **Paved shoulders** can be used in rural areas to provide a dedicated space for people cycling on rural roads and highways, they are located on streets without a curb.

- Proposed Facility Types
 - Separated Bicycle Lane
 - Neighbourhood Bikeway
 - Off-Street Trail
- Proposed Classification
 - Network Spine
 - Downtown Grid
- Schools
- Parks
- Conceptual Major Destinations
 - Downtown
 - Built Up Area
 - Primary Destination
 - Secondary Destination

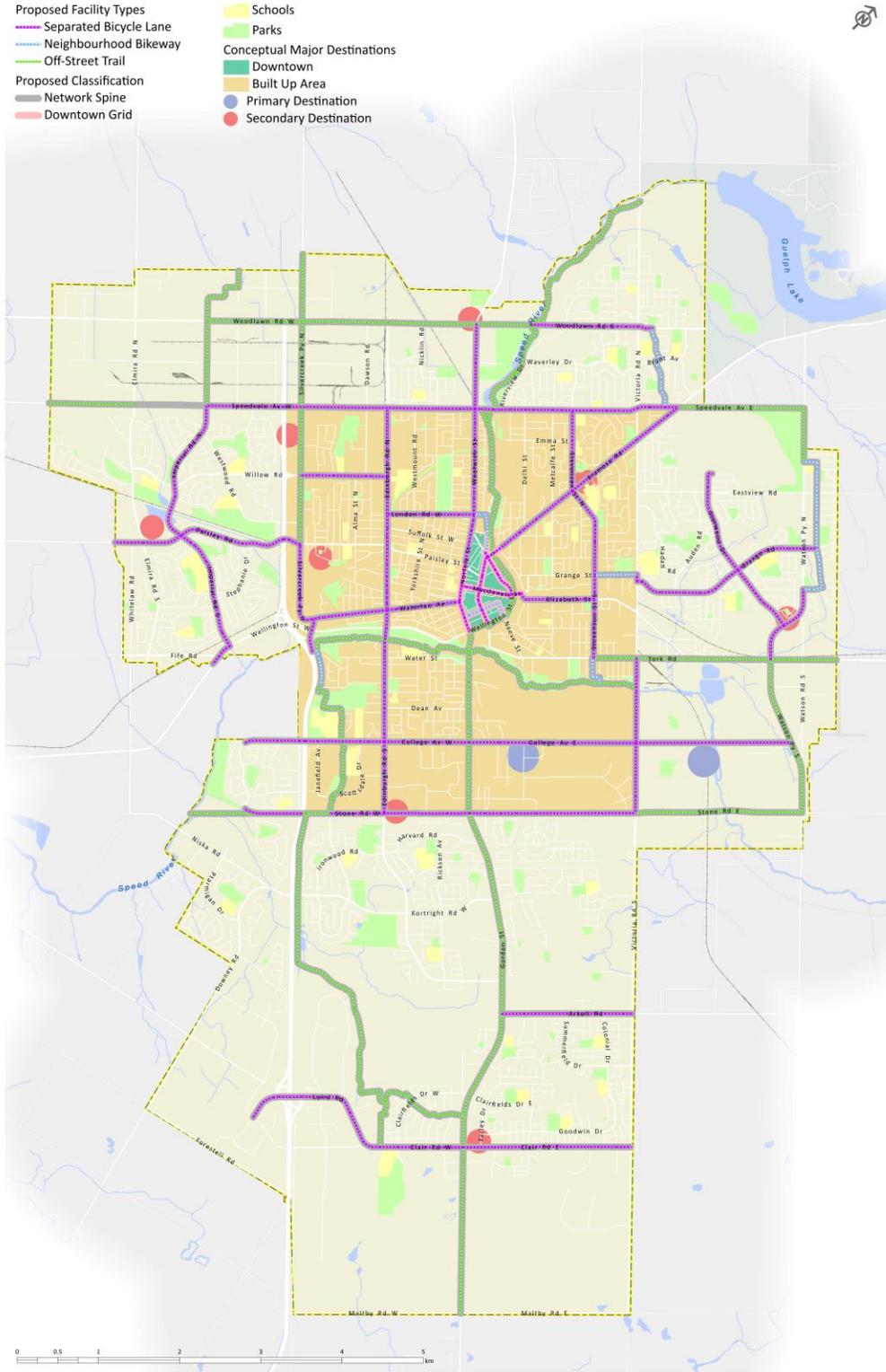


Figure 5: Spine Network (With Proposed Facility Types)

Barriers and Crossings

There are a number of barriers to cycling throughout Guelph, including major road crossings, highway crossings, rail corridors, and waterways. Improving crossings for cyclists will reduce the total distance travelled, improve safety, and make cycling a more attractive and practical transportation choice.

Many existing bridges, underpasses, and overpasses have facilities for people cycling; however, they may not necessarily feel comfortable or safe, or provide the most direct route. The City should continue to work with its partners to provide safer and more convenient cycling facilities on bridges, underpasses, and overpasses. This includes ensuring facilities meet current design standards in terms of width, clearance, and appropriate railings. Overall, cycling facilities designed to overcome major barriers should be designed using AAA principles. To enhance the connectivity and convenience of the proposed cycling network, the installation of new underpasses and overpasses should be considered as part of the implementation of the cycling plan.

In addition to bridges, underpasses, and underpasses, there are many challenging intersections that also need to be carefully addressed, as these are common locations for cycling collisions. Properly designed intersection treatments can minimize increase cyclist convenience and reduce conflicts with motorists and help to improve the overall comfort and safety of a city's bicycle network. Cycling safety improvements also serve to remove barriers and can help make cycling more attractive to people of all ages and abilities, and help to make cycling a more attractive mode. A brief description of some intersection treatments is provided below:

- **Coloured Conflict Zone Markings** can be used at conflict zones, including intersections and driveways, areas where vehicles are merging across a bicycle lane. Often denoted by the colour green, these markings increase the visibility of cyclists and highlight areas where potential conflict can occur.
- **Dashed Bicycle Lane Markings** through intersections provide direction for where cyclists should be positioned as they travel through an intersection. They also alert vehicle drivers that cyclists may be travelling in these lanes.
- **Bike Boxes** can be used at signalized intersections to provide cyclists with an opportunity to position themselves ahead of queued vehicles, and to proceed through the intersection when the signals turn green in advance of vehicles.
- **Enhanced Bicycle Signal Crossings** can include full signals or pedestrian and bicycle activated signals which can be activated by a cyclist through a range of technologies, such as bicycle loop detectors, bicycle pushbuttons, or video detection at traffic signals. Dedicated bicycle signal heads can also be considered at locations throughout the city where bicycle facilities intersect with signalized intersections.
- **Crossbikes**, pavement markings that indicate a crossing zone in which a cyclist does not need to dismount, may be combined with a pedestrian crosswalk or may be used to indicate a separate bicycle crossing.
- **Protected Intersections** utilize a combination of bicycle signal phases and design elements as well as space allocation to help protect people cycling from turning vehicles. The design of

protected intersections include a combination of corner refuge islands, a forward stop bar for bicyclists, a setback bicycle and pedestrian crossing and protected bicycle phasing help protect bicycle users in intersections as they are riding along protected bikeways.

The City should work to review existing bicycle crossings at major streets to ensure that these crossings are appropriate for the context, and provide a safe and convenient crossing for those on bicycles, including ensuring that bicycle facilities continue to and through the intersection with treatments such as cross-rides and bicycle boxes.

Design Guidelines

The TMP focuses on building a cycling culture by developing a network of bicycle facilities that are comfortable for everyone. There are a range of provincial, national, and international design guidelines that the City should follow to ensure cycling facilities are being designed to reflect current best practices to ensure a high quality user experience is provided.

The City should continue to follow guidelines such as the Ontario Traffic Manual (OTM) and Transportation Association of Canada (TAC) standards as well as national and international best practices for the design and installation of bicycle infrastructure to ensure that new cycling facilities in the City are reflective of current design standards, and congruent with cycling facilities in other parts of Ontario and elsewhere in Canada. The City should integrate these best practices in its Complete Street Design Guidelines and its roadway design standards.

Rapid Implementation

The City should consider the design and rapid installation of adjustable and temporary measures such as adjustable curbs, planters, and bollards, as a method to speed up the pace of the installation of the proposed cycling network. The temporary and movable nature of these facilities allows for both a quick and inexpensive installation, as well as easy adjustments as required.

5.2 Policies and Programs

The policy recommendations for the cycling plan are to **provide support facilities**.

In addition to on-street and off-street cycling network connections and addressing barriers, there are other bicycle infrastructure improvements that can make cycling a more attractive and convenient transportation choice. Opportunities include enhanced wayfinding, bicycle parking supply and development requirements, end-of-trip facilities, bicycle-transit integration, and supporting e-bikes, public bike share, and other forms of micro-mobility.

Bicycle Parking

Providing safe, secure parking for bicycles is an important part of improving cycling conditions throughout Guelph. It is important to recognize that the fear of bicycle theft or vandalism is a significant deterrent to cycling. There are many different types of bicycle parking that can be tailored to specific

situations. One of the key considerations in providing bicycle parking is to locate the ‘right’ bicycle parking facility in the ‘right’ place. The best type of bicycle parking facility for a specific location is driven by user needs (such as the purpose of the trip, length of the trip, and length of stay); and other factors (such as adjacent land uses, available space, and safety). Bicycle parking is typically categorized as either short-term or long-term; the differences between these two categories are summarized in **Table 5**.

Table 5 Types of Bicycle Parking

CRITERIA	SHORT-TERM	LONG-TERM
Parking duration	Less than two hours	More than two hours
Fixture types	Simple bicycle racks (Post-and-Ring, Inverted U, Coathanger, Artistic racks)	Lockers, racks in secured area
Weather protection	Unsheltered (although providing a limited number of sheltered racks is desired)	Sheltered or enclosed
Security	Unsecured	Secured, active surveillance <i>Unsupervised:</i> "Individual-secure" such as bicycle lockers "Shared-secure" such as bicycle room or cage <i>Supervised:</i> Valet bicycle parking Paid area of transit station
Typical land uses	Commercial or retail, medical/healthcare, parks and recreation areas, community centres, schools	Major transit stops/stations, workplaces, multifamily housing, temporary events (valet parking)
Other considerations	Located in the public right-of-way or on private land. Should be located as close to destinations as possible in convenient locations that are highly visible to users	Oriented towards people who need to park for an entire day or longer. Some secure bicycle parking areas offer access to bicycle repair tools, pumps, showers, or other amenities.

The City’s Zoning By-Law includes short-term and long-term bicycle parking requirements within its downtown zone for apartment buildings, townhouses, live-work and mixed use buildings, retail and office users, and other non-residential uses. In 2019, the City conducted a Parking Standards Review which provided bicycle parking recommendations.

Recommendations to improve bicycle parking in Guelph include:

- The City should add definitions for “Bicycle Parking Space, Short Term” and “Bicycle Parking Space, Long Term” be added to the City’s Zoning By-law and provide city-wide requirements as per Appendix E of the Parking Standards Review.
- The City should add bicycle parking dimensional stall requirements to the City’s Zoning By-law, including provisions for larger and emerging types of bicycles such as cargo bicycles.
- The City should add requirements for e-bicycle plug-ins to the Zoning By-law.

- The City should work with businesses to provide regularly spaced and sheltered on-street bicycle parking in the public right-of-way on all commercial streets and other commercial areas, and should also ensure that bicycle parking is provided at schools, community centres, and other important destinations.
- The City should work with businesses to develop an on-street bicycle corral program in areas of high pedestrian and cycling activity such as the downtown core and major commercial areas to provide on-street bicycle parking as an alternative to bicycle racks on sidewalks.
- Bicycle parking should be addressed as part of development site parking studies.
- The City could also develop bicycle parking and development design guidelines to regulate the overall quality and design of bicycle parking facilities. The City could also require that large employers provide secure long-term bicycle parking facilities.
- The City should work with community groups to provide temporary event parking. Temporary parking typically consists of portable racks that meet the demand for an event. Racks are clustered together, providing a higher level of security than if people were to park the bicycles on their own. Event staff can monitor the area, providing people with peace of mind while they are away from their bicycle.

End-Of-Trip Facilities

End-of-trip facilities such as showers and clothing lockers at workplaces are critical components of making cycling more convenient for employees. Many bicycle commuters have long commutes or are required to wear professional clothing attire and need a place to change before coming into the office. The City should consider adding requirements for end-of-trip facilities in the Zoning By-law.

Wayfinding

While most residents know how to travel through the city by car, it may not be obvious which routes are the best by bicycle. For both experienced and inexperienced cyclists, signage and pavement markings can help riders to find the best routes that match their cycling abilities and comfort levels and to find new routes as they become more confident. Bicycle route signage and pavement markings can also highlight for drivers and other road users where they should expect to see greater concentrations of cyclists, which can help to educate drivers and cyclists and to improve cycling safety.

Bicycle-Transit Integration

Transit integration allows people cycling to make trips that are farther than they may be able to ride and allows transit riders to reach destinations that are not adjacent to transit routes. Currently, bicycles are supported on all Guelph Transit buses through carrying racks on the front of each bus. The City also provides information on its website – *Rack, Ride, 'N' Roll with Guelph Transit!* The City should continue to work with Guelph Transit to continue to ensure transit and cycling are seamlessly integrated by continuing to ensure that all transit buses have bicycle racks, by providing bicycle parking at major transit stops, and ensuring cycling network connections to major transit stops.

Facility Maintenance

Once bicycle facilities are installed, it is important to ensure that bicycle infrastructure is well maintained on a regular basis, all year-round. Riding surfaces should be kept smooth and free of debris, while pavement markings and signage should be visible for all road users. This includes prioritizing road maintenance on bicycle routes and ensuring that durable pavement markings are used to identify bicycle routes. The City should develop and implement maintenance and cleaning guidelines for bicycle routes, prioritizing routes with high ridership.

Cycling Amenities

The City should identify opportunities to provide cycling amenities throughout the City. Cycling amenities include drinking fountains with bottle fill stations throughout City and bicycle maintenance and repair stations placed at key locations throughout the City. The City should also consider opportunities to provide a “bike traffic garden” education park with demonstration infrastructure, display boards/kiosks, bike racks, repair stand. These amenities and maintenance stations should be located on high activity bicycle routes and at major destinations such as downtown and the University of Guelph.

E-Bikes And Micro-Mobility

The growing trend towards new forms of mobility has seen the increasing popularity of electric bicycles (e-bikes), electric kick scooters (e-scooters), and other small, one-person electric vehicles. E-bikes and other micro-mobility devices are an emerging transportation mode that are gaining popularity worldwide. E-bikes have the potential for increasing the appeal of cycling to a larger group of people and extending the range of destinations that can be reached by bicycle. This is particularly important with an aging population as this helps ensure everyone can cycle or roll. The City should identify opportunities to encourage e-bikes and other forms of micro-mobility to expand active transportation options in Guelph.

Public Bike Share

Public bike share programs provide community members with temporary access to a bicycle, through payment for short-term rental periods. Public bike share programs around the world each have their own blend of unique characteristics which range from a variety of ownership and operation models, user experiences, distribution and integration with other modes and systems, among other factors. Public bike share systems can make it more convenient and enjoyable for those that walk or use transit daily and can also provide an important service for tourists. With a compact urban form and major destinations including the downtown and the University of Guelph, the City is well positioned for public bike share. The City should work with partners, including the University of Guelph, to investigate the potential of a public bike share program.

The program recommendations for the cycling plan are to provide **cycling support programs**.

Education, awareness campaigns, events and other incentive and information programs can help bolster cycling activity in addition to infrastructure improvements. While it is understood that the installation of a well-connected network of AAA cycling facilities is likely to help promote cycling within the city, it has also been found that infrastructure alone is often not enough to see higher levels of ridership. A number of support initiatives are recommended for Guelph, as described below. The City should partner with other organizations, agencies, non-profits, and other nearby communities to gain support for these programs and to help make them more effective.

Cycling Education Programs

The City should support education programs in conjunction with partner agencies to provide cycling skills and information to residents. Examples of programs include Share the Road safety campaigns, Safer School Travel Programs, and bike skills courses for both adults and school-aged children. These programs help to instill confidence in new riders, support existing riders, and educate both people cycling and people driving about the rules of the road.

Educational Materials

A challenge with the installation and implementation of new types of cycling infrastructure can be ensuring that all road users, including cyclists and motorists, are both aware of its presence, as well as how to safely navigate it, either by bicycle or in a vehicle. Often, these new facilities may be entirely new or unfamiliar to many and can result in confusion as to how to safely interact with them. Undertaking a campaign that demonstrates the proper usage of these facilities for all road users, including cyclists and motorists, can help to increase both the safety of all road users, as well as help to encourage usage of these new facilities amongst residents. Particular attention should be given to materials which explain how to use various intersection treatments, given the high percentage of collisions that occur at intersections.

Promotional Events

Promotional events help to raise awareness and showcase the benefits of cycling as healthy sustainable transportation options. These events can be mixed in with other active transportation events. Bike to Work Week is an example of an enjoyable community event that simultaneously promotes cycling and provides cycling education.

Celebrate and Promote New Infrastructure

The City should continue to find ways to celebrate the installation of new cycling projects through website material, videos, posts on social media, and events that raise awareness and get people excited about the ongoing implementation of cycling facilities. The City could consider developing a Bike Infrastructure Celebration Toolkit that would offer a checklist of items that need to be completed every time the City completes a project. This could include items such as templates for newspaper advertisements, surveys, social media posts, and press releases to help build the profile of cycling and the impacts of projects. When new major cycling projects are completed, celebration events should be

held and Guelph should use the resources in the toolkit to continue to promote new projects through social media, press releases and other forums to raise awareness and to provide people with an opportunity to try the new facility.

Bike Maps

Bike maps enable users to identify designated cycling routes that match their cycling ability and comfort level. The City should continue to update its bicycle map that identifies bicycle facility types and includes important local destinations and amenities. The map should be available in both hard copy and digital formats. The City should consider creating an interactive online map or encouraging innovation by releasing open source mapping data.

Bicycle Tourism

Cycling can contribute to the development of a healthy and diverse economy. Promoting cycling from a tourism perspective can provide a variety of benefits to the local economy. Cycling can also support and encourage tourism, as cycling tourism is the fastest growing tourism sector in Ontario and is recognized by the tourism industry as a powerful economic driver to the province. Guelph's unique natural, historic, and cultural setting along with its geographic location positions the City strongly to leverage this growing sector to be a premier cycling tourism destination. The City should leverage provincial efforts to promote cycling tourism, including working to implement the Ontario's Cycling Tourism Plan at a local level by working with the Ontario Tourism Marketing Partnership Corporation (OTMPC) to support cycling tourism marketing efforts and support Regional Tourism Organizations (RTOs) in developing partnerships to advance cycling tourism projects. The City should also partner with local organizations to promote cycling options and activities for visitors. For example, bicycle friendly businesses can increase awareness about cycling by establishing initiatives that encourage visitors, as well as residents and employees, to cycle to shops and restaurants. Promoting cycling tours in Guelph can help to increase bicycling and grow local businesses such as hotels, bed and breakfasts, restaurants, breweries, farmers markets and other arts and cultural attractions.

School Travel Planning

School Travel Planning is important to encourage children to walk or cycle to school. School Travel Planning is directed through a partnership of municipalities and school boards and has two mandates: to promote the use of active school travel, and to reduce school traffic. School Travel Planning typically focuses on 6 E's: engineering, education, encouragement, enforcement, evaluation, and equity. Solutions are customized for each school site and often involve a group of interventions that might include Sidewalk Smarts education, Trailblazer patrollers, active transportation celebration days, tactical urbanism, walking clinics, the CAA Foot Patrol program, Drive to Five campaigns, Cycling into the Future education, bike rodeos, Walking School Buses and creative interventions customized to unique school scenarios. The City should continue to partner with school boards and other partners to fund and support School Travel Planning initiatives. This action would result in greater social attention and

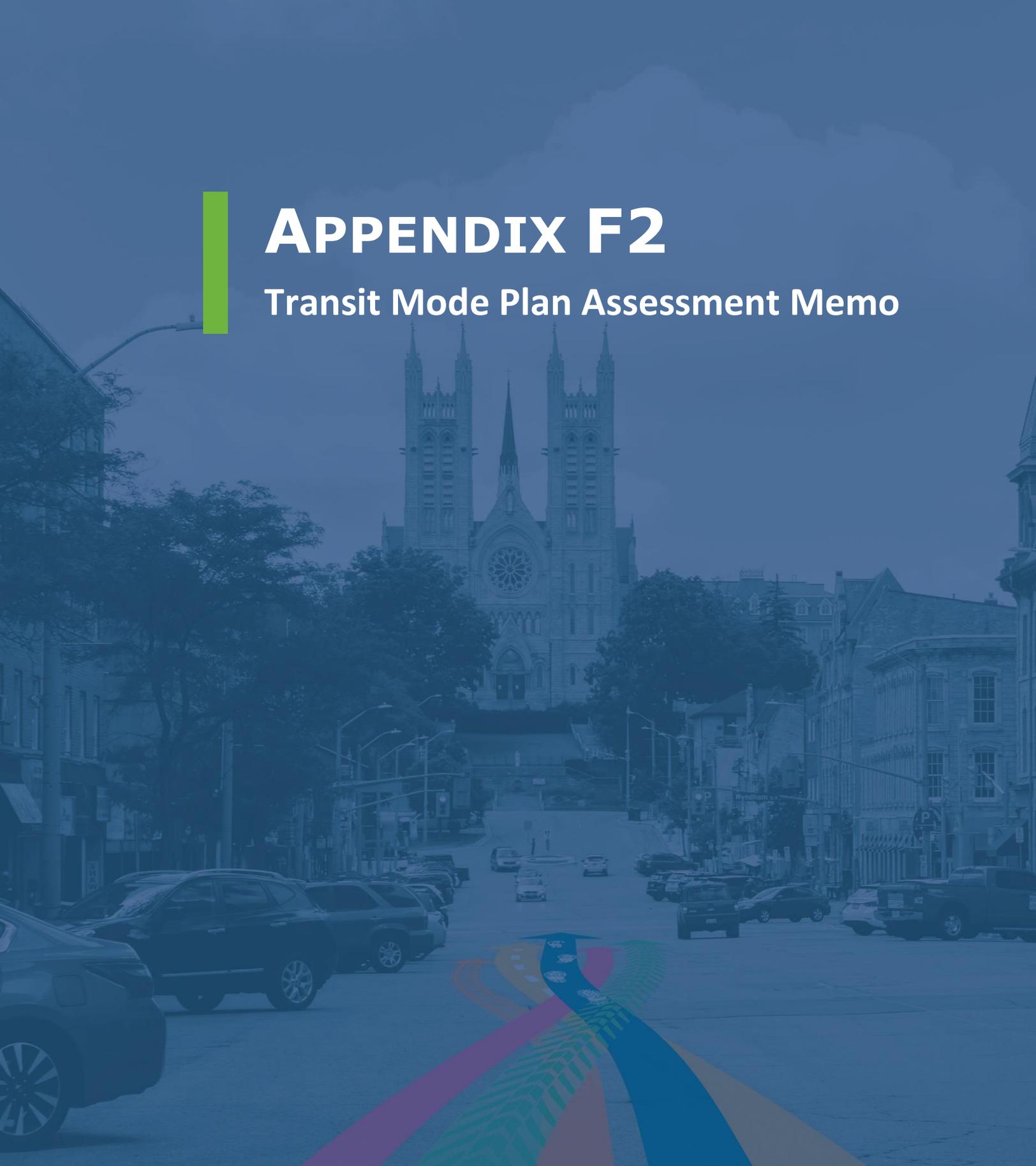
understanding of the impacts of mode choice; greater safety for those who are using active school transportation; and a gradual shift in mode choice away from family vehicle use.

University of Guelph Partnerships

The University of Guelph is a major cycling destination in Guelph. Through its Transportation Demand Management (TDM) Plan, the university is already supporting active transportation through the planning and funding of cycling routes, safe and secure bicycle storage on campus, the construction and repair of pathways from transit stops, and increasing the campus bicycle rack capacity to store 1,200 bicycles in exterior bike racks. Parking and Transportation Services will be installing covered and/or secure bicycle facilities across campus. The first two locations will be in the campus core near the University Center and on the west campus. In subsequent years, with input from the Bike Unit, Campus Community Police, additional locations for bicycle storage facilities will be identified across campus. The City should work with the University as an important partner to support investments in cycling infrastructure and support facilities and programs to ensure seamless connections to and from campus.

Dedicated Funding For Support Programs

An important component of installing new infrastructure projects is ensuring that residents are aware of new investments and are familiar with how to use the facilities. Promotion of new infrastructure projects helps to build education and share safety information specific to new facilities that may be unfamiliar. To ensure appropriate funds are available for education, awareness and encouragement, a portion of every active transportation project's capital budget should be allocated to education, awareness and encouragement. The City should develop a budgeting checklist for all new projects to ensure project funding includes education, awareness, and encouragement as part of the capital budget.



APPENDIX F2

Transit Mode Plan Assessment Memo

Memo



To: Terry Gayman, City of Guelph
Gwen Zhang, City of Guelph

From: Shawn Doyle, Dillon Consulting Limited

cc: Jennifer Juste, City of Guelph
Sean Rathwell, Dillon Consulting Limited
Tom Pacy, Dillon Consulting Limited
Mariam Bello, Dillon Consulting Limited

Date: May 26, 2021

Subject: Assessment of Mode Plans - Transit

Our File: 18-8919

1 Introduction

1.1 Purpose

This memo assesses the alignment of the existing plans and networks for transit with the goals and objectives for transit in the Guelph Transportation Master Plan (TMP). This memo achieves this by:

- Identifying existing and planned directions for the transit mode in Guelph;
- Presenting the existing transit network;
- Summarizing the policies and programs that currently guides the transit mode;
- Reviewing mode-specific problems and opportunities in alignment with the updated TMP policy framework; and
- Ultimately presenting recommendations for Guelph's future transit network, policies, and programs.

1.2 Background

During the second half of the 20th Century – the “automobile era” – many cities were built to meet the needs of the car. New streets were built to be wide, parking was plentiful and free, and cities were developed to accommodate the car because travel by personal vehicle allowed us to go farther, faster.

But a new era of transportation is beginning, caused by growing awareness and impacts of climate change, new trends and technologies, shifts in how we live, work and shop, increasing congestion and persistent road safety concerns.

The Guelph TMP is looking to create a more sustainable transportation strategy for Guelph moving forward. The vision, values, and goals for the Guelph TMP all speak to a shift in strategy aimed at accommodating a broader community of travellers, balancing mobility for cars with safety for all, and increasing access to a broad range of travel options for all trip purposes. This shift in strategy will require

updates to a number of networks, policies, and guidelines related to planning, design, and operations of streets.

2 Existing and Planned Conditions

This section identifies the existing and planned conditions for Guelph's transit mode plan as identified in strategic plans, network plans, policies, and programs.

2.1 Strategic Plans

There are two documents that currently provide guidance for the planning and development of transit service and infrastructure in Guelph:

1. 2010 Guelph Transit Growth Strategy and Plan and Mobility Services Review (2010 Transit Strategy); and,
2. 2015 City of Guelph Transit Priority Project (2015 Transit Priority Project).

The following sections summarize the goals and objectives for Guelph Transit outlined in these plans as well as the current transit network, policies, programs and infrastructure.

2010 Transit Strategy

The 2010 Transit Strategy provided the following vision for Guelph Transit:

"Guelph Transit is the preferred transportation mode for the residents, employees and visitors of Guelph over the single occupant vehicle"

In addition to this vision, the Strategy described three primary goals, each with several supporting objectives that reflect and support the vision. These are summarized below.

Goal 1 – Community Focus

"Supports and promotes a sustainable, equitable and environmentally responsible community on its own and in partnership with neighbouring communities"

- a. A Vision of Guelph - Work cooperatively with other City departments and members of the community to support the strategic vision, goals and objectives of the City of Guelph.
- b. Environmental Protection - Contribute to air quality and energy reduction targets as outlined in the Community Energy Plan.
- c. Ridership Growth – Move towards a transit mode share target of 15 percent by 2031.
- d. Seamless Connections – Promote and facilitate seamless connections between transit vehicles, other travel modes and interregional services within Guelph and throughout the larger commutershed.
- e. Affordability – Ensure Guelph Transit continues to be an affordable transportation option for all residents, employees and visitors within Guelph.
- f. Quality of Life – Support livable communities, walkable neighbourhoods and a strong local economy through access to neighbourhoods, major employment and activity centres.
- g. Equity – Deliver a family of services, which provides mobility for all members of the community, regardless of their abilities, through access to efficient public transit.

- h. Sustainable Funding – Secure long-term, sustainable funding sources to support existing and expanded levels of transit service.
- i. Response to Growth – Respond to development, growth pressures and changing demographics in a proactive manner, recognizing that transit is an integral part of urban development and environmental sustainability.

Goal 2 – Customer Focus

“Maximize ridership on Guelph Transit by providing a level of service to customers that is a competitive alternative to the single occupant vehicle”

- a. Service Reliability – Provide a reliable and dependable service to customers that minimizes waiting times and transfers.
- b. Availability – Maximize the availability of transit to all members of the community, regardless of their abilities. This includes:
 - Spatial Availability – access to bus stops and facilities;
 - Temporal Availability – service provided when required by users;
 - Financial Availability – affordable to users with limited financial means;
 - Information Availability – communication of service use and system changes; and
 - Capacity Availability – ability to accommodate all customers on all vehicles.
- c. Safety, Comfort and Convenience – Promote the safety, comfort and convenience of the customer both on board the vehicle and at designated interface points.
- d. Travel Time – Deliver a service that provides competitive travel times to single occupant vehicle travel for the entire duration of the trip.

Goal 3 – Transit System Focus

“Pursue effective, efficient and innovative approaches to ridership growth in response to changing community needs, and deliver a service quality that exceeds customer expectations.”

- a. Image – Promote a positive image of Guelph Transit in the community as the preferred transportation mode for diverse markets of residents, employees and visitors.
- b. Customer Service – Focus on the customer’s experience as the primary approach to strategy decision making and service delivery, including:
 - Innovative service delivery options;
 - Cleanliness of vehicles;
 - Safety and reliability of vehicles;
 - Cleanliness of bus stops, shelters and terminals;
 - Advanced information and communications systems;
 - Efficient management of customer complaints and compliments;
 - Staff trained to exceed customer expectations; and
 - Highest priority for personal safety and security of staff and customers.

- c. Effectiveness and Efficiency – Provide an effective and efficient transit service with appropriate sharing of costs among passenger fares, the general municipal tax base, development charges and other revenue sources.
- d. Innovation and Partnerships – Stress innovation and the creation of partnerships in the planning delivery and finding of services.
- e. Fleet Reliability – Develop an effective response for handling interruptions to service and minimize the frequency and duration of disturbances.
- f. Adherence to Quality – Apply the goals and objectives of this plan to set the framework for the development of a comprehensive performance management program, which will regularly monitor and evaluate the effectiveness and quality of transit services provided.

2015 Transit Priority Project

This project had two main objectives:

1. To identify locations for potential transit priority measures and develop appropriate measures for each location; and,
2. To identify locations for potential rapid transit services that operate faster than conventional local bus services.

2.2 Networks

The 2010 Transit Strategy undertook a thorough review of the transit route network at that time and recommended a variety of route and service changes and improvements. Many of these were subsequently implemented and, in the ten years since the Strategy was completed, additional route and service changes have been undertaken in order to respond to customer, community and resource needs. The result is that today, in 2020, Guelph Transit operates a hybrid route network that utilizes radial routes operating from hubs as well as cross-town style routes that connect hubs together. The specific features of the route network are summarized below:

- A primary transit terminal in downtown Guelph that serves as a focal point for several radial transit routes that travel to most areas of urban Guelph north of the Eramosa River. This terminal also services a cross-town route and other routes traveling south of the River, GO Transit service, and Via Rail;
- Other transit terminals located at the Smart Centres location north of Woodlawn Road, the Stone Road Mall, the University of Guelph, and in the vicinity of the Gordon Street and Clair Road intersection. These terminals serve as focal points for local transit services and cross-town services and, in the case of the University of Guelph terminal, serve a major transit city destination;
- A north-south cross-town route along the Gordon/Woolwich corridor that connects all of the terminals except the one at the Stone Road Mall;
- A pair of cross-town routes operating in a circle around Guelph and connecting the Smart Centres, Stone Road Mall and University terminals;

- A number of transit routes serving the area south of the Eramosa River that connect communities to one or two of the terminals in this area;
- Several routes that provide supplemental service to and from the University; and,
- A parallel mobility bus service for eligible customers who are unable to use the primary transit system.

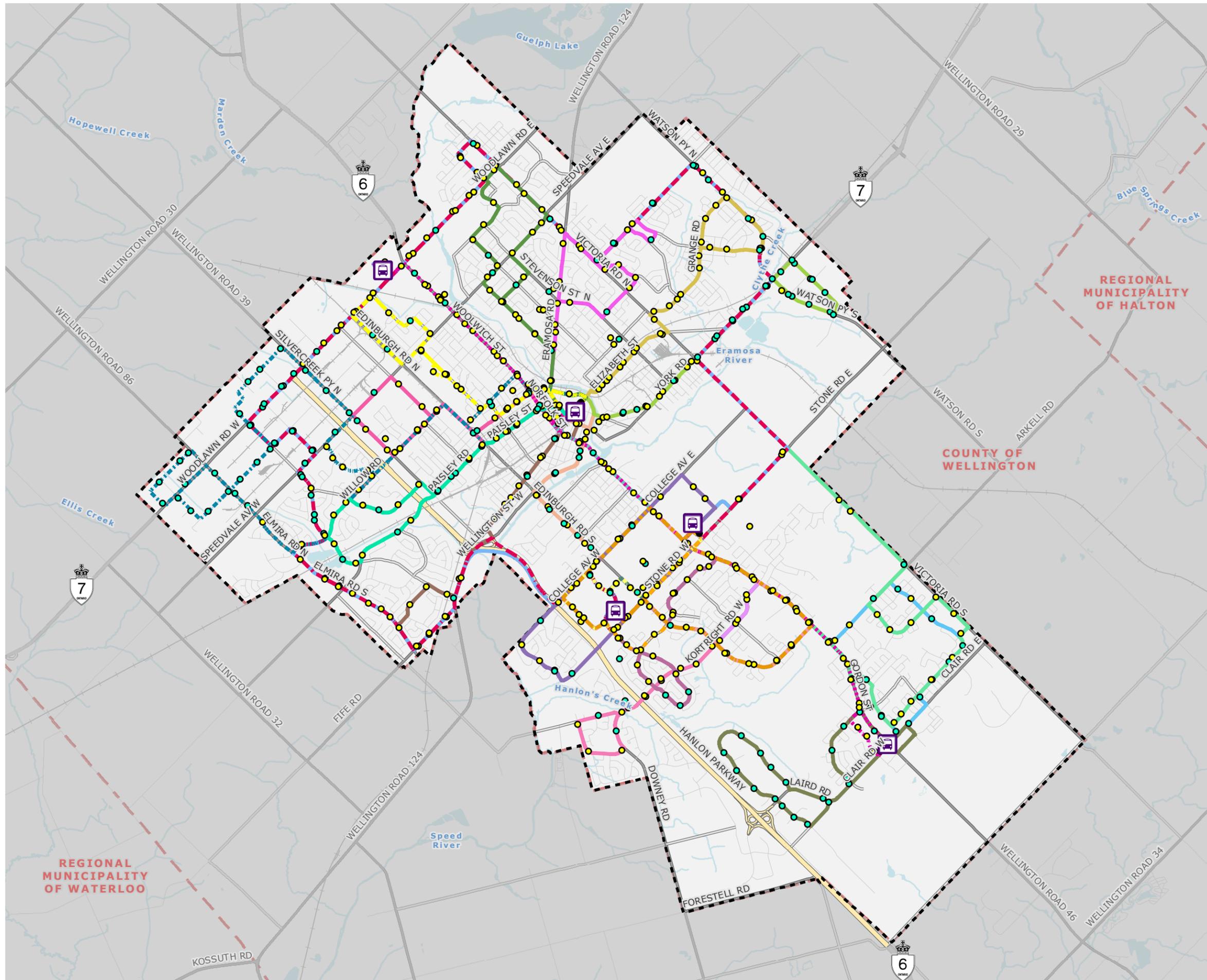
An image of the most recent (September 2019) Guelph Transit system map is provided in Figure 1.

Both the 2010 Transit Strategy and the 2015 Transit Priority Project discussed potential higher order transit corridors that should be considered for transit priority measures, bus lanes, and or bus rapid transit (BRT) service. Both plans emphasized potential facilities on the Gordon/Woolwich corridor between Woodlawn Road and Clair Road and the Stone Road corridor between the Hanlon Expressway, the University of Guelph and the Innovation District. The 2015 Transit Priority Project also both the Speedvale Avenue and Woodlawn Road corridors between Elmira Road and Victoria Road. A plan showing the locations of all these corridors is provided in Figure 2.

The 2010 Transit Strategy also discussed the potential for using the Guelph Junction Railway as a potential transit corridor. It did not identify an immediate requirement for the corridor for public transit purposes, but did recommend protecting the corridor and four potential station areas.

TRANSIT NETWORK

FIGURE 1



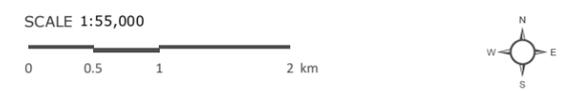
- Guelph Transit Main Transfer Point
- Bus Stop - with hard surface
- Bus Stop - without hard surface

- GUELPH TRANSIT ROUTES**
- | | |
|--------------------------------------|----------------------------------|
| 1 - Edinburgh College | 18 - Watson Woodlawn |
| 2 - College Edinburgh | 20 - Northwest Industrial |
| 3 - Westmount | 40 - Scottsdale Express |
| 4 - York | 41 - Downtown-University Express |
| 5 - Goodwin | 50 U - Stone |
| 6 - Harvard Ironwood | 51 U - Janefield |
| 7 - Kortright Downey | 52 U - Kortright |
| 8 - Stone Road Mall | 56 U - Colonial |
| 9 - Waterloo | 57 U - Ironwood |
| 10 - Imperial | 58 U - Edinburgh |
| 11 - Willow West | 99 - Mainline |
| 12 - General Hospital | |
| 13 - Victoria Road Recreation Centre | |
| 14 - Grange | |
| 15 - University College | |
| 16 - Southgate | |
| 17 - Woodlawn Watson | |

- BASE DATA**
- City of Guelph
 - Railway
 - Watercourse
 - Waterbody
 - Municipal Boundary



TRANSPORTATION MASTER PLAN

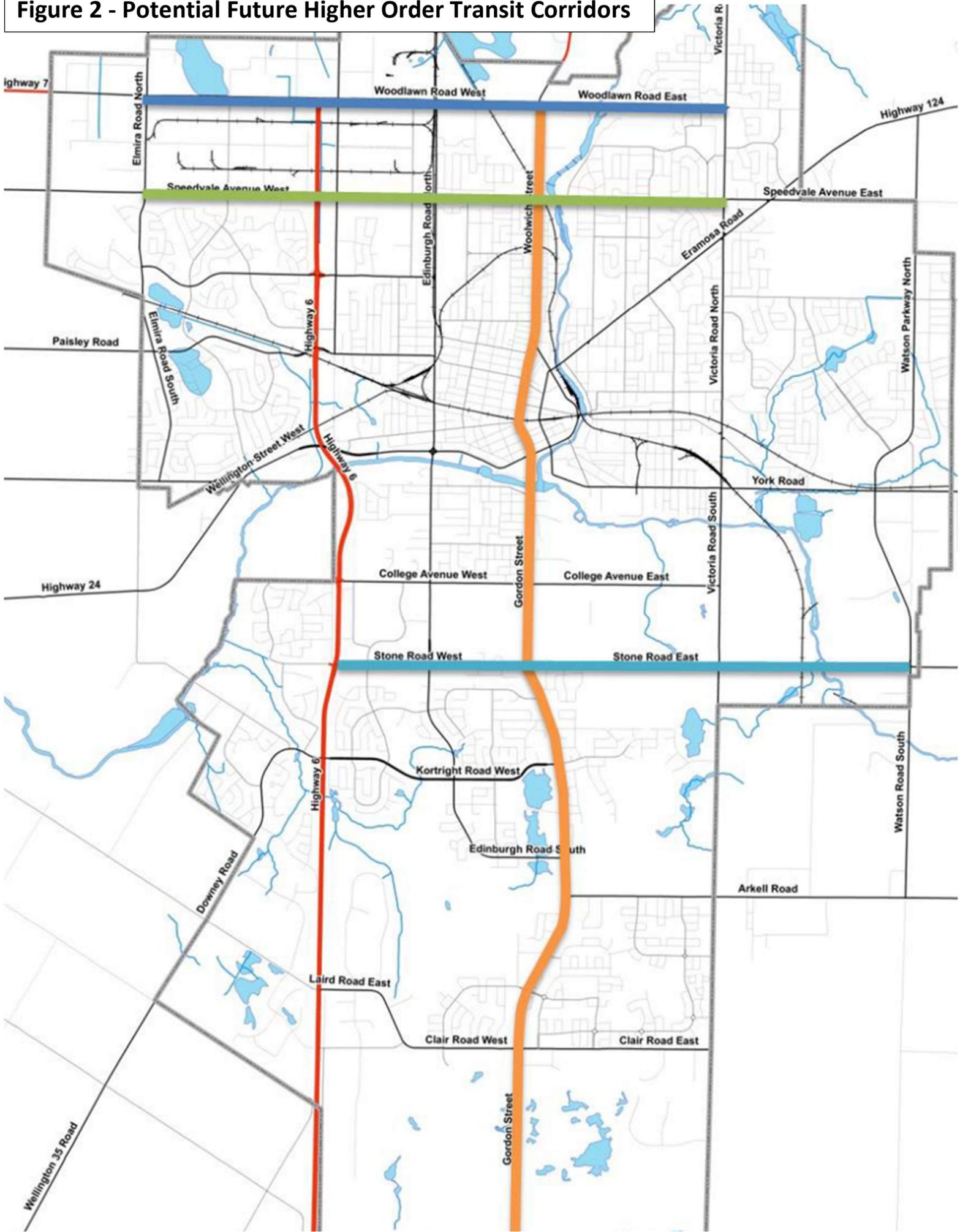


MAP DRAWING INFORMATION:
 DATA PROVIDED BY CITY OF GUELPH 2019, MNR 2019
 MAP CREATED BY: LK
 MAP CHECKED BY: SD
 MAP PROJECTION: NAD 1983 UTM Zone 17N



PROJECT: 188919
 STATUS: DRAFT
 DATE: 2020-08-25

Figure 2 - Potential Future Higher Order Transit Corridors



2.3 Policies and Programs

Guelph Official Plan

The City of Guelph Official Plan (2018 Consolidation) outlines a number of broad transit supportive transit-related policies and directions:

- The City's transportation system will be planned and managed to:
 - i. Provide connectivity among transportation modes for moving people and goods;
 - ii. Offer a balance of transportation choices that reduces reliance upon any single mode and promotes transit, cycling and walking;
 - iii. Be sustainable, by encouraging the most financially and environmentally appropriate mode for trip-making;
 - iv. Offer multi-modal access to jobs, housing, schools, cultural and recreational opportunities and goods and services;
 - v. Provide for the safety of system users; and
 - vi. Ensure coordination between transportation system planning, land use planning and transportation investment.
- In planning for the development, optimization, and/or expansion of new or existing transportation infrastructure the City will:
 - i. Consider increased opportunities for moving people and moving goods by rail, where appropriate;
 - ii. Consider separation of modes within transportation corridors, where appropriate;
 - iii. Use transit infrastructure to shape growth and planning for high residential and employment densities that ensure the efficiency and viability of existing and planned transit service levels;
 - iv. Place priority on increasing the capacity of existing transit systems to support intensification areas;
 - v. Expand transit service to areas that have achieved, or are planned to achieve, transit-supportive residential and employment densities, together with a mix of residential, office, institutional and commercial development wherever possible;
 - vi. Facilitate improved linkages from nearby neighbourhoods to Downtown, and other intensification areas; and
 - vii. Increase the modal share of transit.
- Public transit will be the first priority for vehicular transportation infrastructure planning and transportation investments.

In addition to these broad policies, the Official Plan also discusses a number of specific public transit policies and directions that the City and the transit system will follow:

1. The City shall continue to increase connectivity and integration between public transit and other modes of travel through measures such as installing bicycle racks on buses, including bicycle

- parking at transit terminals, designing for pedestrian and cyclist access to terminals and providing for "park and ride" opportunities.
2. To ensure that public transit is an attractive, energy efficient and convenient means of travel the City will:
 - i. Plan for a compact urban form by promoting mixed and transit- supportive land uses, urban intensification, a strong Downtown and urban structure of nodes and corridors;
 - ii. Consider public transit as a high priority for transportation infrastructure planning, second only to active transportation;
 - iii. Ensure the creation of a road network that permits reasonable walking distances to and from transit stops for a majority of residences, jobs and other activities in the area;
 - iv. Ensure that the phasing of new development allows for the provision of transit service in the early phases of new development so that using transit is a viable option for the first occupants;
 - v. Require development proponents to plan for the provision of transit in an integrated and comprehensive manner including the location of transit routes and facilities, where appropriate; and
 - vi. Consider the impacts on transit when planning the locations for higher density housing, commercial and employment centres.
 3. In addition to transit-supportive land use development, a high level of service, reliability and amenities are needed to attract riders. The City will promote greater use of transit by:
 - i. Maintaining efficient transit service through improvements to travel time, reliability, overall routes and regularity of service, especially for those routes that link areas of population and employment concentrations;
 - ii. Providing transit priority measures to lessen delays on transit vehicles caused by traffic congestion and traffic control signals, where appropriate;
 - iii. Ensuring that bus stops are provided at regular intervals, generally within 400 metres of every residence and business, to promote accessibility to all areas; Providing adequate facilities to improve rider amenities such as bus stop shelters and routes and schedule information; and
 - iv. Facilitating access to public transit for persons with disabilities by providing special equipment and services where warranted, designing stops, shelters and terminals for accessibility and taking other actions that facilitate improved access to transit services.
 4. In the review of development applications that involve major traffic generators and of facilities potentially used by transit riders, the City may require the provision of on-site or off-site facilities, such as transit user amenities or road improvements that will facilitate public transit service as appropriate.

2010 Transit Strategy

The 2010 Transit Strategy was developed considering the planning context of a long list of relevant policy and guiding documents at that time, including:

- Provincial Growth Plan (Places to Grow);
- The Official Plan and OPA 39;
- Envision Guelph Official Plan Update;
- Strategic Plan 07 and Beyond;
- Community Energy Plan;
- Recreation, Parks & Culture Strategic Master Plan / South End Centre Component Study;
- Prosperity 2020 Phase 1: Economic Base Analysis Report;
- 2002 Guelph Transit Route Planning, Service Design and Downtown Transfer Point Relocation Study;
- Guelph-Wellington Transportation Study (GWTS), July 2005;
- Metrolinx Regional Transportation Plan (The Big Move); and
- Accessibility for Ontarians with Disabilities Act (AODA).

Based on these guiding documents, the Strategy considered both conventional and mobility bus services and established recommended routes, programs and implementation plans to guide Guelph Transit over the following years.

3 TMP Update Directions for Transit

This section documents the vision, values, and goals that were developed for the policy framework of the ongoing Guelph TMP update. It also documents the objectives related to transit. Note that all of the policy frameworks presented in this section were finalized as part of an earlier stage of the TMP update.

3.1 Vision

The TMP update established the following vision:

“Transportation in Guelph will be safe, equitable, sustainable, complete, affordable, and supportive of land use.”

This vision means that Guelph provides safe transportation networks for people to walk, wheel, and use vehicular transportation through all corners of the city. Transportation is geographically equitable – people can complete their trips comfortably and in a reasonable time, regardless of if they own a vehicle, which part of Guelph they are coming from, and which part of Guelph they are going to. Most people travel sustainably, minimizing the negative impacts of their trip on the environment. This is possible because the network for each mode of travel is complete, enabling continuous multimodal travel throughout our city. We accomplish these things in a way that is affordable for the user and makes the most financially efficient use of our investments. Finally, our transportation network is supportive of land use, meaning that we design our streets to be context-sensitive to support the growth of our community.

3.2 Values

The following transportation values for transportation in Guelph combine principles of the community values of the 2019 Guelph Community Plan with the values identified in the transportation vision of Guelph’s 2018 OP. The transportation values include:

- Safe
- Equitable
- Complete
- Sustainable
- Affordable
- Supportive of Land Use

Safe

Safe means a transportation network where users of all modes can expect to travel hazard-free and complete trips without fatal or serious injury.

In making decisions regarding safety, the most vulnerable users will be prioritized first. Decisions affecting the transportation network must first and foremost ensure the safety of pedestrians and

cyclists, as these are the users who are at the greatest risk. Next, the safety of the transit mode, a vehicular mode which carries many users and is sometimes treated with animosity by other vehicular modes, and then other vehicular modes.

Equitable

Equitable transportation speaks to a network that provides people with the ability to complete trips comfortably, safely, with dignity, and in a reasonable time, whether or not they own a vehicle. This applies throughout Guelph's geography, to all origins and destinations within the city. Additionally, by focusing on transportation equity, the City is seeking to ensure that members of marginalized communities have the same access/opportunities in finding and retaining employment.

Equity is closely linked to making streets in Guelph complete so that people are free to move regardless of their financial means, accessibility requirements, or other needs.

Complete

A complete - or a connected - network is one that treats all modes of travel as equal in importance. In essence, a multimodal network allows anyone to viably complete their trip by any mode of their choice. A complete network also ensures connectivity within and between networks for all modes. This means smooth continuous travel is possible without network gaps for users of any mode and that the transportation system is interconnected and reflects modern forms of mobility, allowing users to seamlessly transfer between modes for various portions of their trip. And in a complete transportation network, all parts of the city are connected via the various modal networks. This enables Guelph to feel as one community rather than separate pieces.

Sustainable

A sustainable transportation network is one that promotes healthy lifestyles and environmental stewardship. To promote healthy lifestyles and environmental sustainability, Guelph will encourage a shift towards active transportation modes (i.e. cycling and walking) and transit. The transportation system will reflect these modal priorities.

Affordable

An affordable transportation network is one where investment decisions are made while keeping in mind the lifecycle costs of the decision. This means that both the capital and the operation/maintenance costs are considered. In an affordable transportation network, cost effective solutions are valued above ones that provide the same value but cost exponentially more. An affordable transportation network is also one that considers the user costs associated with each trip.

To offset maintenance and operations costs, an affordable system looks for opportunities to maximize revenue generation from transportation network by exploring new revenue generation opportunities.

Supportive of Land Use

A transportation system that is supportive of land use creates context-sensitive transportation links and enables the development of healthy high- and medium-density mixed use communities. Such communities have strong active transportation connections but also enable their residents to travel via any mode of their choice. A land use supportive transportation network also ensured that all people are well connected to their places of work by multimodal transportation.

3.3 Goals

The TMP update set seven goals, based on the previously presented vision and values:

1. People of all ages and physical ability will be able to travel safely using any transportation mode that they choose
2. Guelph's transportation system will be easy-to-use, reliable and give people and businesses the options they want when they need them.
3. Transit service will provide travel times and traveler convenience at levels that are competitive with travel by car
4. The carbon footprint from the transportation sector will aim for net zero by 2050
5. Guelph's streets, trails, and rail networks will align with the City's land use objectives
6. Investment decisions will be made considering the asset lifecycle costs
7. Guelph's transportation system will plan for the changes of tomorrow, while delivering great service today

3.4 Objectives

There are a number of objectives and actions related to transit that will be undertaken in order to achieve the goals outlined in the previous section. Those objectives and actions that speak specifically to the transit system or services are outlined in Table 1.

Table 1: Transit-Related TMP Objectives and Accompanying Actions

#	Objective	Action
O3	Design new and transform existing streets and pathways to meet AAA guidelines for vulnerable users	<ul style="list-style-type: none">• Update Transit Stop Guidelines to include accessible amenities as post-TMP action.• Develop a policy that indicates requirement to connect all bus stops to active transportation network
O4	Increase city-wide walking, cycling and transit mode shares	<ul style="list-style-type: none">• Confirm (and, if necessary, update) Guelph's transit priority network.• Identify sustainable transportation design priorities across Guelph's network.
O6	Reduce transit travel time to make it competitive with car travel time	<ul style="list-style-type: none">• Update transit strategy as a post-TMP action.• Extend frequent transit service to more employment hubs as part of the Transit Master Plan update.

#	Objective	Action
O7	Improve transit system convenience for transit users	<ul style="list-style-type: none"> Connect more key employment OD pairs during peak periods with direct transit services as part of the Transit Master Plan update. Study opportunities for ASD and micro-mobility in Guelph.
O10	Increase use of transit for trips between Guelph and adjacent communities	<ul style="list-style-type: none"> Include considerations for the Downtown transit hub context in the Complete Streets Design Guide. Complete a study on the feasibility of Park and Ride.
O11	Improve alignment of street design with objectives of intensification strategy	<ul style="list-style-type: none"> Review (and, if necessary, update) Guelph Transit service guidelines as a post TMP action.

3.5 Global Mode Share Targets

The ongoing Guelph TMP update is taking a sustainable approach. A sustainable TMP is mode-share driven rather than corridor-capacity driven. At its core, the differentiating characteristic of a sustainable TMP is that it identifies mode share targets for the future and develops the plan to achieve them. Sustainable TMPs are founded on a philosophy of Complete Streets; they ultimately result in plans to change right-of-way allocations in major street corridors to accommodate a wider range of modes and provides city-wide equitable access to all modes of travel. This shift is made in response to community values rather than measured existing demands (which would reflect a priority for vehicular travel), putting strong upward pressure on sustainable mode shares to mirror the design of the network.

Previous analysis identified the proportion of trips in Guelph based on trip distance. The results of this analysis are shown in Table 2. The table also suggests a range of trip lengths that could be comfortably completed by that mode given ideal infrastructure.

Table 2: Mode Share Potential by Distance

Trip Distance	AM (7-9am)	PM (4-6pm)	Daily
0-2.5km (Comfortable for Walking)	15%	18%	14%
2.5-7.5km (Comfortable for Cycling)	41%	44%	39%
7.5-15km (Comfortable for Transit)	18%	17%	17%
15km+ (Comfortable for Driving/Regional Transit)	26%	21%	29%

Note that in the table that the method applied in calculating the percentages excludes trips with shorter distances from the “higher” modes, which will not necessarily be the case in reality. That is, in reality, cycling would be practical for any trip from 0 to 7.5km in length, transit may be attractive for trips from 0 to 15km, and cars can be used for a trip of any length. Adopting this “cumulative” approach provides a wider window of potential for each mode. For example, cycling during the AM peak hour could be seen

as practical for 41% to 56% (41% + 15%) of Guelph residents based on their current trip lengths, as trips that are of a practical distance for walking could also be accomplished on a bike.

The urban, developed portions of the City of Guelph are all served by Guelph Transit. Census information and the TTS all indicate that between 7% and 8% of all daily travel is made on transit. Trip profiles developed for the TMP have found that about 70% of all daily trips are less than 15 kilometres in length, and ideally suited for travel by active transportation and transit.

Previous work on the TMP update also set Global mode share targets for the city. A city-wide Global mode share target is the starting point for influencing and managing future travel choices. Traditionally, the Global target is set by strategic planning documents. They are usually just aspirations that reflect directionality of change from existing mode shares and community values. However, in this analysis, the aspirational mode shares were checked against existing mode share data and reviewed through a “mode share potential” lens based on existing travel demands and trip lengths. The proposed transit target of 15% of all daily travel is shown, along with the targets of other modes, in Table 3.

Table 3: Existing Daily Mode Share and Ultimate Global Mode Share Targets

Travel Mode	Existing Census Mode Share	Existing TTS Mode Share	2031 Official Plan Target Mode Share	Proposed Global Target Mode Share for 2031
Walking	5.9%	6.4%	15%	15%
Cycling	1.6%	2.1%	3%	10%
Transit	7.1%	8.0%	15%	15%
Auto	84.5%	83.4%	67%	60%

Note that the proposed 2031 Global target for transit is the same as the target outlined in the 2018 OP. To meet this Global mode share target, the proportion of daily trips made by transit will have to double the current levels.

3.6 Summary

Based on a review of policy directions and mode share targets, to meet the Guelph TMP Goals, the TMP-aligned strategy for transit would have to:

- Double the transit mode share;
- Improve transit service reliability;
- Improve connections to business parks and employment areas;
- Ensure that the route network supports intensification objectives;
- Meet the community’s expectations regarding hours of service, service coverage and service frequency;
- Ensure transit stops, stations, and terminals can accommodate transit customers of all ages and abilities;
- Improve integration of transit stops, stations, and terminals with other modes;
- Improve customer communication; and,
- Include a strategy for evaluating and incorporating emerging transportation technologies.

4 Problems and Opportunities

Based on the established directions from the ongoing TMP update, this section summarizes the problems and opportunities for the transit mode plan.

To ensure alignment with the policy framework, the importance of which was discussed in the TMP Vision and Values paper, the problems and opportunities for the transit mode are broken down by transportation goals from Section 3.3. Note that the section is organized so that the appropriate problem or opportunity statements are listed below the corresponding goal.

Goal 1 - People of all ages and physical ability will be able to travel safely using any transportation mode that they choose

- What bus stop guidelines that exist are incomplete and do not reflect the most up to date needs of the community.
- There is little direct integration of transit with other existing or emerging modes.

Goal 2 - Guelph's transportation system will be easy-to-use, reliable and give people and businesses the options they want when they need them

- Guelph does not currently have formal, Council-approved transit service guidelines that clearly respond to the community's expectations regarding hours of service, service coverage and service frequency.
- Business parks and employment areas do not all have high quality transit service connections the way the University and retail areas do.
- Guelph transit's vehicles are regularly impacted by traffic congestion.
- Guelph provides on-line and printed information that is typical of that provided by most transit systems.

Goal 3 - Transit service will provide travel times and traveler convenience at levels that are competitive with travel by car

- The budget and staff resources available to Guelph Transit do not allow for operation of sufficient routes or service frequency to provide transit service that is competitive with travel by car between many locations in the transit service area.
- Transit is not prioritized in those corridors with multiple routes and/or high usage.
- The Guelph Junction Railway (GJR) is only used for freight today, and not for passengers.

Goal 4 - The carbon footprint from the transportation sector will aim for net zero by 2050

- Increase transit mode share to 15% of all daily travel.
- The transit and mobility bus fleet is currently diesel powered.

Goal 5 - Guelph's streets, trails, and rail networks will align with the City's land use objectives

- The current street classifications and representative design cross sections do not recognize how to implement physical transit priority measures such as bus lanes and queue jump lanes, or indicate that other measures, such as roundabouts instead of traffic signals or stop signs, can act as transit priority measures that keep transit moving reliably.
- The intensification corridors and community mixed-use nodes identified in schedule 1 of the Guelph Official Plan are not all served by quality transit service.

Goal 6 - Investment decisions will be made considering the asset lifecycle costs

- N/A

Goal 7 - Guelph's transportation system will plan for the changes of tomorrow, while delivering great service today

- Guelph has no on-line platform for customer communication
- Autonomous vehicle technology is emerging quickly and Guelph Transit needs to be ready to evaluate and adopt this technology if the business case makes sense:

5 Recommended Future Transit Networks, Policies, and Programs

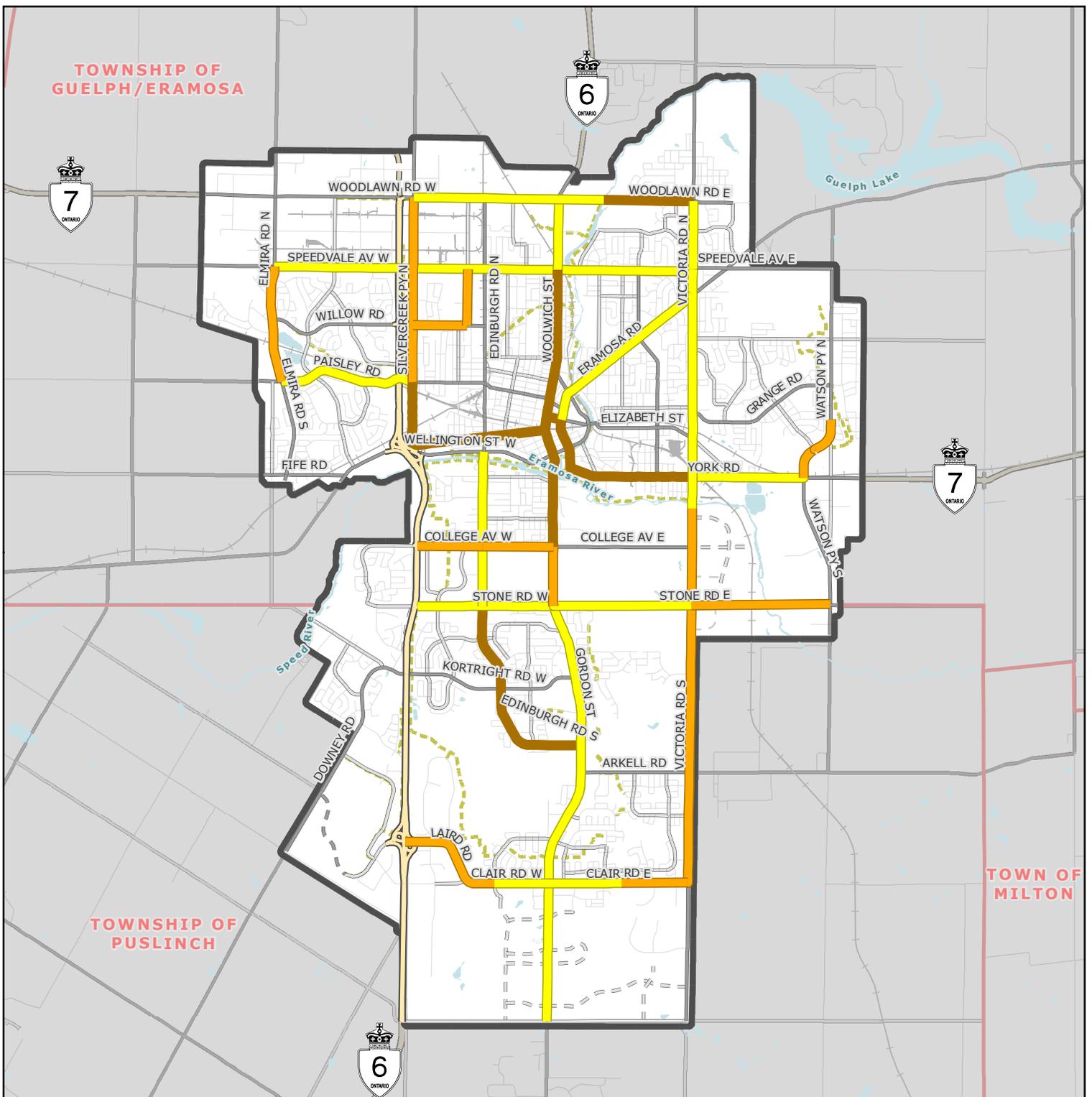
This final section of this memo presents the recommended transit network, policies, and programs for Guelph in response to the existing conditions, problems, and opportunities identified earlier in the memo. Note that the recommendations for the transit mode in this section consider the transit mode plan in isolation of other modes. Trade-offs between different modes required for an integrated mobility solution for Guelph will be discussed and mitigated at a future stage.

5.1 Networks

The transit network is anticipated to be updated in detail through the upcoming Guelph Transit Master Plan update. However, the high-level network recommendations for the transit network are to:

- Study customer needs through a comprehensive engagement program to understand how to better serve them and complete a route network review to identify areas for improvement;
- Identify the resources – including human resources, operating costs, and capital costs - necessary to enhance service, achieve the goal of doubling the transit mode share to 15%, and become more competitive with the car;
- Expand service;
- Improve transit connections to business parks and employment areas;
- Provide high quality service that runs along Intensification Corridors and connects Community Mixed-Use Nodes as well as other high activity areas;
- Review and update the recommendations of the 2015 Transit Priority Project to improve the speed and reliability of transit service, using measures such as transit priority, bus lanes, and/or a Bus Rapid Transit (BRT) network;
- Identify if the system requires additional transit terminals and/or maintenance and storage facilities (MASF) to provide additional service;
- Ensure that stops, stations, and terminals have the necessary facilities, amenities, and infrastructure to accommodate transit customers of all ages and abilities; and
- Improve intersections and corridors that are considered for transit priority measures.

Based on these recommendations, Figure 3 shows the recommended quality transit network for Guelph. This network can form the foundation of the Transit Master Plan update.



QUALITY TRANSIT

- █ Quality Transit Network - potential lane conversion
- █ Quality Transit Network - potential widening to 4 lanes
- █ Quality Transit Network - optimization only

BASE DATA

- Municipal Boundaries
- - - Active Transportation Network
- Expressway (MTO)
- Arterial Road
- Collector Road
- Local Road

- Approved Expressway (MTO) (OP)
- - - Approved Arterial Road (OP)
- - - Approved Collector Road (OP)
- - - Approved Local Road (OP)
- Railway
- █ Waterbody

Figure 3:
Recommended Quality
Transit Network



MAP DRAWING INFORMATION:
DATA PROVIDED BY CITY OF GUELPH 2019,
MNR 2019

MAP CREATED BY: GAM/LMM
MAP CHECKED BY: SD
MAP PROJECTION: NAD 1983 UTM Zone 17N



SCALE 1:80,000

0 0.75 1.5 KM

PROJECT: 18-8919

STATUS: DRAFT

DATE: 2022-02-25

5.2 Policies and Programs

The policy recommendations for the transit mode plan are to:

- Develop transit service guidelines that clearly respond to the community's expectations regarding hours of service, service coverage and service frequency;
- Develop transit stop guidelines that clearly describe the necessary facilities, amenities and infrastructure required at various types of stops, stations, or terminals required to accommodate transit customers of all ages and abilities;
- Establish policies and guidelines that clearly describe the procedures, programs and infrastructure required to allow people of all ages and abilities to move easily between transit and other modes (such as walking, cycling, taxis/passenger drop off from cars, and emerging micro-mobility approaches) at terminals, stations and stops;
- Develop an implementation plan to move all buses and fleet vehicles to zero emission, including identification of the facilities and infrastructure required to accomplish this; and
- Complete bi-annual reviews of autonomous vehicle technology for transit in order to identify the implications on the planning and operation of the transit system.

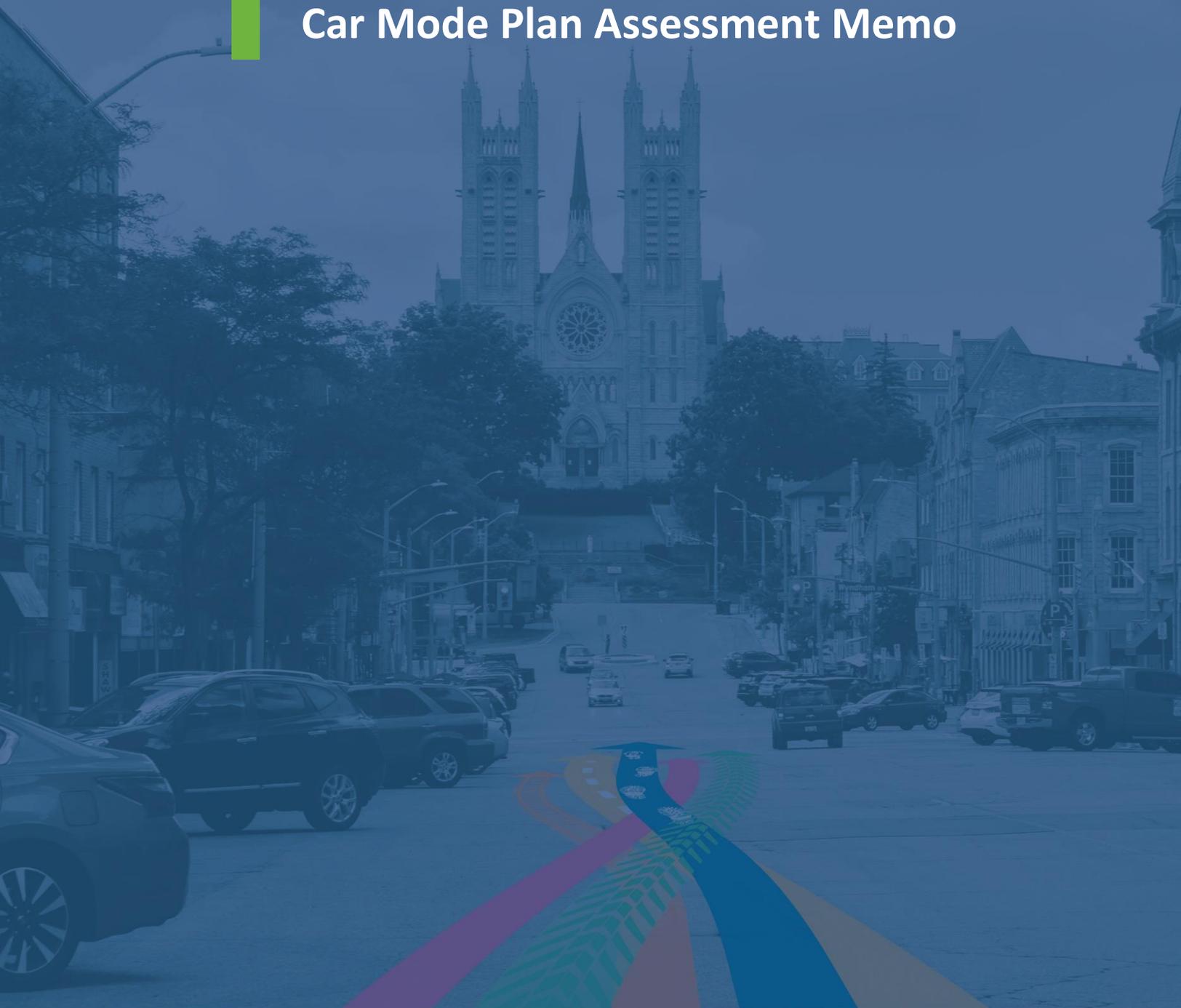
The program recommendations for the transit mode plan are to:

- Develop a comprehensive program focused on travel demand management and influencing that encourages significantly greater integrated use of transit and active transportation;
- Develop a program to review Guelph's transit fare policy and structure at regular intervals;
- Ensure that Guelph Transit consistently maintains connection to transit facilities that are well lit and accessible, that stops and terminals are comfortable places to be, that buses are clean, sanitized, and other customers are following appropriate etiquette and behaviour, and that operators are well trained and professional;
- Ensure that Guelph Transit employees are provided with a workplace free of discrimination, violence, and harassment; comprehensive workplace health and safety programs; on- bus communications for operator contact and safety; a clean and sanitized work station (including on the bus); and interactions with customers following appropriate etiquette and behaviour; and
- Implement an equity lens into regular transit service reviews to ensure that everyone in the community is able to access and use the transit system regardless of where they live, their income, their gender, their race, or other identity or life experience.



APPENDIX F3

Car Mode Plan Assessment Memo



Memo



To: Terry Gayman, City of Guelph
Gwen Zhang, City of Guelph

From: Shawn Doyle, Dillon Consulting Limited

cc: Jennifer Juste, City of Guelph
Mariam Bello, Dillon Consulting Limited

Date: May 26, 2021

Subject: Assessment of Mode Plans - Cars

Our File: 18-8919

1 Introduction

1.1 Purpose

This memo assesses the alignment of the existing plans and networks for cars with the goals and objectives for cars in the Guelph Transportation Master Plan (TMP). This memo achieves this by:

- Identifying existing and planned directions for the car mode in Guelph;
- Presenting the existing car network;
- Summarizing the policies and programs that currently guides the car mode;
- Reviewing mode-specific problems and opportunities in alignment with the updated TMP policy framework; and
- Ultimately presenting recommendations for Guelph's future car network, policies, and programs.

1.2 Background

During the second half of the 20th Century – the “automobile era” – many cities were built to meet the needs of the car. New streets were built to be wide, parking was plentiful and free, and cities were developed to accommodate the car because travel by personal vehicle allowed us to go farther, faster.

But a new era of transportation is beginning, caused by growing awareness and impacts of climate change, new trends and technologies, shifts in how we live, work and shop, increasing congestion and persistent road safety concerns.

The Guelph TMP is looking to create a more sustainable transportation strategy for Guelph moving forward. The Vision, Values, and Goals for the Guelph TMP all speak to a shift in strategy aimed at accommodating a broader community of travellers, balancing mobility for cars with safety for all, and increasing access to a broad range of travel options for all trip purposes. This shift in strategy will require updates to a number of networks, policies, and guidelines related to planning, design, and operations of streets.

2 Existing and Planned Conditions

This section identifies the existing and planned conditions for Guelph's car mode plan as identified in strategic plans, network plans, policies, and programs.

2.1 Strategic Plans

The existing mode plan for cars was established most strongly by the 2005 Guelph-Wellington Transportation Study, which identified the primary street pattern (hierarchy, role, and function), capacity, performance measures and targets, policies, and management programs for streets and car/vehicle operations. The Mode Plan for streets and cars in the TMP was modified and/or complemented by a number of subsequent strategic planning studies.

These studies, summarized in this memo, include the following documents:

- 2005 Guelph-Wellington Transportation Study (GWTS)
- 2018 Official Plan (OP)
- 2015 Downtown Parking Master Plan and 2018 Parking Master Plan Update
- 2016 Downtown Secondary Plan

2005 Guelph-Wellington Transportation Study (GWTS)

Priority will be given to the maintenance and improvement of roadways, including sidewalks, and to the efficient function of arterial roads to facilitate transit and to keep vehicular traffic away from residential areas.

Goal

To accommodate and ensure the safety of all modes in the road system, maintain and improve all roadways including sidewalks, and to ensure efficient arterial roadway operations to facilitate transit operations and vehicular traffic and keep vehicular traffic away from residential areas.

Objectives

The objectives of the roadway strategy are as follows:

- To improve safety on City roadways for all modes of travel.
- To recognize roadway rights-of-way as shared-use facilities and enhance accessibility for alternative modes.
- To increase pedestrian amenities and enhance the visual quality of roadways.
- To protect the mobility function of the arterial roadways for the efficient movement of people and goods, by limiting direct access to properties, confining turning movements to signalized intersections, and implementing traffic signal co-ordination to improve traffic flow through intersections.
- To keep through-vehicular traffic away from residential areas and streets.
- To reduce the environmental impacts of new roadways and widening of existing roadways.

- To improve the co-ordination, communication and understanding associated with the planning, design, construction and operation of the roadway network with the general public, the business community, adjacent jurisdictions and provincial agencies

2018 Official Plan (OP)

The City's transportation system will be planned and managed to:

- provide connectivity among transportation modes for moving people and goods;
- offer a balance of transportation choices that reduces reliance upon any single mode and promotes transit, cycling and walking;
- be sustainable, by encouraging the most financially and environmentally appropriate mode for trip-making;
- offer multi-modal access to jobs, housing, schools, cultural and recreational opportunities and goods and services;
- provide for the safety of system users; and
- ensure coordination between transportation system planning, land use planning and transportation investment.

The City will ensure that adequate parking facilities are provided to meet the parking demands generated by various land uses.

2016 Downtown Secondary Plan

The Downtown Secondary Plan will:

- Achieve a network of streets, transit facilities, trails and other infrastructure that supports multiple modes of travel to and within Downtown as well as existing and planned land uses.
- Provide route options for those traveling to and through Downtown by car, truck or bicycle.
- Provide parking to meet the needs of Downtown businesses, residents and visitors.
- Ensure planned mobility improvements are coordinated with development.

In the design of public right of ways, the City will balance the provision of a safe, functional and attractive pedestrian-oriented environment with an acceptable level of vehicular traffic. The City is prepared to accept a level of service which reflects the constraints of the rights-of-way Downtown, in return for a more pedestrian-oriented environment and achievement of urban design objectives along its roads.

Downtown shall continue to be served by a range of parking facilities, including but not limited to above-ground and below-ground parking structures, small public and private surface parking lots, and on-street parking. The City shall continue to play an active role in the supply of off-street parking in the Downtown. As lands are redeveloped and the Downtown population increases, the City shall continue to acquire, operate and pursue development of public parking facilities in the general locations identified in Schedule A and potentially in other locations.

2015 Downtown Parking Master Plan

The Downtown Parking Master Plan (DPMP) provides a parking supply that supports the needs of future urban conditions and supports economic development through strategic public investment. The DPMP parking strategy was developed to serve the needs of retail and office employees, customers, patrons of special institutions and downtown residents, each of which have different parking needs.

The DPMP calls for 1,500 new spaces by 2031. The goal of the DPMP is to support the vision of downtown as it develops and intensifies up to 2031. Development of the downtown area to accommodate the population increase of over 6,000 residents and over 1,500 jobs by 2031, in line with the Province's Places to Grow projections, would result in significant changes to existing parking demands. The redevelopment of lands currently dedicated to surface parking will increase parking demand while decreasing parking supply in a parking system that is operating near capacity.

On-street parking is a key source of short-term, convenient parking in the downtown area. On-street parking management must balance the needs of consistent enforcement and ensuring turnover, while being attractive to potential customers and other visitors.

Summary

The current street network was developed to maintain efficient movement of cars at a reasonable level of service (2005 GWTS). Recently, the City has begun to emphasize the need to balance level of service for cars with level of service and safety for all modes (2018 OP). The City will accept a level of service for cars in the Downtown that reflects the constrained rights-of-way (2016 Downtown Secondary Plan).

The City has long recognized that street rights-of-way should be safe and accessible for all modes of travel (all strategic plans).

The City has stated a desire for parking capacity that meet the needs of the various land uses (2018 OP), particularly the intensification of Downtown (2016 Downtown Secondary Plan and 2015 DPMP).

2.2 Networks

Street Hierarchy

Figure 1 shows the current street network and street classifications in Guelph. Figure 1 shows the Hanlon Expressway and Highway 7, both of which are under the jurisdiction of Ministry of Transportation of Ontario (MTO); planning and design decisions can be influenced by the City, but not controlled. The primary street network consists of the Expressway, Arterials and Collectors. Table 1, taken from the 2018 OP, describes the street classifications.

The Official Plan also permits the designation of Main Streets in Downtown or in areas of existing or planned high density including Intensification Corridors and Community Mixed-use Nodes. The adjacent land use context must reflect their planned function as focal points for shopping, offices and community interaction and will be develop based on the adjacent land use context. The City has identified a network of intensification nodes and corridors per Figure 2.

A unique hierarchy was developed for Downtown streets through the Secondary Plan to promote a stronger commitment to Active Transportation and connection to urban design. Figure 3 shows the Downtown hierarchy.

Street Capacity

Figure 4 shows the existing number of lanes on all streets, which is a representation of existing corridor capacity.

Guelph is currently completing an Environmental Assessment (EA) to widen Gordon Street to five lanes from Edinburgh Road South to Lowes Road. Guelph also has a design for the widening of York Road to four lanes from Wyndham Street South to the east City Limit.

Highway 7

MTO plans a new alignment for a four lane controlled access design for Highway 7 connecting the Hanlon Expressway to Kitchener. The new alignment for Highway 7 is north of Woodlawn Road, with interchanges in the Guelph area planned at WR86/Elmira Road (full), Silvercreek Parkway (partial), and Woodlawn Road (partial); the Silvercreek Parkway and Woodlawn Road partial interchanges together will allow for all movements. Construction on some elements has started at the Kitchener end of the corridor. MTO has committed to constructing the balance of the project over several years starting in 2021.

STREET CLASSIFICATION

FIGURE 1

STREET CLASSIFICATION

- Expressway / Highway
- Ramp
- Arterial
- Collector
- Local

BASE DATA

- City of Guelph
- Railway
- Watercourse
- Waterbody
- Municipal Boundary



TRANSPORTATION MASTER PLAN

SCALE 1:55,000



MAP DRAWING INFORMATION:
DATA PROVIDED BY CITY OF GUELPH 2019, MNR 2019
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MAP CHECKED BY: SD
MAP PROJECTION: NAD 1983 UTM Zone 17N



PROJECT: 188919
STATUS: DRAFT
DATE: 2020-08-25

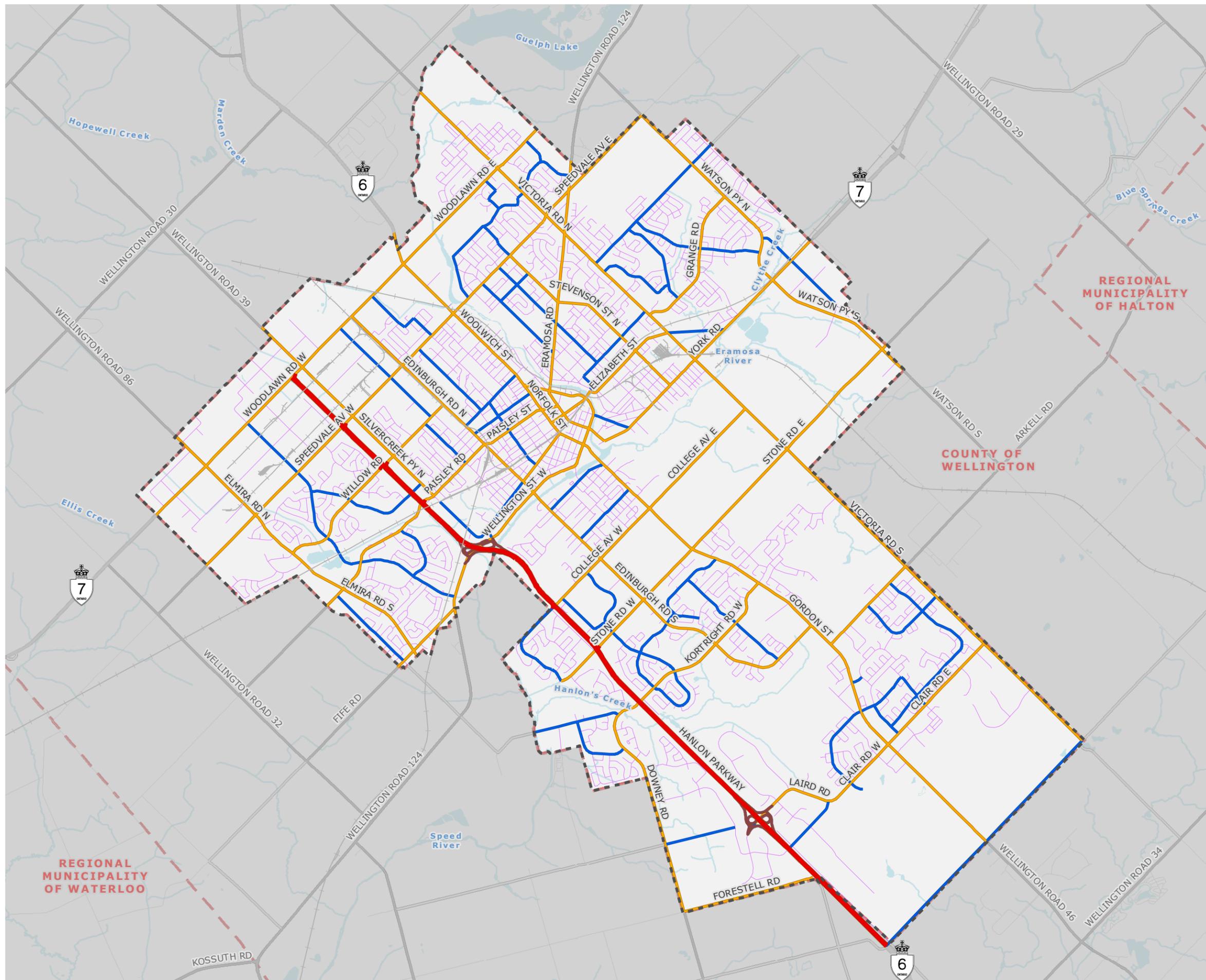
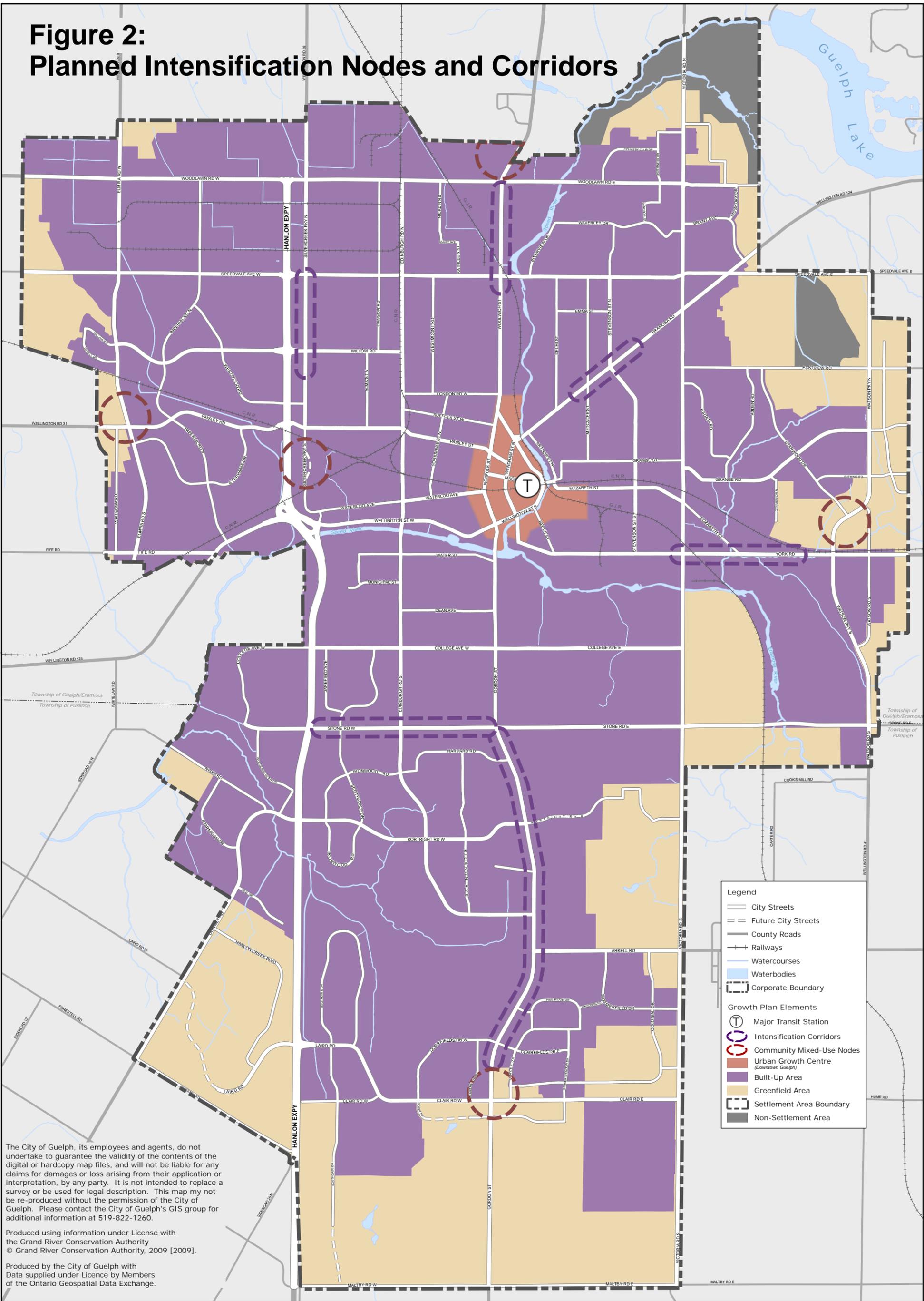


Table 1: Guelph Official Plan Road Classification System

Classification	Details
Expressway	<ul style="list-style-type: none"> ● Provincial highways intended to move very large volumes of traffic within and through the City ● High-speed, multi-lane, divided roadways with access restricted to interchanges ● Access via signalized intersections may be provided for an interim period of time
Arterial	<ul style="list-style-type: none"> ● Intended to move moderate to large volumes of traffic over moderate distances and to direct traffic to the Provincial highway system. ● Medium speed ● 2-6 lane, usually undivided, with access generally restricted to intersections with collector and arterial roads ● Intended to accommodate high levels of transit ● May incorporate on-street parking to achieve urban design objectives ● Right-of-way widths ideally range from 26-36 m
Collector	<ul style="list-style-type: none"> ● Intended to move low to moderate volumes of traffic within specific areas of the City and collect local traffic for distribution to the arterial or Provincial highway system ● Moderate speed ● 2-4 lanes, usually undivided ● May incorporate on-street parking where needs are defined by adjacent land uses ● Right-of-way widths ideally range from 23-26 m
Local	<ul style="list-style-type: none"> ● All other roads not otherwise identified in the functional hierarchy ● Low volumes with direct access to abutting private properties ● Low speed ● 2 lanes, undivided ● Parking permitted where appropriate

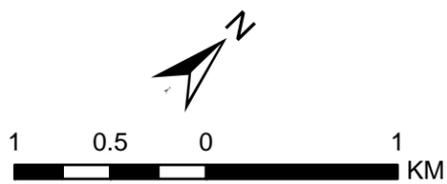
Figure 2: Planned Intensification Nodes and Corridors



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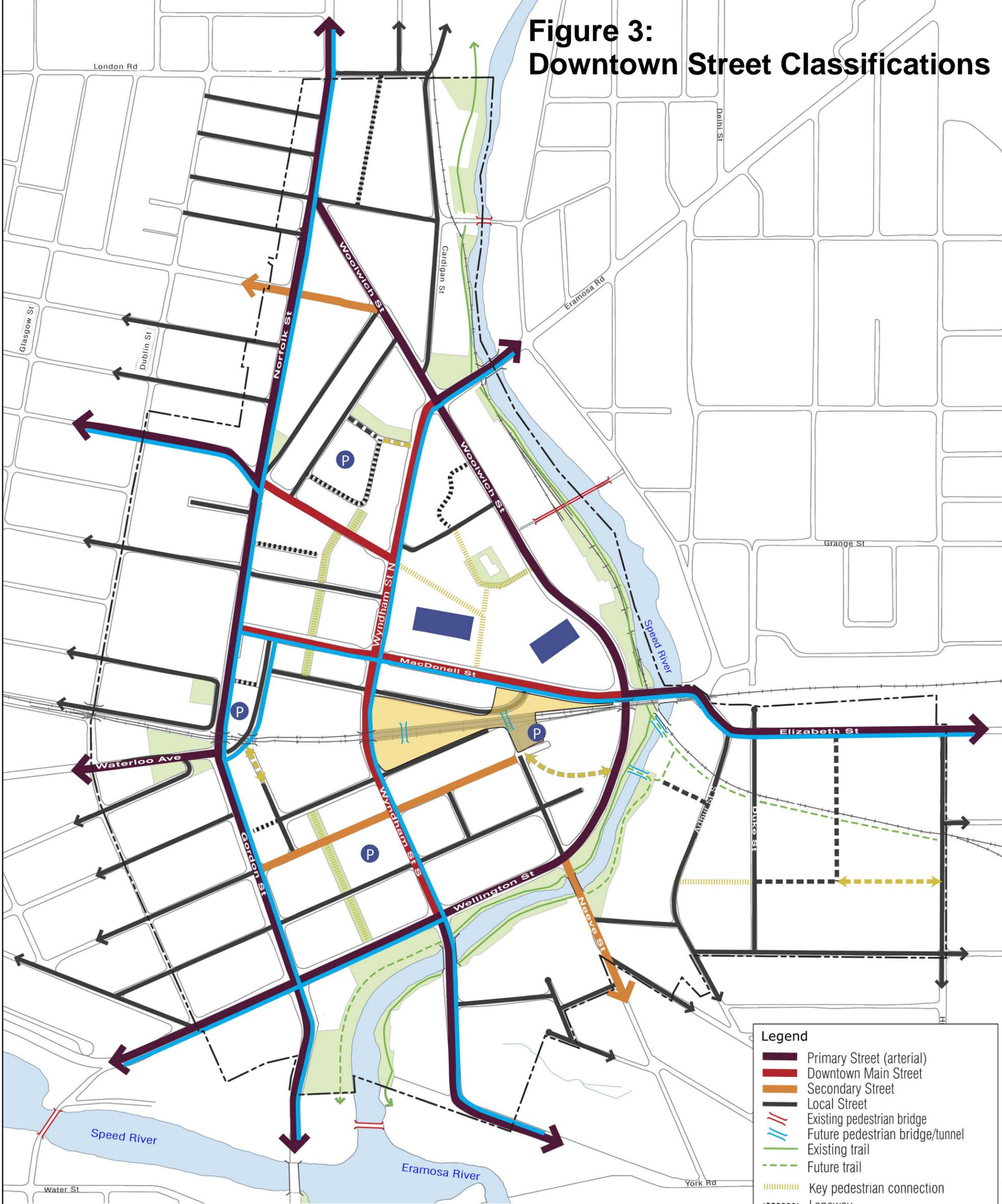


Projection: UTM 17N NAD83
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Planning Services
March 2018 Consolidation

CITY OF GUELPH OFFICIAL PLAN SCHEDULE 1: GROWTH PLAN ELEMENTS



Figure 3: Downtown Street Classifications



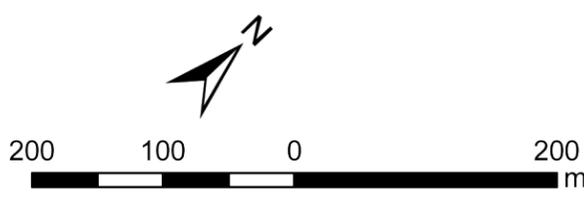
Legend

- Primary Street (arterial)
- Downtown Main Street
- Secondary Street
- Local Street
- Existing pedestrian bridge
- Future pedestrian bridge/tunnel
- Existing trail
- Future trail
- Key pedestrian connection
- Laneway
- Potential Local Street or Active Transportation Link
- Potential Local Street
- Proposed and existing bike facilities
- Major Transit Station
- Existing parking structure
- Future parking structure
- Boundary of the Secondary Plan Area
- Existing railway or road bridge

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CITY OF GUELPH OFFICIAL PLAN SCHEDULE A: DOWNTOWN SECONDARY PLAN MOBILITY PLAN



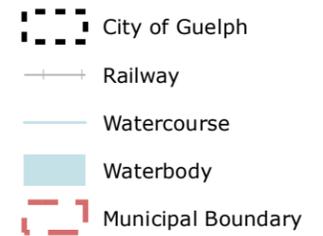
NUMBER OF LANES

FIGURE 4

NUMBER OF LANES



BASE DATA



TRANSPORTATION MASTER PLAN

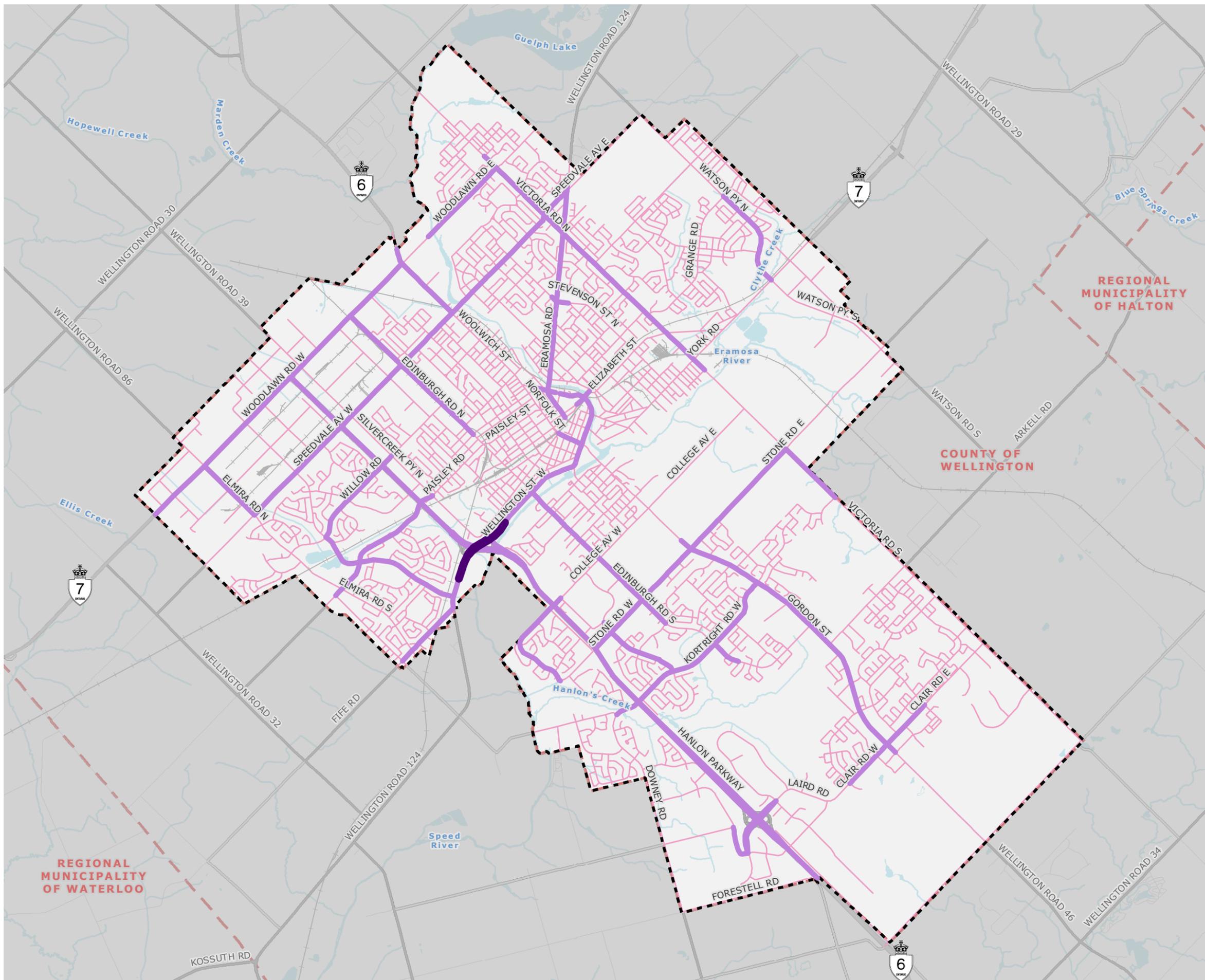
SCALE 1:55,000



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PROJECT: 188919
 STATUS: DRAFT
 DATE: 2020-08-25



Highway 6/ Hanlon Expressway

MTO plans modifications to Highway 6 between the north boundary of Hamilton and the south boundary of Guelph. South of Highway 401, Highway 6 will be realigned to the west to reduce impacts on the Village of Morriston. North of Highway 401, existing at grade-intersections on the Hanlon Expressway will be closed to improve safety and improve traffic flow. Interchanges built as follows:

- A bridge over the Hanlon Expressway to replace the intersection at College Avenue, including closing the access to the Hanlon Expressway;
- A partial interchange to replace the intersection at Kortright Road/Downey Road (to/from the south); and
- A full interchange to replace the intersection at Stone Road.

Downtown Parking System

The non-residential parking system is a key element of car mode network plan, as a parking space is the ultimate origin and destination of every trip. Non-residential parking network is also a major influence on mode choice for cars – things like convenience, cost, even ultimately availability impact traveller selection of car as mode of travel

Guelph's parking system consists of municipally-owned on-street parking and municipal and private off-street parking structures and lots. Table 2 indicates the existing and planned Downtown municipal parking supply.

Table 2: Downtown Municipal Parking Supply

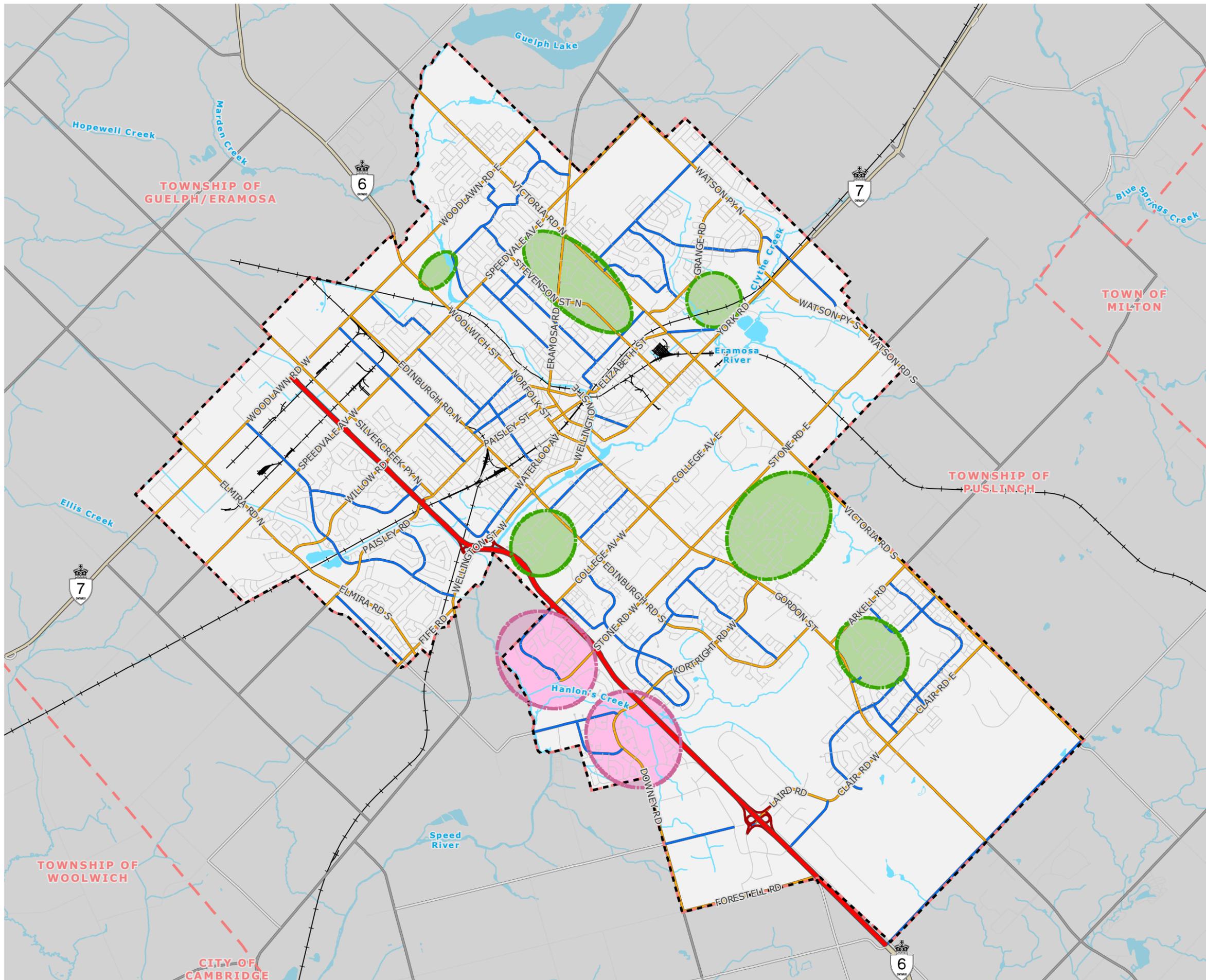
Location	Parking Supply (spaces)	
	Existing	Planned Future
On-Street (2 hour free, once per day)	558	608
Off-street	1,707	3,007-3,357
Total	2,265	3,615-3,965

Summary

Figures 1-3 show the existing street hierarchy in Guelph. There are some clear gaps in the network based on typical guidelines for network spacing and arterial connectivity (see Figure 5).

Table 1 shows the design guidelines for all street classes in Guelph, including Arterials. Table 1 shows a broad range of potential design and capacity in the arterial class. Arterials can range from 2-6 lanes and from 26-36m in ROW. Further, it is not really possible to build a six lane multi-modal arterial streets in a 36m ROW and Guelph standard cross-sections do not include a six lane street.

Figure 4 shows the lane capacity of the street networks major roads. Several gaps can be seen in the continuity of the four lane street system (see Figure 6).



GAPS IN EXISTING STREET HIERARCHY

FIGURE 5

STREET CLASSIFICATION

- Expressway / Highway
- Ramps
- Arterial Roads
- Collector Roads
- Local Roads

GAPS IN EXISTING STREET HIERARCHY

- Gaps in Arterial Network
- Gaps in Collector Network

BASE DATA

- City of Guelph
- Municipal Boundaries
- +— Railway
- Watercourse
- Waterbody



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GAPS IN CONTINUITY OF SYSTEM CAPACITY

FIGURE 6

NUMBER OF LANES

- █ 6
- █ 4
- █ 2

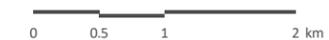
GAPS IN CONTINUITY OF SYSTEM CAPACITY

- Gaps

BASE DATA

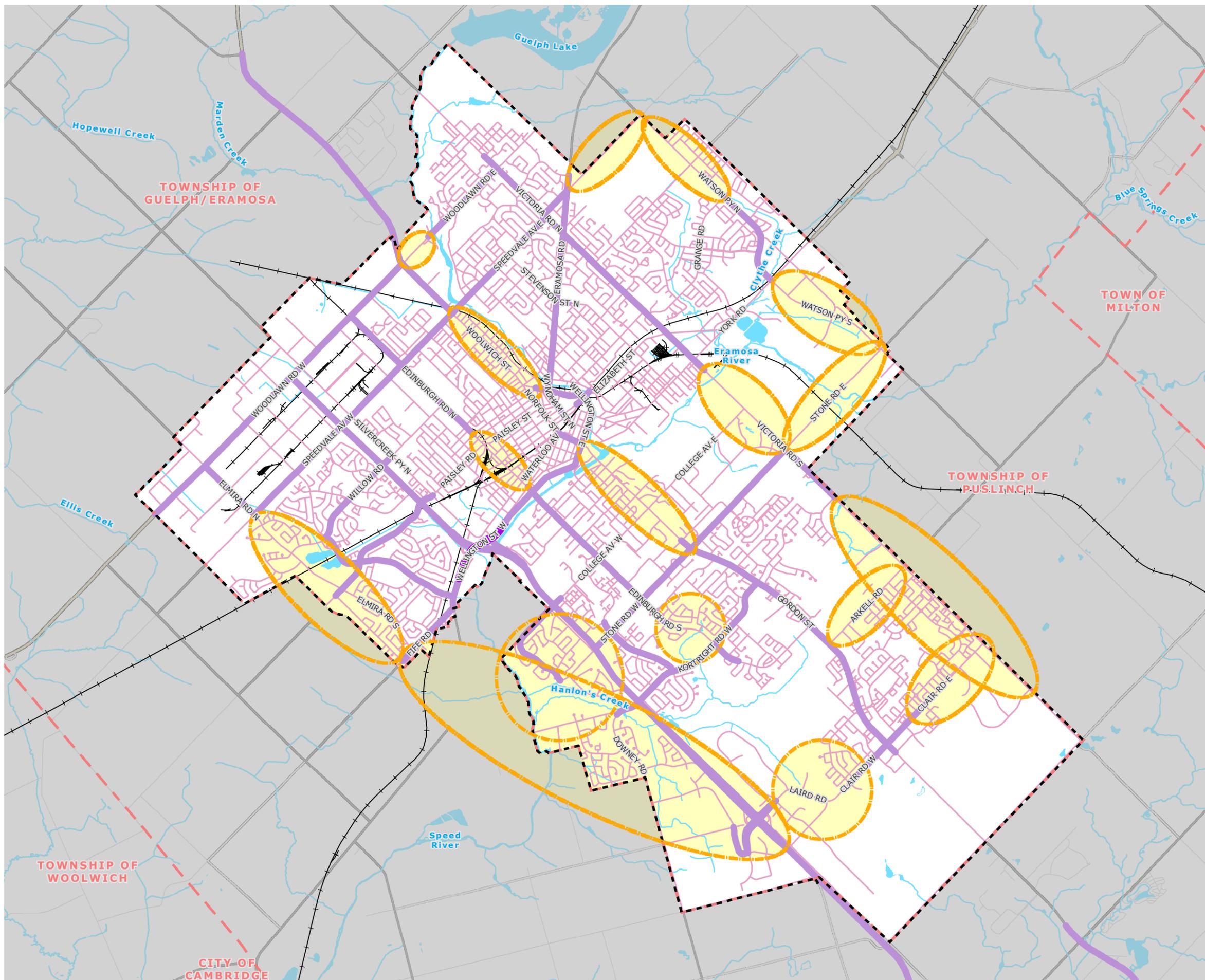
- City of Guelph
- Municipal Boundaries
- Expressway / Highway
- Ramp
- Arterial
- Collector
- Local
- Railway
- Watercourse
- Waterbody

SCALE 1:55,000



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2.3 Policies and Programs

2018 Official Plan

Policies

The City's transportation system will be planned and managed to:

- i. provide connectivity among transportation modes for moving people and goods;
- ii. offer a balance of transportation choices that reduces reliance upon any single mode and promotes transit, cycling and walking;
- iii. be sustainable, by encouraging the most financially and environmentally appropriate mode for trip-making;
- iv. offer multi-modal access to jobs, housing, schools, cultural and recreational opportunities and goods and services;
- v. provide for the safety of system users; and,
- vi. ensure coordination between transportation system planning, land use planning and transportation investment.

A multi-modal approach will be used in planning and implementing transportation improvements and in encouraging the increased use of non-auto travel modes.

The City will create an efficient road network that accommodates all modes of travel, including vehicular traffic, at a reasonable level of service. Road rights-of-way will be planned and designed to enable safe and comfortable use by all users including pedestrians, cyclists, motorists and transit riders of all ages and abilities.

The City will ensure that adequate parking facilities are provided to meet the parking demands generated by various land uses. The City shall specify off-street parking requirements and may establish maximum parking requirements in the Zoning By-law, where appropriate. Off-street parking areas and facilities shall be provided through zoning and site plan requirements. The City may acquire, develop and operate parking facilities.

Programs

Network Traffic Management/Traffic Calming/ Safety

Where necessary, traffic calming measures shall be incorporated into the design of the street network in accordance with the City's Neighbourhood Traffic Management Policy, or successor thereto.

TDM

Reduced parking requirements may be considered as part of a Parking Study, particularly within Downtown, Community Mixed-use Nodes and Intensification Corridors, or for affordable housing, or where high levels of transit exist or are planned.

The City may develop zoning regulations for shared parking arrangements between multiple facilities to optimize the staggered nature of demand for parking on a time-of-day, weekday/weekend and monthly basis.

The City may encourage managing the supply of parking as a TDM measure.

2016 Downtown Secondary Plan

In the design of public right of ways, the City will balance the provision of a safe, functional and attractive pedestrian-oriented environment with an acceptable level of vehicular traffic. The City is prepared to accept a level of service which reflects the constraints of the rights-of-way Downtown, in return for a more pedestrian-oriented environment and achievement of urban design objectives along its roads. To achieve this environment, the City may use a variety of techniques, depending on the function of the road, including alternative engineering standards. Similarly, in the design of its right of ways, the City will also balance the need for, where appropriate, bicycle facilities, loading facilities, transit priority measures, on-street parking and other infrastructure needs, including street trees. These issues will be considered in a holistic manner to create a final design which is sensitive to the urban context of Downtown and the street classification

2005 GWTS

Priority will be given to the efficient operation of arterial roadways, including intersections, to facilitate transit and prevent through-vehicular traffic infiltrating residential areas. The Level-of Service criteria at signalized intersections will include adequate time for pedestrian crossing and reducing delays to buses. Traffic signal operations on arterial roadways will be co-ordinated to facilitate efficient traffic flow through the intersections.

Performance Measures

The City of Guelph has also established a variety of performance measures and targets from the collected strategic plans documenting the car mode plan. They are presented in Table 4.

Table 3: Performance Measures and Targets for Car Mode Plan

Area of Performance	Performance Measure	Performance Target	Source
Mobility	Screenline capacity	Volume/capacity ratio = 0.90	Inferred from GWTMP
	Corridor capacity	Volume/capacity ratio = 0.90	Inferred from GWTMP
	Intersection capacity	Volume/capacity ratio = 0.90	Inferred from discussions with staff
Support for Land Use	Qualitative assessment	Vehicle speed and volume in residential areas are appropriate given adjacent land use	Inferred from traffic calming policy
	Qualitative assessment	Street designs in intensification areas promote active modes and transit	Inferred from urban design guidelines and from discussions with staff

Area of Performance	Performance Measure	Performance Target	Source
	Municipal non-residential downtown parking supply	Provide enough parking to cover existing deficiency and meet needs of intensification targets	Downtown Parking Master Plan
Mode Choice	Mode share	Reduce auto mode share by approximately 17% (from 84% to 67%)	Official Plan
Climate Impact	GHG levels	The carbon footprint from the transportation sector will aim for net zero by 2050	Climate Change Action Plan

3 TMP Update Directions for Cars

This section documents the vision, values, and goals that were developed for the policy framework of the ongoing Guelph TMP update. It also documents the objectives related to cars and parking. Note that all of the policy frameworks presented in this section were finalized as part of an earlier stage of the TMP update.

3.1 Vision

The TMP update established the following vision:

“Transportation in Guelph will be safe, equitable, sustainable, complete, affordable, and supportive of land use.”

This vision means that Guelph provides safe transportation networks for people to walk, wheel, and use vehicular transportation through all corners of the city. Transportation is geographically equitable – people can complete their trips comfortably and in a reasonable time, regardless of if they own a vehicle, which part of Guelph they are coming from, and which part of Guelph they are going to. Most people travel sustainably, minimizing the negative impacts of their trip on the environment. This is possible because the network for each mode of travel is complete, enabling continuous multimodal travel throughout our city. We accomplish these things in a way that is affordable for the user and makes the most financially efficient use of our investments. Finally, our transportation network is supportive of land use, meaning that we design our streets to be context-sensitive to support the growth of our community.

3.2 Values

The following transportation values for transportation in Guelph combine principles of the community values of the 2019 Guelph Community Plan with the values identified in the transportation vision of Guelph’s 2018 OP. The transportation values include:

- Safe
- Equitable
- Complete
- Sustainable
- Affordable
- Supportive of Land Use

Safe

Safe means a transportation network where users of all modes can expect to travel hazard-free and complete trips without fatal or serious injury.

In making decisions regarding safety, the most vulnerable users will be prioritized first. Decisions affecting the transportation network must first and foremost ensure the safety of pedestrians and cyclists, as these are the users who are at the greatest risk. Next, the safety of the transit mode, a vehicular mode which carries many users and is sometimes treated with animosity by other vehicular modes, and then other vehicular modes.

Equitable

Equitable transportation speaks to a network that provides people with the ability to complete trips comfortably, safely, with dignity, and in a reasonable time, whether or not they own a vehicle. This applies throughout Guelph's geography, to all origins and destinations within the city. Additionally, by focusing on transportation equity, the City is seeking to ensure that members of marginalized communities have the same access/opportunities in finding and retaining employment.

Equity is closely linked to making streets in Guelph complete so that people are free to move regardless of their financial means, accessibility requirements, or other needs.

Complete

A complete - or a connected - network is one that treats all modes of travel as equal in importance. In essence, a multimodal network allows anyone to viably complete their trip by any mode of their choice. A complete network also ensures connectivity within and between networks for all modes. This means smooth continuous travel is possible without network gaps for users of any mode and that the transportation system is interconnected and reflects modern forms of mobility, allowing users to seamlessly transfer between modes for various portions of their trip. And in a complete transportation network, all parts of the city are connected via the various modal networks. This enables Guelph to feel as one community rather than separate pieces.

Sustainable

A sustainable transportation network is one that promotes healthy lifestyles and environmental stewardship. To promote healthy lifestyles and environmental sustainability, Guelph will encourage a shift towards active transportation modes (i.e. cycling and walking) and transit. The transportation system will reflect these modal priorities.

Affordable

An affordable transportation network is one where investment decisions are made while keeping in mind the lifecycle costs of the decision. This means that both the capital and the operation/maintenance costs are considered. In an affordable transportation network, cost effective solutions are valued above ones that provide the same value but cost exponentially more. An affordable transportation network is also one that considers the user costs associated with each trip.

To offset maintenance and operations costs, an affordable system looks for opportunities to maximize revenue generation from transportation network by exploring new revenue generation opportunities.

Supportive of Land Use

A transportation system that is supportive of land use creates context-sensitive transportation links and enables the development of healthy high- and medium-density mixed use communities. Such communities have strong active transportation connections but also enable their residents to travel via any mode of their choice. A land use supportive transportation network also ensured that all people are well connected to their places of work by multimodal transportation.

3.3 Goals

The TMP update set seven goals, based on the previously presented vision and values:

1. People of all ages and physical ability will be able to travel safely using any transportation mode that they choose
2. Guelph's transportation system will be easy-to-use, reliable and give people and businesses the options they want when they need them.
3. Transit service will provide travel times and traveler convenience at levels that are competitive with travel by car
4. The carbon footprint from the transportation sector will aim for net zero by 2050
5. Guelph's streets, trails, and rail networks will align with the City's land use objectives
6. Investment decisions will be made considering the asset lifecycle costs
7. Guelph's transportation system will plan for the changes of tomorrow, while delivering great service today

3.4 Objectives

Stemming from the seven goals, Table 4 identifies the objectives from the TMP update that relate to cars and parking.

Table 4: Car Mode-Related TMP Objectives and Accompanying Actions

#	Objective	Action
O2	Increase safety provisions in planning, design, and operational decisions.	Develop multi-modal Level of Service (MMLOS) Guidelines that include safety analysis for links and intersections
		Include "black spot" identification and data collection in Road Safety program charter
		Update the City's Traffic Calming Strategy as a post-TMP action
		Include monitoring of at-grade rail crossings in the Road Safety program charter
		Assess implications of Metrolinx downtown grade-separation proposal in the TMP

#	Objective	Action
		Include monitoring of at-grade Hanlon Expressway intersections in the Road Safety program charter
		Provide background for the public on emerging modes and transportation technologies in the Background Papers on New Mobility and Resiliency
		Develop a city-wide strategy for roundabouts
05	Manage demands to reflect capacity provided for each mode	Develop a formalized TDM program charter for Guelph
		Recommend TDM policies for internal travel as part of the TMP
		Identify corridors that exceed performance targets as “problems” in the TMP
08	Make transportation in Guelph more sustainable	Develop policy to evaluate transportation projects based on projected GHG emissions
09	Promote low/lower emission car technology	Include electric vehicles (EVs) in an Emerging Mobility program charter
		Develop strategy for increasing rate of consumer adoption of EVs
		Develop policy to locate more public EV charging stations
		Review (and if necessary, update) the City's fleet electrification strategy as a post-TMP action
		Develop strategy for smart signal implementation
		Develop policy to move more goods by rail
011	Improve alignment of street design with objectives of intensification strategy	Review (and if necessary, update) street classifications for Guelph's city-wide network with consideration for land use alignment
012	Improve alignment of street design for key corridors with neighbourhood objectives	Complete noise mitigation studies for urban street corridors with identified noise pollution issues
		Develop a Complete Streets Design Guide (CSDG) to guide all future street design
013	Create new tools and expand existing ones to promote and facilitate sustainable transportation modes	Develop multi-modal Level of Service (MMLOS) Guideline to evaluate multi-modal performance of streets

#	Objective	Action
		Review (and if necessary, update) the City's Downtown parking strategy Develop a TDM checklist for development applications Update Guelph's TIA guidelines to include TDM strategy requirements for new developments of a certain size
O15	Explore new revenue generation opportunities	Study untapped revenue generation opportunities Study on-street parking revenue generation strategies Review (and if necessary, update) transportation revenue generation policies and programs
O16	Maximize contribution of new travel modes to the transportation strategy for Guelph	Study the readiness of Guelph for autonomous vehicles AVs
O17	Improve the capacity of the transportation system to adapt and respond to emerging transportation modes and technologies	Study emerging modes and transportation technologies to understand their possible implications on Guelph Develop an Emerging Mobility program charter, covering micro-mobility, AVs, EVs, etc.
O18	Improve ability of transportation system to adapt to climate change	Increase redundancy of accesses to Guelph's neighbourhoods Develop policies to avoid constructing roads in low-lying flood zones and/or areas with old under-capacity storm sewer areas
O19	Incorporate Big Data into Guelph's transportation strategy in an appropriate way	Study Big Data collection methods for future use in transportation planning Include Big Data in the Emerging Mobility program charter Include Intelligent Transportation Systems (ITS) and "smart" transportation infrastructure in the Emerging Mobility program charter

3.5 Global Mode Share Targets

The ongoing Guelph TMP update is taking a sustainable approach. A sustainable TMP is mode-share driven rather than corridor-capacity driven. At its core, the differentiating characteristic of a sustainable TMP is that it identifies mode share targets for the future and develops the plan to achieve them. Sustainable TMPs are founded on a philosophy of Complete Streets; they ultimately result in plans to change right-of-way allocations in major street corridors to accommodate a wider range of modes and provides city-wide equitable access to all modes of travel. This shift is made in response to community values rather than measured existing demands (which would reflect a priority for vehicular travel), putting strong upward pressure on sustainable mode shares to mirror the design of the network.

Previous analysis identified the proportion of trips in Guelph based on trip distance. The results of this analysis are shown in Table 5. The table also suggests a range of trip lengths that could be comfortably completed by that mode given ideal infrastructure.

Table 5: Mode Share Potential by Distance

Trip Distance	AM (7-9am)	PM (4-6pm)	Daily
0-2.5km (Comfortable for Walking)	15%	18%	14%
2.5-7.5km (Comfortable for Cycling)	41%	44%	39%
7.5-15km (Comfortable for Transit)	18%	17%	17%
15km+ (Comfortable for Driving/Regional Transit)	26%	21%	29%

Note that in the table that the method applied in calculating the percentages excludes trips with shorter distances from the “higher” modes, which will not necessarily be the case in reality. That is, in reality, cycling would be practical for any trip from 0 to 7.5km in length, transit may be attractive for trips from 0 to 15km, and cars can be used for a trip of any length. Adopting this “cumulative” approach provides a wider window of potential for each mode. For example, cycling during the AM peak hour could be seen as practical for 41% to 56% (41% + 15%) of Guelph residents based on their current trip lengths, as trips that are of a practical distance for walking could also be accomplished on a bike.

With the majority of the City accessible by bicycle, there is significant latent potential to shift some short- and medium-distance trips to cycling. Trip profiles developed for the TMP have found that over half (53%) of all daily trips in Guelph are less than 7.5 kilometres in length. Whereas the Census and TTS estimate that cycling makes up approximately 2% of all daily trips, the actual distances travelled by

people in Guelph on a daily basis mean that about 53% of daily trips could potentially be accomplished by cycling. This potential approaches 56% in the AM peak and 62% in the PM peak.

Previous work on the TMP update also set Global mode share targets for the city. A city-wide Global mode share target is the starting point for influencing and managing future travel choices. Traditionally, the Global target is set by strategic planning documents. They are usually just aspirations that reflect directionality of change from existing mode shares and community values. However, in this analysis, the aspirational mode shares were checked against existing mode share data and reviewed through a “mode share potential” lens based on existing travel demands and trip lengths. Table 6 presents the resulting Global mode share targets.

Table 6: Existing Mode Share and Ultimate Global Mode Share

Travel Mode	Existing Daily Mode Share by Data Source		Strategic 2031 Target	Proposed Global Daily Target for 2031
	Census	TTS	Official Plan	
Walking	5.9%	6.4%	15%	15%
Cycling	1.6%	2.1%	3%	10%
Transit	7.1%	8.0%	15%	15%
Auto	84.5%	83.4%	67%	60%

Note that the proposed 2031 Global targets are not significantly different from the targets outlined in the 2018 OP. The differences stem from consideration of the potential for additional cycling activity based on observed trip lengths; some of the auto mode share was redistributed to cycling in the future as a result.

3.6 Summary

Based on a review of policy directions and mode share targets, to meet the Guelph TMP Goals, the TMP-aligned strategy for cars would have to:

- increase the safety provisions in planning, design and operations
- significantly decrease car mode share
- increase effort to manage demands to reflect capacity for each mode
- manage/ mitigate delays and queues for cars
- significantly decrease annual car vkt to reduce GHG from transportation
- promote lower emission vehicles
- align street designs with needs of intensification and existing neighbourhoods
- improve redundancy of neighbourhood access
- include a strategy for evaluating and incorporating emerging opportunities

4 Problems and Opportunities

Based on the established directions from the ongoing TMP update, this section summarizes the problems and opportunities for the car mode plan.

To ensure alignment with the policy framework, the importance of which was discussed in the TMP Vision and Values paper, the problems and opportunities for the car mode are broken down by transportation goals from Section 3.3. Note that the section is organized so that the appropriate problem or opportunity statements are listed below the corresponding goal.

Goal 1 - People of all ages and physical ability will be able to travel safely using any transportation mode that they choose

- Planning and analysis tools for streets and intersections do not allow for the assessment of car safety

Goal 2 - Guelph's transportation system will be easy-to-use, reliable and give people and businesses the options they want when they need them.

- The car network has insufficient redundancy of major street access to some neighbourhoods
- The car network has inconsistencies in the continuity of major street capacity, causing congestion points

Goal 3 - Transit service will provide travel times and traveler convenience at levels that are competitive with travel by car

- N/A

Goal 4 - The carbon footprint from the transportation sector will aim for net zero by 2050

- Mode share for cars needs to significantly decrease; active management of mode share will be required
- Total vehicle-km traveled by car needs to significantly decrease
- The parking strategy for downtown needs to be updated to mesh with the mode share objectives
- The strategy for supporting and promoting lower emission vehicles needs to be strengthened

Goal 5 - Guelph's streets, trails, and rail networks will align with the City's land use objectives

- Existing hierarchy, cross-sections and design tools do not align with needs of residential communities

Goal 6 - Investment decisions will be made considering the asset lifecycle costs

- Implementation of Complete Streets in existing corridors with limited ROW has resulted in cross-sections that place utilities under sidewalks, increasing the cost of maintenance

Goal 7 - Guelph's transportation system will plan for the changes of tomorrow, while delivering great service today

- The City's approach to managing emerging transportation issues and opportunities is ad hoc

5 Recommended Future Car Network, Policies, and Programs

This final section of this memo presents the recommended car mode network, policies, and programs for Guelph in response to the existing conditions, problems, and opportunities identified earlier in the memo. Note that the recommendations for the car mode in this section consider the car mode plan in isolation of other modes. Trade-offs between different modes required for an integrated mobility solution for Guelph will be discussed and mitigated at a future stage.

5.1 Networks

Capacity/ Congestion

Figure 7 shows the existing areas of peak hour congestion, as determined by the forecasting model. The City will need to manage congestion in these corridors by either increasing capacity or decreasing demand.

The Car Priority Network

Figure 8 establishes network modifications required to improve safety, improve access to developing areas, protect neighbourhoods, and manage congestion. Implementing the car mobility improvement network includes:

The 2051 Road Hierarchy

Figure 9 shows the core network of highways and arterial roads that allow vehicles to travel efficiently. This priority network has to support the movement of large volumes of vehicles safely at moderate to high speeds

The Resiliency Network

Figure 10 identifies key arterial and collector streets that are designed to be flexible by protecting space in the right-of-way for future uses. This offers the transportation network flexibility so that the City can make changes to improve mobility along those streets in response to factors like changing travel patterns/needs, climate change impacts, societal disruptions like COVID-19, new mobility technologies, and more.

Since the Resilience Network is focused on future needs, these streets will not require any immediate physical changes. Implementation involves protecting for improvements or widenings of select existing arterial and collector streets through the OP.

Parking

The City will need to update parking strategy for downtown to account for the significant decrease planned for the car mode share.

Figure 7 - 2016 PM Peak Hour Corridor Congestion

Legend

Links

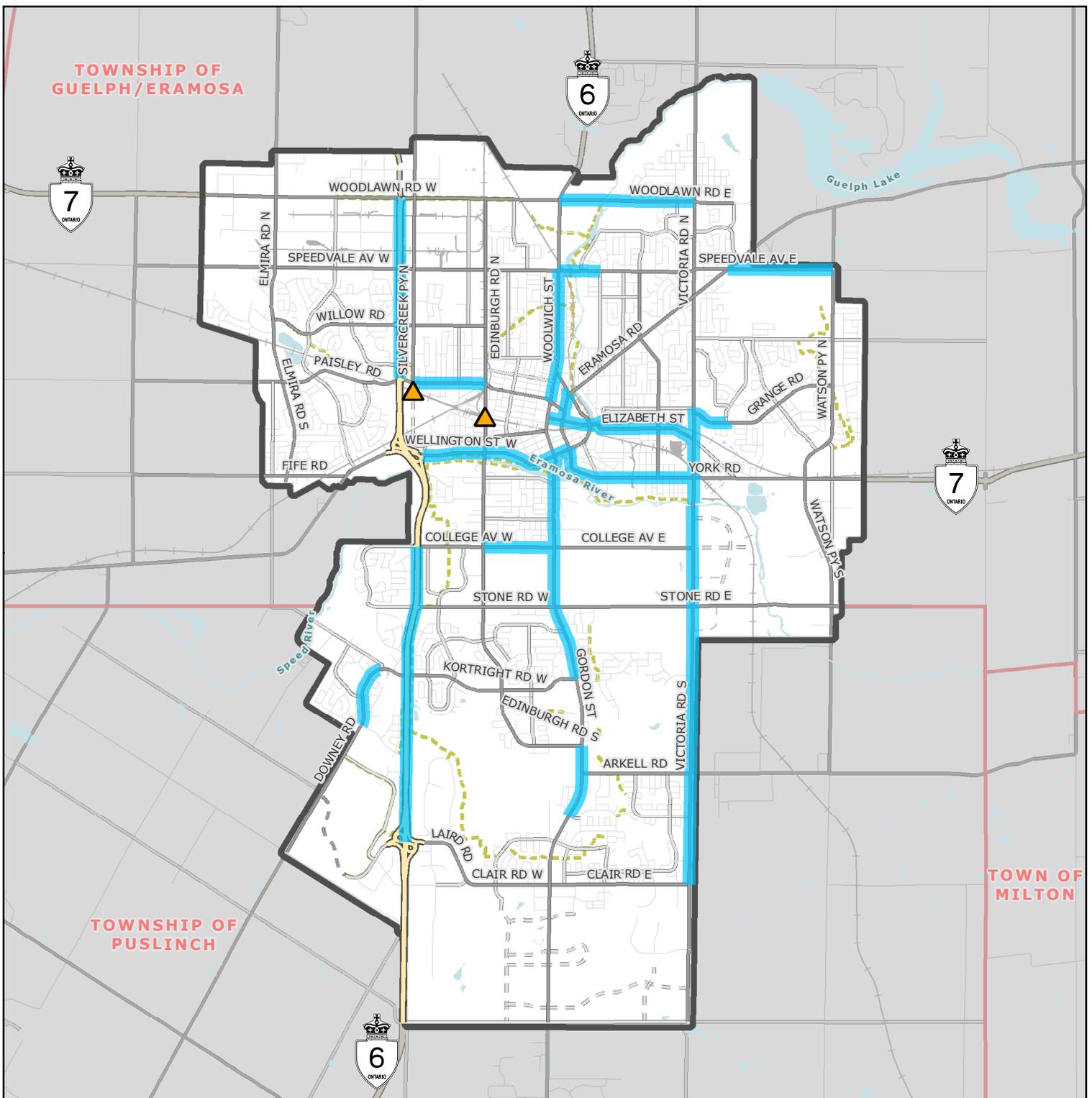
Volume capacity ratio PrT (AP)

— Free Flow

— Approaching Capacity

— At Capacity





- Recommended Grade Separation
- CAR MOBILITY IMPROVEMENTS**
- Car Mobility - optimization and mode shift

- BASE DATA**
- Municipal Boundaries
 - Active Transportation Network
 - Expressway (MTO)
 - Arterial Road
 - Collector Road
 - Local Road

- Approved Expressway (MTO) (OP)
- Approved Arterial Road (OP)
- Approved Collector Road (OP)
- Approved Local Road (OP)
- Railway
- Waterbody

Figure 8: Car Priority Network



MAP DRAWING INFORMATION:
DATA PROVIDED BY CITY OF GUELPH 2019,
MNR 2019

MAP CREATED BY: GAM/LMM
MAP CHECKED BY: SD
MAP PROJECTION: NAD 1983 UTM Zone 17N



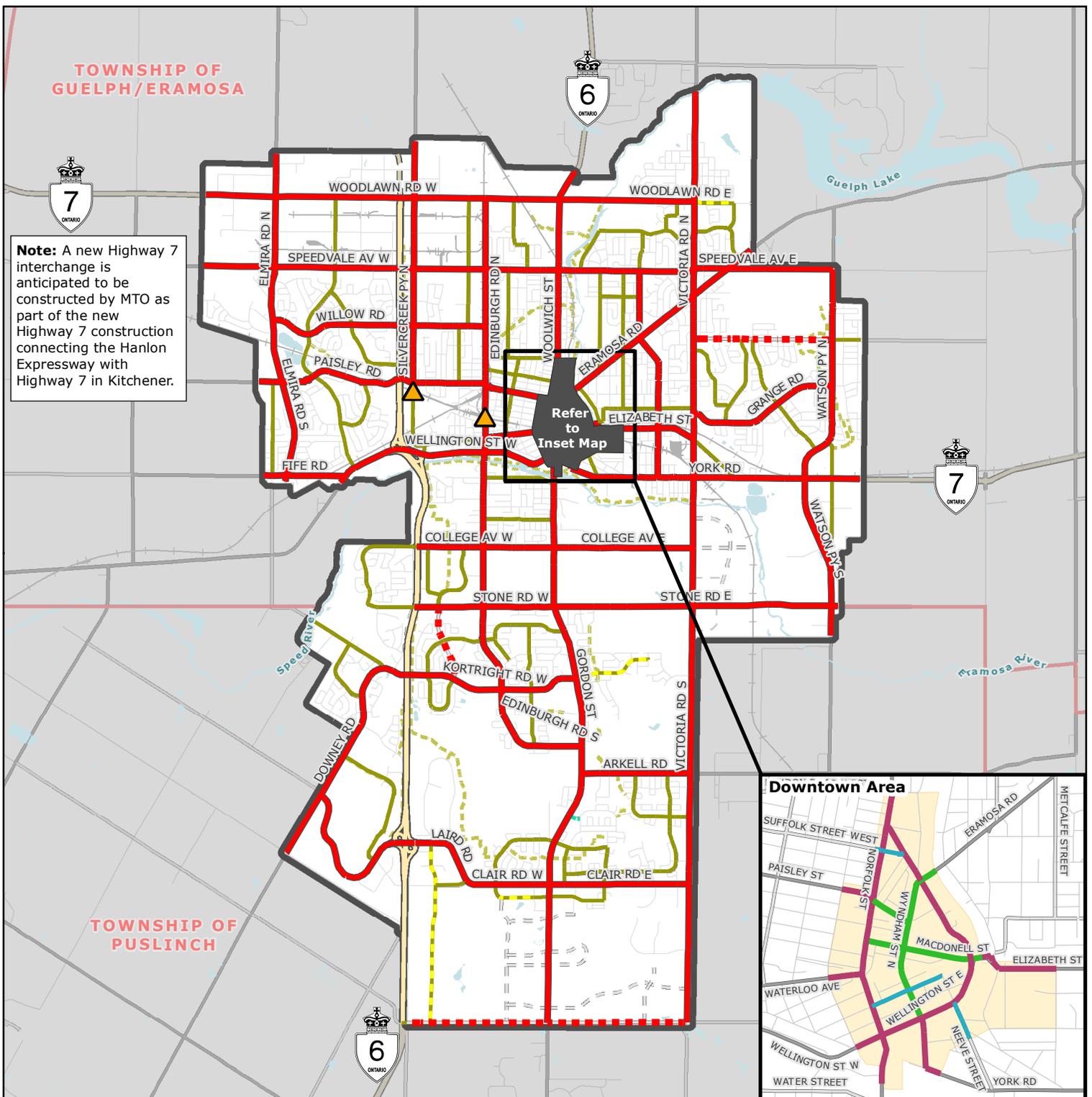
SCALE 1:80,000

0 0.75 1.5 KM

PROJECT: 18-8919

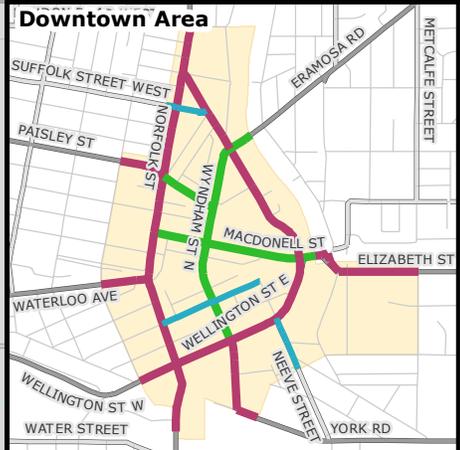
STATUS: DRAFT

DATE: 2022-02-25



Note: A new Highway 7 interchange is anticipated to be constructed by MTO as part of the new Highway 7 construction connecting the Hanlon Expressway with Highway 7 in Kitchener.

Refer to Inset Map



- Recommended Grade Separation
- Arterial
- Recommended Change to Arterial
- Collector
- Recommended Change to Collector
- Recommended Change to Local

- Downtown Road Classification**
- Primary Street
 - Downtown Main
 - Secondary Street
 - Downtown Area
- BASE DATA**
- Municipal
 - Active Transportation Network
 - Expressway (MTO)

- Arterial Road
- Collector Road
- Local Road
- Approved Expressway (MTO) (OP)
- Approved Arterial Road (OP)
- Approved Collector Road (OP)
- Approved Local Road (OP)

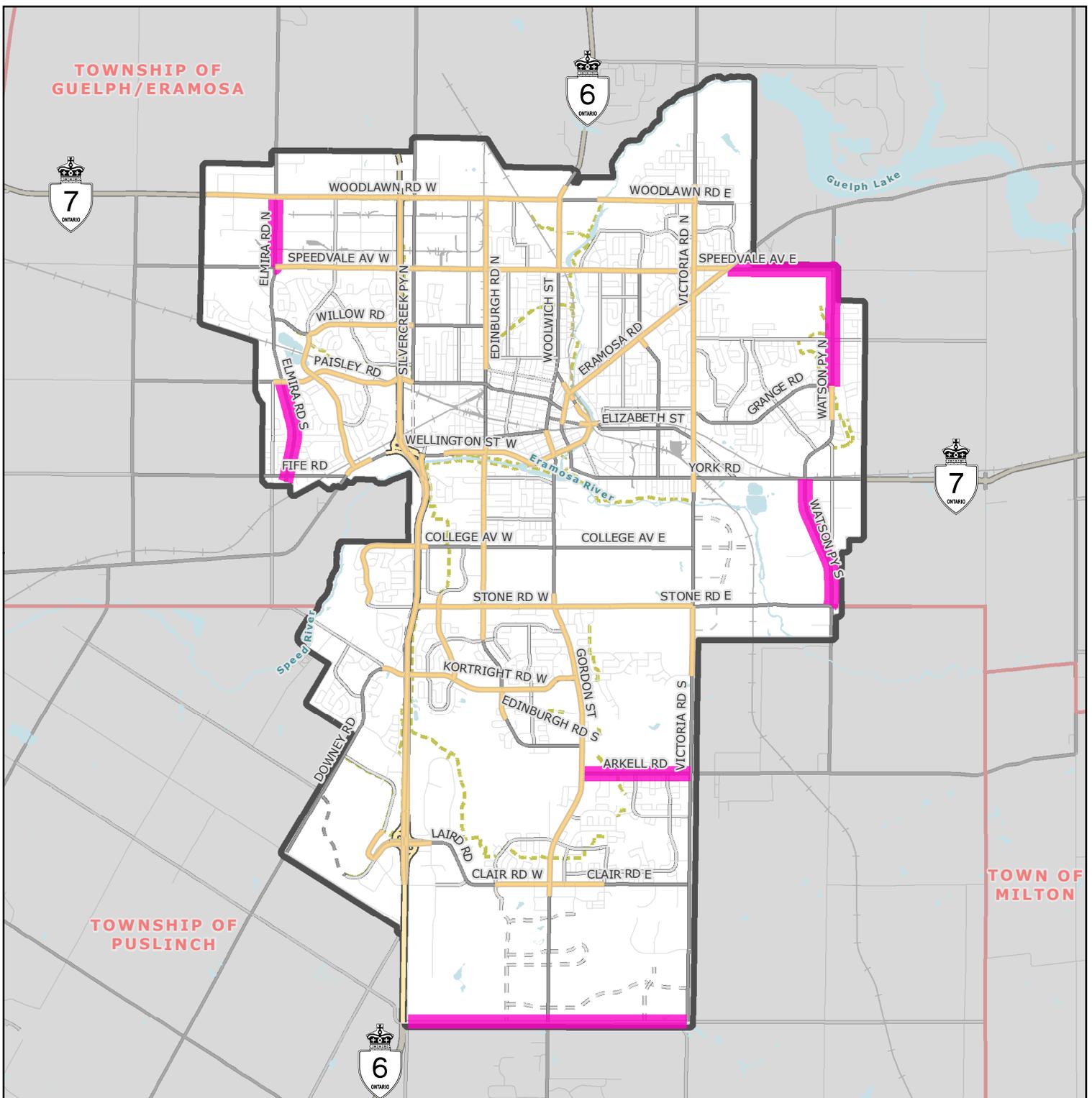
Figure 9: Recommended Street Hierarchy



MAP DRAWING INFORMATION:
DATA PROVIDED BY CITY OF GUELPH 2019,
MNR 2019

MAP CREATED BY: GAM/LMM
MAP CHECKED BY: SD
MAP PROJECTION: NAD 1983 UTM Zone 17N

SCALE 1:80,000
0 0.75 1.5 KM
PROJECT: 18-8919
STATUS: DRAFT
DATE: 2022-02-25



- 4 Lane Arterial
- Potential Resiliency Widening

BASE DATA

- Municipal Boundaries
- Active Transportation Network
- Expressway (MTO)
- Arterial Road
- Collector Road
- Local Road

- Approved Expressway (MTO) (OP)
- Approved Arterial Road (OP)
- Approved Collector Road (OP)
- Approved Local Road (OP)
- +— Railway
- Waterbody

Figure 10: Resiliency Network



MAP DRAWING INFORMATION:
DATA PROVIDED BY CITY OF GUELPH 2019,
MNR 2019

MAP CREATED BY: GAM/LMM
MAP CHECKED BY: SD
MAP PROJECTION: NAD 1983 UTM Zone 17N

SCALE 1:80,000
0 0.75 1.5 KM

PROJECT: 18-8919
STATUS: DRAFT
DATE: 2022-02-25

5.2 Policies and Programs

The policy recommendations for the car mode plan are to:

- Prepare/update guidelines for guidelines for electric vehicle integration and support;
- Prepare Complete Streets Design Guidelines to better align design philosophies and cross-sections to land use plan; and
- Prepare Multi-Modal Level of Service (MMLOS) guidelines that integrate safety into planning decisions.

The program recommendations for the car mode plan are to:

- Increase resources dedicated to TDM programs;
- Create an emerging transportation program to monitor and integrate emerging technology and approached, like autonomous vehicles (AVs), smart infrastructure, etc.; and
- Continue with Road Safety and Traffic Calming Programs.



APPENDIX F4

Guelph Model Results 2031 Network Alternatives – Performance Overview

Memo



To: Jennifer Juste
From: Shawn Doyle
cc: Gwen Zhang, Paul Bumstead & Jeff Axisa
Date: April 22, 2021
Subject: Guelph Model Results: 2031 Network Alternatives – Performance Overview
Our File: 18-8919

Screenline Summary Overview

- The critical time period is **PM**.
- The critical direction of travel is **North/South**.
- The critical Screenline (the only one forecast to have capacity conditions in the ‘Mitigate’ category) is **S River (Hanlon-Victoria)**.
 - It is 25-33% over capacity in Alt 2 & 3 during the PM peak hour.
- The critical Link is **Hanlon Parkway**.
 - It is over capacity by at least 29% in all alternatives.
- Additional capacity on the Hanlon Parkway would address much of the north/south deficiency across multiple screenlines.
 - Upgrade to freeway (the addition of grade separated interchanges) increases per lane capacity (1,200 vph → 1,800 vph) and total capacity (2,400 vph → 3,600 vph)
 - Upgrade to freeway and add a third directional lane) increases per lane capacity (1,200 vph → 1,800 vph) and total capacity (2,400 vph → 5,400 vph).

Alternative 1/4 (very similar results)

- Screenline results indicate that all are working within or at capacity. The exception is the S River (Hanlon-Victoria) screenline which is operating at slightly over capacity.
- No screenlines require mitigation.
- Four screenlines (14, 15, 17 & 20) are assessed to be in the “Analyze / Manage” category.
 - All located in southern Guelph (south of the River) and are directionally North/South.
- The planned upgrades to the Hanlon Parkway will address any capacity shortfall on the screenlines identified as being in the “Analyze / Manage” category.

Alternative 2/3 (very similar results)

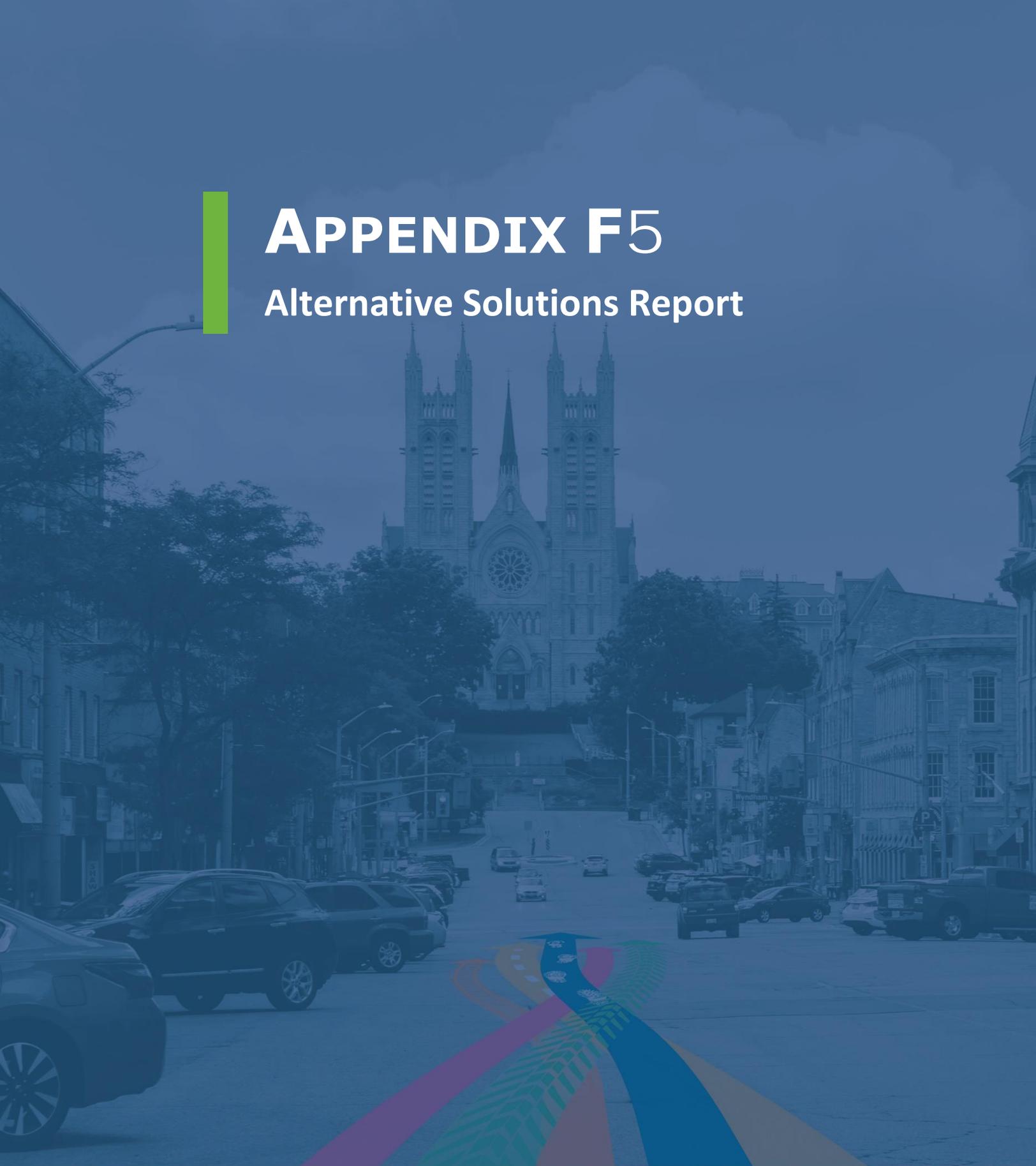
- Screenline results indicate that capacity conditions in the “Analyze/Manage” category have increased.
- However, the **S River (Hanlon-Victoria)** screenline is the only one that requires mitigation.
 - This mitigation could come in the form the upgrade of the Hanlon Parkway to a Freeway (increases directional capacity from 2,400 vph → 3,600 vph).

- This upgrade would significantly increase the capacity across all north/south screenlines
- Almost all roadways that are forecast to require “Mitigation” are as a result of proposed lane conversion. They include:
 - Edinburgh Road and Victoria Road south of the river;
 - Gordon Street south of Arkell Road;
 - Speedvale Avenue west of Woolwich Street; and
 - Speedvale Avenue west of Edinburgh Road.
- This suggests that the reduction in capacity (as a result of lane conversions) is outpacing the reduction in auto demand (as a result of enhanced transit and AT). This would suggest that some / all lane conversions should be delayed to beyond 2031 to allow for the reduction in auto demand to catch up.
- It should also be noted that where a 4-lane roadway has a lane converted to a transit lane, the efficiency of the remaining lane would improve (i.e. achieve a higher per lane capacity) as there would be reduced lane friction (no weaving between lanes) and better lane utility. As well, the transit lane effectively provides an exclusive right turn lane for autos.
 - For example: An arterial roadway with a per lane capacity of 800 vph (i.e. Speedvale Avenue and sections of Edinburgh Road) across a 4 lane auto cross-section (1,600 vph per direction) could be assumed to have a per lane capacity of 1,000 vph across a 2 lane auto cross-section with transit lanes (1,000 vph per direction). Thus capacity is not simply cut in half as the model assumes as a worst case scenario.
- The roadways that are forecast to require “Mitigation” and are not as a result of a lane conversion are the Hanlon Expressway and Gordon Street just south of the river. It is noted that these constraints are expected given:
 - The MTO plans for upgrades to the Hanlon Expressway; and
 - The central role that Gordon Street plays now, and will continue to play in the future, in accessing the downtown and the limited potential for expanding the cross section just south of the river.

Attachments

- Guelph Screenline Results - Future (2031) Alternative 1 – 2021-04-22
- Guelph Screenline Results - Future (2031) Alternative 2 – 2021-04-22
- Guelph Screenline Results - Future (2031) Alternative 3 – 2021-04-22
- Guelph Screenline Results - Future (2031) Alternative 4 – 2021-04-22
- Guelph Screenline Results - Future (2031) Problem Summary – 2021-04-22
- Guelph Screenline Link Results - Future (2031) Problem Summary – AM – 2021-04-22
- Guelph Screenline Link Results - Future (2031) Problem Summary - PM – 2021-04-22
- Guelph VC Results - Future (2031) Alt 1 - AM – 2021-04-22
- Guelph VC Results - Future (2031) Alt 1 - PM – 2021-04-22

- Guelph VC Results - Future (2031) Alt 2 - AM – 2021-04-22
- Guelph VC Results - Future (2031) Alt 2 - PM – 2021-04-22
- Guelph VC Results - Future (2031) Alt 3 - AM – 2021-04-22
- Guelph VC Results - Future (2031) Alt 3 - PM – 2021-04-22
- Guelph VC Results - Future (2031) Alt 4 - AM – 2021-04-22
- Guelph VC Results - Future (2031) Alt 4 - PM – 2021-04-22



APPENDIX F5

Alternative Solutions Report



CITY OF GUELPH

Guelph Transportation Master Plan

Evaluation of Alternatives Report

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Appendices

A	Detailed Evaluation Results
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1.0 Introduction

This report presents the evaluation of Alternative Solutions for the Guelph Transportation Master Plan (TMP) update. The comparative evaluation of options is summarized in the main report and the detailed results supporting the evaluation can be found in **Appendix A**.

1.1 Background

The Guelph Transportation Master Plan (TMP) update is a long-range strategic plan that will define how Guelph's transportation system will support the community as the city continues up to 2051. The main objectives of the TMP update are:

1. to ensure the new plan is consistent with current policies, including the Official Plan and other master plans that have been approved since 2005;
2. to recommend new policies and guidelines that reflect our community's vision and that balance mobility, environment and efficiency while prioritizing safety and access for all travellers, and
3. to explore how new and evolving technologies and travel services will shape the future of transportation in Guelph.

The analysis summarized in this report builds upon previously completed work as part of the TMP, including:

- Develop the TMP vision, values, and goals;
- Identifying strategic directions for the TMP;
- Summarizing existing conditions;
- Developing the TMP Problem Statements;
- Developing the ideal networks for each mode of travel; and
- Developing and refine the Alternative Solution network concepts.

Refer to previous project documentation for a more detailed overview of each of the aforementioned project tasks.

2.0 Alternative Solutions and Evaluation Criteria

This section defines the four Alternative Solutions considered as part of the Guelph TMP and the criteria used to evaluate them.

2.1 Alternative Solutions

Alternative Solutions represent the options for what Guelph's future transportation networks could look like. Four Alternative Solutions were considered as part of this TMP update, representing combinations of different proposed priority network concepts for each mode of travel. Since the TMP is a long-term strategic plan with a horizon year of 2051, all of the elements of the ultimately selected option - known as the Preferred Solution - may not be implemented until 2051.

The six proposed priority networks, which were developed in earlier stages of the project, include:

1. Pedestrian Priority Network
2. Cycling Priority Network (i.e the Cycling Spine Network)
3. Transit Priority Network (i.e the Quality Transit Network)
4. Goods Movement Priority Network (i.e. for trucks)
5. Car Priority Network
6. Resilience Priority Network

Table 1 summarizes the priority networks included in each Alternative Solution, which are further defined under the following headings.

Table 1: Inclusion of Priority Networks by Alternative Solution

	Alternative 1 Do Nothing	Alternative 2 Sustainability	Alternative 3 Sustainability and Resilience	Alternative 4 Car Efficiency
Pedestrian Priority Network	Y	Y	Y	Y
Cycling Spine Network	N	Y	Y	Y
Quality Transit Network	N	Y	Y	S
Goods Movement Priority Network	Y	S	S	Y
Car Priority Network	N	N	N	Y
Resilience Priority Network	N	N	Y	Y

Y = Alternative implements all the elements of the network

S = Alternative implements some of the elements of the network

N = Alternative does not implement the network

2.1.1

Alternative 1 – Do Nothing

With this Alternative, the City would make no changes to the existing transportation network for any mode - car, transit, bike or pedestrian – beyond future projects that have already been approved by City Council.

Priority Networks Included

This Alternative would include the implementation of the Pedestrian Priority Network since the elements of the Pedestrian Priority Network have been approved to through previous policies and strategic plans.

Justification for Alternative

Alternative 1 is an option that is required to be included to meet the needs of the Municipal Engineers Association (MEA) Class Environmental Assessment (EA) process for infrastructure Master Plans. It provides a baseline for the analysis of the other Alternative Solutions.

Alternative 1 is most strongly aligned with the affordability value and goal of the TMP as it eliminates new capital costs beyond what has already been committed to. It does not align with other TMP values or goals.

2.1.2 Alternative 2 – Sustainability Focus

Alternative 2 is the best network strategy for shifting the mode share in Guelph towards sustainable modes of travel like walking, cycling and transit while not adding new street capacity for cars. This Alternative rebalances the overall transportation system, shifting the priorities away from improving car efficiency in all situations towards improving the experience for non-car modes. It also improves the safety and experience of more vulnerable users - people walking, cycling using transit.

This Alternative will help manage congestion for people who continue to drive by encouraging more people to travel by non-car modes (this Alternative has the biggest potential for a mode shift away from cars among the four Alternatives). The Alternative also improves the safety and environment of all travelers, particularly the more vulnerable users - people walking, cycling and using transit.

Priority Networks Included

Alternative 2 implements the Pedestrian Priority, Spine Cycling and Quality Transit Networks. It also partially implements the Goods Movement Priority Network.

Justification for Alternative

Alternative 2 is strongly aligned with the **sustainability, safety, equity, and land use alignment** values and goals of the TMP. It is also aligned with the **affordability** value and goal as it limits additional investment in infrastructure for cars.

2.1.3 Alternative 3 – Sustainability + Resilience Focus

Alternative 3 supports the shift in mode share towards sustainable modes of travel. It also adds transportation network resiliency against future challenges and opportunities, such as climate change, emerging mobility technologies, or societal disruptions like the COVID-19 pandemic by extending the four-lane street network to offer flexibility and redundancy. This Alternative improves the safety and experience for all travelers walking, cycling and using transit.

This Alternative will help manage congestion for people who continue to drive by encouraging more people to travel by non-car modes and also widening some roads (note that increased capacity due to long-term widening is expected to be a short-term solution; case studies over the decades have shown that congestion tends to rebound to pre-widening levels due to a concept called “induced demand”). The Alternative also improves the safety and environment of all travelers, particularly the more vulnerable users - people walking, cycling and using transit.

Priority Networks Included

Alternative 3 implements the Pedestrian Priority, Spine Cycling, Quality Transit and Resilience Networks. It also partially implements the Goods Movement Priority Network.

Justification for Alternative

Alternative 3 is strongly aligned with the **safety, equity, land use alignment and future resiliency** values and goals of the TMP. It is also aligned with the **sustainability** value and goal.

2.1.4 Alternative 4 – Car Efficiency Focus

Alternative 4 improves the convenience of driving while also supporting a mode shift away from cars by implementing the Pedestrian Priority and Spine Cycling Network. The Alternative also improves the safety and environment of all travelers, particularly the more vulnerable users - people walking, cycling and using transit.

Note that reductions to car delays resulting from street widenings are expected to be a short-term benefit. Case studies over the decades have shown that congestion tends to rebound to pre-widening levels due to a concept called “induced demand.”

Priority Networks Included

Alternative 4 implements the full versions of all priority networks except the Quality Transit Network. Stage 1 of the Quality Transit Network would be implemented through this Alternative, even if indicators show that other stages are warranted. This is because Stages 2 and 3 of the Quality Transit Network will require physical reconfiguration for streets within constrained rights-of-way, which will be prioritized for increasing car capacity.

Stage 1 of the Quality Transit Network would be completely implemented. Stage 2 and Stage 3 of the Quality Transit Network would be scaled back. All potential transit priority lanes to be implemented through conversion of existing traffic lanes would be eliminated. Some widenings to create transit priority lanes would also be eliminated (e.g. on Victoria Road) where the additional street width was needed to reduce delays for cars.

Justification for Alternative

Alternative 4 best represents the traditional approach to TMP projects where infrastructure and street widening decisions are based primarily on the need to provide the necessary car capacity to meet travel demands.

3.0

Evaluation Criteria

The evaluation criteria used to assess the four Alternative Solutions for the Guelph TMP fall into three Criteria Groups, which represent the three types of impacts each network concept could have:

- Natural and Social Environment
- Transportation Environment
- Cost Environment

The evaluation criteria for each category were developed to align with the TMP policy framework, established in earlier stages of the project. The recommended criteria, justification for including each criterion, and the indicator for each criterion (along with indication of whether the indicator can be determined qualitatively or quantitatively) are summarized in **Table 2**.

The rationale for the selection of each indicator can be found in **Appendix A**.

Table 2: Summary of Evaluation Criteria

Criteria Group	Criteria	Criteria Justification	Indicator	Qualitative	Quantitative
Natural and Social Environment	Reduces potential for footprint (property) impacts on natural and social heritage features	EA requirement	Lane-km of street widenings		X
	Creates opportunities for additional streetscaping	Aligned with TMP Goal 5	Lane-km of street widenings		X
	Increases transportation options for all travelers	Aligned with TMP Goal 1	Provision of new or improved active transportation and transit network elements	X	
	Reduces GHG by supporting mode share shift	Aligned with TMP Goal 4	Tonnes of CO ₂ from passenger vehicles during AM and PM peak hours		X

Criteria Group	Criteria	Criteria Justification	Indicator	Qualitative	Quantitative
	Aligns with Guelph's planning objectives	Aligned with TMP Goal 5	Aligns with the City's Official Plan, Strategic Plan, and Growth Management Strategy: <ul style="list-style-type: none"> • Reduces GHG, • Reduces auto mode share; • Reduces collision severity by improving safety for vulnerable travelers; • Supports intensification through sustainable transportation; • Minimizes footprint impacts 	X	
Transportation Environment	Improves safety of vulnerable users	Aligned with TMP Goal 1	Extent of implementation of recommended All Ages and Abilities (AAA) cycling network	X	
	Improves resiliency of transportation system	Aligned with TMP Goal 7	Extent of implementation of new or improved network elements for multiple modes AND implementation of Core 4-Lane network		X
	Supports increase in use of active transportation modes	Aligned with TMP Goal 2 Aligned with TMP Goal 4	Extent of implementation of AAA cycling network while also limiting increase in car capacity	X	
	Supports increase in use of transit	Aligned with TMP Goal 3 Aligned with TMP Goal 4	Extent of implementation of Quality Transit network while also limiting increase in car capacity	X	

Criteria Group	Criteria	Criteria Justification	Indicator	Qualitative	Quantitative
	Manages congestion on car network	Aligned with TMP Goal 2	Proportion of major road network with V/C >0.9 during peak hours (lane-km of expressways, arterials and collectors)		X
	Manages congestion on truck routes	Aligned with TMP Goal 2	Proportion of truck routes with V/C >0.9 during peak hours (lane-km of expressways, arterials and collectors)		X
Cost Environment	Limits capital costs	Aligned with TMP Goal 6	Lane-km of street widening		X
	Limits operations and maintenance (O+M) costs	Aligned with TMP Goal 6	Extent of implementation of the AAA cycling network	X	
	Limits transit operation costs	Aligned with TMP Goal 6	Extent of implementation of Quality Transit Network	X	

4.0

Natural and Social Environment Evaluation

Table 3 summarizes the evaluation of the four Alternative Solutions through the lens of impacts to the natural and social environment.

Refer to **Appendix A** for detailed results of the qualitative and quantitative analysis supporting the scores in **Table 3**.

Table 3: Natural and Social Environment Evaluation

Criteria	Alternative 1 <i>Do Nothing</i>	Alternative 2 <i>Sustainability</i>	Alternative 3 <i>Sustainability and Resilience</i>	Alternative 4 <i>Car Efficiency</i>
Reduces potential for footprint (property) impacts on natural and social heritage features				
Creates opportunities for additional streetscaping				
Increases transportation options for all travelers				
Reduces GHG by supporting mode share shift				
Aligns with Guelph's planning objectives				
TOTAL				

** Full circle = most preferred, empty circle = least preferred

5.0

Transportation Environment Evaluation

Table 4 summarizes the evaluation of the four Alternative Solutions through the lens of impacts to the transportation environment.

Refer to **Appendix A** for detailed results of the qualitative and quantitative analysis supporting the scores in **Table 4**.

Table 4: Transportation Environment Evaluation

Criteria	Alternative 1 <i>Do Nothing</i>	Alternative 2 <i>Sustainability</i>	Alternative 3 <i>Sustainability and Resilience</i>	Alternative 4 <i>Car Efficiency</i>
Improves safety of vulnerable users				
Improves resiliency of transportation system				
Supports increase in use of active transportation modes				
Supports increase in use of transit				
Manages congestion on car network				
Manages congestion on truck routes				
TOTAL				

** Full circle = most preferred, empty circle = least preferred

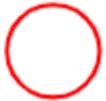
6.0

Cost Environment Evaluation

Table 5 summarizes the evaluation of the four Alternative Solutions through the lens of impacts to the City costs.

Refer to **Appendix A** for detailed results of the qualitative and quantitative analysis supporting the scores in **Table 5**.

Table 5: Cost Environment Evaluation

Criteria	Alternative 1 <i>Do Nothing</i>	Alternative 2 <i>Sustainability</i>	Alternative 3 <i>Sustainability and Resilience</i>	Alternative 4 <i>Car Efficiency</i>
Limits capital costs				
Limits operations and maintenance (O+M) costs				
Limits transit operation costs				
TOTAL				

** Full circle = most preferred, empty circle = least preferred

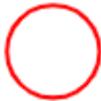
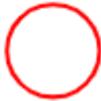
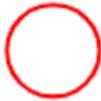
7.0

Evaluation Summary

Table 6 summarizes the overall evaluation. Based on the technical evaluation only, Alternatives 2 and 3 are tied as the Preferred Alternatives for Guelph's future transportation networks. Both Alternatives show the most significant alignment with the TMP goals, which were supported through the November-December 2020 round of public engagement for the TMP.

Alternatives 2 and 3 tie for the highest score in the Natural and Social Environment criteria group. Alternative 3 also scores highest in the Transportation Environment criteria group but lower in the Cost Environment criteria group. Alternative 2 scores second-highest in both the Transportation Environment and Cost Environment criteria groups.

Table 6: Summary of Evaluation

Criteria	Alternative 1 <i>Do Nothing</i>	Alternative 2 <i>Sustainability</i>	Alternative 3 <i>Sustainability and Resilience</i>	Alternative 4 <i>Car Efficiency</i>
Natural and Social Environment				
Transportation Environment				
Cost Environment				
TOTAL				

** Full circle = most preferred, empty circle = least preferred

Appendix A

Detailed Evaluation Results

Table 1: EA Evaluation Criteria and Rationale

Criteria Group	Criteria	Criteria Justification	Indicator	Rationale for Indicator
Natural and Social Environment	Reduces potential for footprint (property) impacts on natural and social heritage features	EA requirement	Lane-km of street widenings	<ul style="list-style-type: none"> This is a requirement of the EA process, and is a proxy for all of the negative impacts from footprint type of analysis that is completed in EA studies Widenings with potential for impact on sensitive natural or social heritage features were explicitly screened out
	Creates opportunities for additional streetscaping	Aligned with TMP Goal 5	Lane-km of street widenings	<ul style="list-style-type: none"> Reflects alignment with land use objectives Any capital project provides the opportunity to add enhancements
	Increases transportation options for all travelers	Aligned with TMP Goal 1	Provision of new or improved active transportation and transit network elements beyond those approved by Council	<ul style="list-style-type: none"> To measure the difference in geographic equity for the Alternatives; how well the Alternative supports the implementation of the Priority networks to improve balance of system
	Reduces GHG by supporting mode share shift	Aligned with TMP Goal 4	Tonnes of CO2 from passenger vehicles during AM and PM peak hours	<ul style="list-style-type: none"> To measure how GHG will be reduced resulting from the mode share shift Calculated total peak hour vehicle-km using the model
	Aligns with Guelph's planning objectives	Aligned with TMP Goal 5	Aligns with the City's Official Plan, Strategic Plan, and Growth Management Strategy: <ul style="list-style-type: none"> Reduces GHG, 	<ul style="list-style-type: none"> To represent alignment of the Alternatives with land use objectives

			<ul style="list-style-type: none"> • Reduces auto mode share; • Reduces collision severity by improving safety for vulnerable travelers; • Supports intensification through sustainable transportation; • Minimizes footprint impacts 	
Transportation Environment	Improves safety of vulnerable users	Aligned with TMP Goal 1	Extent of implementation of recommended All Ages and Abilities (AAA) cycling network	<ul style="list-style-type: none"> • Implementation of AAA cycling network improves safety for vulnerable users
	Improves resiliency of transportation system	Aligned with TMP Goal 7	Extent of implementation of new or improved network elements for multiple modes AND implementation of Core 4-Lane network	<ul style="list-style-type: none"> • All widenings to four lanes improve the resiliency of the network, regardless of designated purpose, because lanes can be repurposed in future as necessary
	Supports increase in use of active transportation modes	Aligned with TMP Goal 2 Aligned with TMP Goal 4	Extent of implementation of AAA cycling network while also limiting increase in car capacity	<ul style="list-style-type: none"> • Increases in car capacity run counter to efforts to shift demands to active modes
	Supports increase in use of transit	Aligned with TMP Goal 3 Aligned with TMP Goal 4	Extent of implementation of Quality Transit network while also limiting increase in car capacity	<ul style="list-style-type: none"> • Increases in car capacity run counter to efforts to shift demands to active modes
	Manages congestion on car network	Aligned with TMP Goal 2	Proportion of major road network with V/C >0.9 during peak hours (lane-km of expressways, arterials and collectors)	<ul style="list-style-type: none"> • V/C is the standard measure of performance for congestion • Considers expressways, arterials, and collector roads

	Manages congestion on truck routes	Aligned with TMP Goal 2	Proportion of truck routes with V/C >0.9 during peak hours (lane-km of expressways, arterials and collectors)	<ul style="list-style-type: none"> • V/C is the standard measure of performance for congestion • Considers expressways, arterials, and collector roads
Cost Environment	Limits capital costs	Aligned with TMP Goal 6	Lane-km of street widening	<ul style="list-style-type: none"> • All Alternatives include the planned new Active Transportation bridges; capital costs for the bridges were not considered as they are common to all options and their costs do not impact the comparative evaluation of Alternatives • Street widenings have significant capital costs and vary between Alternatives
	Limits operations and maintenance (O+M) costs	Aligned with TMP Goal 6	Extent of implementation of the AAA cycling network	<ul style="list-style-type: none"> • Streets with unique or specialized treatments have significant operational and maintenance costs • Dedicated transit lanes will not have unique design treatments • Cycle tracks and buffered bike lanes may require increased maintenance costs, depending on individual corridor design
	Limits transit operation costs	Aligned with TMP Goal 6	Extent of implementation of Quality Transit Network	<ul style="list-style-type: none"> • Transit priority measures create a more efficient transit service, which lead to operational cost savings

Table 2: Qualitative Scoring Guide

The table below provides a scoring guide for the criteria with a qualitative indicator. For criteria that used quantitative indicators, that number was used as the score.

Criteria			Score			
Criteria Group	Criteria	Indicator	0 - No change	1 - Minimal	2 - Moderate	3 - Significant
Natural and Social Environment	Increases transportation options for all travelers	Provision of new or improved active transportation and transit network elements beyond those approved by Council	No new elements beyond those already approved	Implements the Core Cycling Network; Quality Transit Network corridor improvements are limited to optimization		Implements the Core Cycling and Quality Transit Network
	Aligns with Guelph’s planning objectives	Aligns with the City’s Official Plan, Strategic Plan, and Growth Management Strategy: <ul style="list-style-type: none"> ● Reduces GHG, ● Reduces auto mode share; ● Reduces collision severity by improving safety for vulnerable travelers; ● Supports intensification through sustainable transportation; ● Minimizes footprint impacts 	Not aligned: <ul style="list-style-type: none"> ● Supports 0 or 1 objectives 	Minimal alignment: <ul style="list-style-type: none"> ● Supports 2 objectives 	Moderate alignment: <ul style="list-style-type: none"> ● Supports 3 or 4 objectives 	Significant alignment: <ul style="list-style-type: none"> ● Supports 5 objectives

Transportation Environment	Improves safety of vulnerable users	Extent of implementation of recommended All Ages and Abilities (AAA) cycling network	Implements none of the elements of the All Ages and Abilities (AAA) cycling network	Implements some of the All Ages and Abilities (AAA) cycling network	Implements most of the All Ages and Abilities (AAA) cycling network	Fully implements the All Ages and Abilities (AAA) cycling network
	Supports increase in use of active transportation modes	Extent of implementation of AAA cycling network WHILE ALSO limiting increase in car capacity	No AAA cycling network implementation Unlimited car capacity	Complete AAA cycling network implementation Unlimited car capacity Or No AAA cycling network implementation No car capacity increases		Complete AAA cycling network implementation No car capacity increases
	Supports increase in use of transit	Extent of implementation of the Quality Transit Network WHILE ALSO limiting increase in car capacity	No Quality Transit Network implementation Unlimited car capacity	Quality Transit Network through optimization only Unlimited car capacity Or No Quality Transit Network No car capacity		Complete Quality Transit Network No car capacity increases

Cost Environment	Limits operations and maintenance costs	Extent of implementation of the AAA cycling network		Full implementation of AAA cycling network		No implementation of AAA cycling network
	Limits transit operation costs	Extent of implementation of Quality Transit Network	No implementation of the Quality Transit Network	Quality Transit Network corridor improvements are limited to optimization		Fully implements the Quality Transit Network

Table 3: Summary Table

Criteria Group	Criteria	Indicator	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Natural and Social Environment	Reduces potential for footprint (property) impacts on natural and social heritage features	Lane-km of street widenings	0	40.6	67.6	67.6
	Creates opportunities for additional streetscaping	Lane-km of street widenings	0	40.6	67.6	67.6
	Increases transportation options for all travelers	Provision of new or improved active transportation and transit network elements beyond those approved by Council	0	3	3	1
	Reduces GHG by supporting mode share shift	Transportation-related GHG emissions (tonnes of CO2)	140.2	132.1	131.9	140.3
	Aligns with Guelph's planning objectives	Aligns with the City's Official Plan, Strategic Plan, and Growth Management Strategy: <ul style="list-style-type: none"> • Reduces GHG, • Reduces auto mode share; • Reduces collision severity by improving safety for vulnerable travelers; • Supports intensification through sustainable transportation; • Minimizes footprint impacts 	0	3	2	0

Transportation Environment	Improves safety of vulnerable users	Extent of implementation of recommended All Ages and Abilities (AAA) cycling network	0	3	3	3
	Improves resiliency of transportation system	Extent of implementation of new or improved network elements for multiple modes AND implementation of Core 4-Lane network	0	40.6	67.6	67.6
	Supports increase in use of active transportation modes	Extent of implementation of AAA cycling network while also limiting increase in car capacity	0	3	3	1
	Supports increase in use of transit	Extent of implementation of Quality Transit network while also limiting increase in car capacity	1	3	3	1
	Manages congestion on car network	Proportion of major road network with V/C >0.9 during peak hours (lane-km of expressways, arterials and collectors)	8%	10%	9%	8%
	Manages congestion on truck routes	Proportion of truck routes with V/C >0.9 during peak hours (lane-km of expressways, arterials and collectors)	19%	25%	23%	18%
Cost Environment	Limits capital costs	Lane-km of street widening	0	40.6	67.6	67.6
	Limits operations and maintenance (O+M) costs	Extent of implementation of the AAA cycling network	3	1	1	1
	Limits transit operation costs	Extent of implementation of Quality Transit Network	0	3	3	1

Alternative 1: No Nothing

Criteria Group	Criteria	Score	Rationale for Score and Data
Natural and Social Environment	Reduces potential for footprint (property) impacts on natural and social heritage features	0	<ul style="list-style-type: none"> 0 km of lane widening
	Creates opportunities for additional streetscaping	0	<ul style="list-style-type: none"> Alternative 1 does not widen any streets, therefore, it creates no opportunities for adding streetscaping
	Increases transportation options for all travelers	0	<ul style="list-style-type: none"> Alternative 1 does not add or improve active transportation and transit network elements
	Reduces GHG by supporting mode share shift	140.2	<ul style="list-style-type: none"> AM GHG emissions peak is 65.6 and PM peak is 74.6 tonnes of CO₂
	Aligns with Guelph's planning objectives	0	<ul style="list-style-type: none"> Does not align with Official Plan because it does not promote transit, cycling and walking to offer a balance of transportation choice or use of transit infrastructure to shape growth for high and density areas Does not support goals of Downtown Secondary Plan because it does not implement street transformations Does not support Climate Change objectives because it does not support shift in mode choice Does not support objectives in the Guelph Strategic Plan
Transportation Environment	Improves safety of vulnerable users	0	<ul style="list-style-type: none"> Alternative 1 does not include any cycling network modifications and does not implement the AAA cycling network

	Improves resiliency of transportation system	0	<ul style="list-style-type: none"> Alternative 1 does not add or improve any network elements for any modes and does not implement the Core 4-Lane network
	Supports increase in use of active transportation modes	0	<ul style="list-style-type: none"> Alternative 1 does not implement Cycling Spine network Alternative 1 continues the existing trend for car capacity and does not include measures to limit car capacity
	Supports increase in use of transit	1	<ul style="list-style-type: none"> Alternative 1 does not implement any elements of the Quality Transit Network
	Manages congestion on car network	8%	<ul style="list-style-type: none"> Average of AM and PM In the AM there are 7% of all links in the networks that exceed a v/c of 0.9 In the PM there are 9% of all links in the networks that exceed a v/c of 0.9
	Manages congestion on truck routes	19%	<ul style="list-style-type: none"> Average of AM and PM In the AM there are 17% of all links in the networks that exceed a v/c of 0.9 In the PM there are 20% of all links in the networks that exceed a v/c of 0.9
Cost Environment	Limits capital costs	0	<ul style="list-style-type: none"> Alternative 1 includes no network modifications.
	Limits operations and maintenance (O+M) costs	3	<ul style="list-style-type: none"> Alternative 1 does not implement the AAA cycling network
	Limits transit operation costs	0	<ul style="list-style-type: none"> Alternative 1 does not implement the Quality Transit Network
Summary			

- Alternative 1 has no network modifications, which results in no improvements for sustainable transportation options, and does not improve the safety of vulnerable road users, or work to lower GHG emissions
- Alternative 1 does not align with Guelph’s Planning Policies because it doesn’t support intensification or promote active transportation or transit
- Alternative 1 has the lowest impact on capital and operating and maintenance costs because it contains no network modifications, though it is expected to have the highest delays for transit, resulting in the highest transit operating costs.
- It also makes no improvements to the streetscape, or network performance

Alternative 2: Sustainability Focus

Criteria Group	Criteria	Score	Rationale for Score and Data
Natural and Social Environment	Reduces potential for footprint (property) impacts on natural and social heritage features	40.6	<ul style="list-style-type: none"> • 40.6 km of widening, resulting in potential impacts to natural and social heritage features
	Creates opportunities for additional streetscaping	40.6	<ul style="list-style-type: none"> • 40.6 km of widening, which creates additional opportunities for streetscaping
	Increases transportation options for all travelers	3	<ul style="list-style-type: none"> • Alternative 2 fully implements the Pedestrian, Cycling Spine, and Quality Transit Networks, which would provide new or improved walking, cycling, and transit network elements
	Reduces GHG by supporting mode share shift	132.1	<ul style="list-style-type: none"> • The AM GHG emissions peak is 61.4 and PM peak is 70.7 tonnes of CO₂
	Aligns with Guelph’s planning objectives	3	<ul style="list-style-type: none"> • Aligned with Official Plan directions of enabling walkability and supporting transit

			<ul style="list-style-type: none"> ● Supports: <ul style="list-style-type: none"> ○ Use of transit and active modes ○ Easy access to a range of transportation options, ○ Growth in the intensification corridors, mixed-use nodes, and Downtown, ○ Development strategies and Secondary Plans for Downtown, GID, and Clair-Maltby, and ○ Minimum impact natural environment
Transportation Environment	Improves safety of vulnerable users	3	<ul style="list-style-type: none"> ● Fully implements the Cycling Spine network, improving the core network of cycling facilities to meet the needs of cyclists of All Ages and Abilities
	Improves resiliency of transportation system	40.6	<ul style="list-style-type: none"> ● Adds approximately 40.6 km of four-lane street to the network ● Fully implements the the Pedestrian, Cycling Spine, and Quality Transit Networks supporting multiple modes
	Supports increase in use of active transportation modes	3	<ul style="list-style-type: none"> ● Alternative 2 fully implements the Cycling Spine Network, improving the core network of cycling facilities to meet the needs of cyclists of All Ages and Abilities without any increases for car capacity
	Supports increase in use of transit	3	<ul style="list-style-type: none"> ● Alternative 2 fully implements the Quality Transit Network without any increases for car capacity
	Manages congestion on car network	10%	<ul style="list-style-type: none"> ● Average of AM and PM ● In the AM there are 9% of all links in the networks that exceed a v/c of 0.9 ● In the PM there are 11% of all links in the networks that exceed a v/c of 0.9

	Manages congestion on truck routes	25%	<ul style="list-style-type: none"> • Average of AM and PM • In the AM there are 23% of all links in the networks that exceed a v/c of 0.9 • In the PM there are 26% of all links in the networks that exceed a v/c of 0.9
Cost Environment	Limits capital costs	40.6	<ul style="list-style-type: none"> • 40.6 km lane widening
	Limits operations and maintenance (O+M) costs	1	<ul style="list-style-type: none"> • Alternative 2 implements the AAA cycling network
	Limits transit operation costs	3	<ul style="list-style-type: none"> • Alternative 2 fully implements the Quality Transit Network

Summary

- Alternative 2 implements the Pedestrian, Spine Cycling and Quality Transit networks which results in improvements to transportation options, and safety for vulnerable road users, although there are capital and operations and maintenance associated with implementing these improvements
- Alternative 2 has some footprint impacts due to lane-km widening, which results in opportunities to add streetscaping
- Alternative 2 would result in improvements to lower the levels of GHG and has the lowest projected levels of GHG of the Alternatives
- Alternative 2 aligns with Guelph planning objectives as it promotes active transportation and supports intensification in key areas with transit

Alternative 3: Sustainability and Resiliency Focus

Criteria Group	Criteria	Score	Rationale for Score and Data
Natural and Social Environment	Reduces potential for footprint (property) impacts on natural and social heritage features	67.6	<ul style="list-style-type: none"> 67.6 km of widening, resulting in potential impacts to natural and social heritage features
	Creates opportunities for additional streetscaping	67.6	<ul style="list-style-type: none"> 67.6 km of widening which creates opportunities for additional streetscaping
	Increases transportation options for all travelers	3	<ul style="list-style-type: none"> Alternative 3 fully implements the Pedestrian, Cycling Spine, and Quality Transit Networks, which would provide new and improved walking, cycling, and transit network elements
	Reduces GHG by supporting mode share shift	131.9	<ul style="list-style-type: none"> AM GHG emissions peak is 61.5 and PM peak is 70.4 tonnes of CO₂
	Aligns with Guelph's planning objectives	2	<ul style="list-style-type: none"> Aligns with the City's existing planning directions on enabling walkability and supporting transit Supports: <ul style="list-style-type: none"> Use of transit and active modes, Easy access to a range of transportation options, Growth in the intensification corridors, mixed-use nodes, and Downtown, Development strategies and Secondary Plans for Downtown, GID, and Clair-Maltby, and Minimum impact natural environment Increases car capacity which may encourage some car travel

Transportation Environment	Improves safety of vulnerable users	3	<ul style="list-style-type: none"> Fully implements the Cycling Spine network, improving the core network of cycling facilities to meet the needs of cyclists of All Ages and Abilities
	Improves resiliency of transportation system	67.6	<ul style="list-style-type: none"> Adds 67.6 km of four lane street to the network Fully implements the the Pedestrian, Cycling Spine, Quality Transit, and Resilience Networks supporting multiple modes
	Supports increase in use of active transportation modes	3	<ul style="list-style-type: none"> Alternative 3 fully implements the Cycling Spine Network, improving the core network of cycling facilities to meet the needs of cyclists of All Ages and Abilities Alternative 3 also adds 13.5 km of widening for the resiliency network, but widenings would have a small benefit to car capacity and a negligible impact on mode choice.
	Supports increase in use of transit	3	<ul style="list-style-type: none"> Alternative 3 fully implements the Quality Transit Network Alternative 3 also adds 13.5km of widening for the resiliency network, but widenings would have a small benefit to car capacity and a negligible impact on mode choice.
	Manages congestion on car network	9%	<ul style="list-style-type: none"> Average of AM and PM In the AM there are 8% of links in the networks that exceed a v/c of 0.9 In the PM there are 10% of networks that exceed a v/c of 0.9
	Manages congestion on truck routes	23%	<ul style="list-style-type: none"> Average of AM and PM In the AM there are 21% of links in the networks that exceed a v/c of 0.9 In the PM there are 24% of networks that exceed a v/c of 0.9
Cost	Limits capital costs	67.6	<ul style="list-style-type: none"> 67.6 km widening

Environment	Limits operations and maintenance (O+M) costs	1	<ul style="list-style-type: none"> Alternative 3 implements the AAA cycling network
	Limits transit operation costs	3	<ul style="list-style-type: none"> Alternative 3 fully implements the Quality Transit Network
<p>Summary</p> <ul style="list-style-type: none"> Alternative 3 implements the Pedestrian, Cycling Spine and Quality Transit Network which results in improvements to transportation options and safety for vulnerable road users, although there are capital and operations and maintenance associated with implementing these improvements Alternative 3 has footprint impacts due to lane-km widening, which results in opportunities to add streetscaping Alternative 3 would result in lower levels of GHG by shifting toward sustainable modes Alternative 3 Aligns with Guelph planning objectives by supporting intensification in key areas with transit and promoting active transportation Alternative 3 does not widen streets to increase car capacity, though streets could be widened in the future to meet a range of transportation needs 			

Alternative 4: Car Efficiency Focus

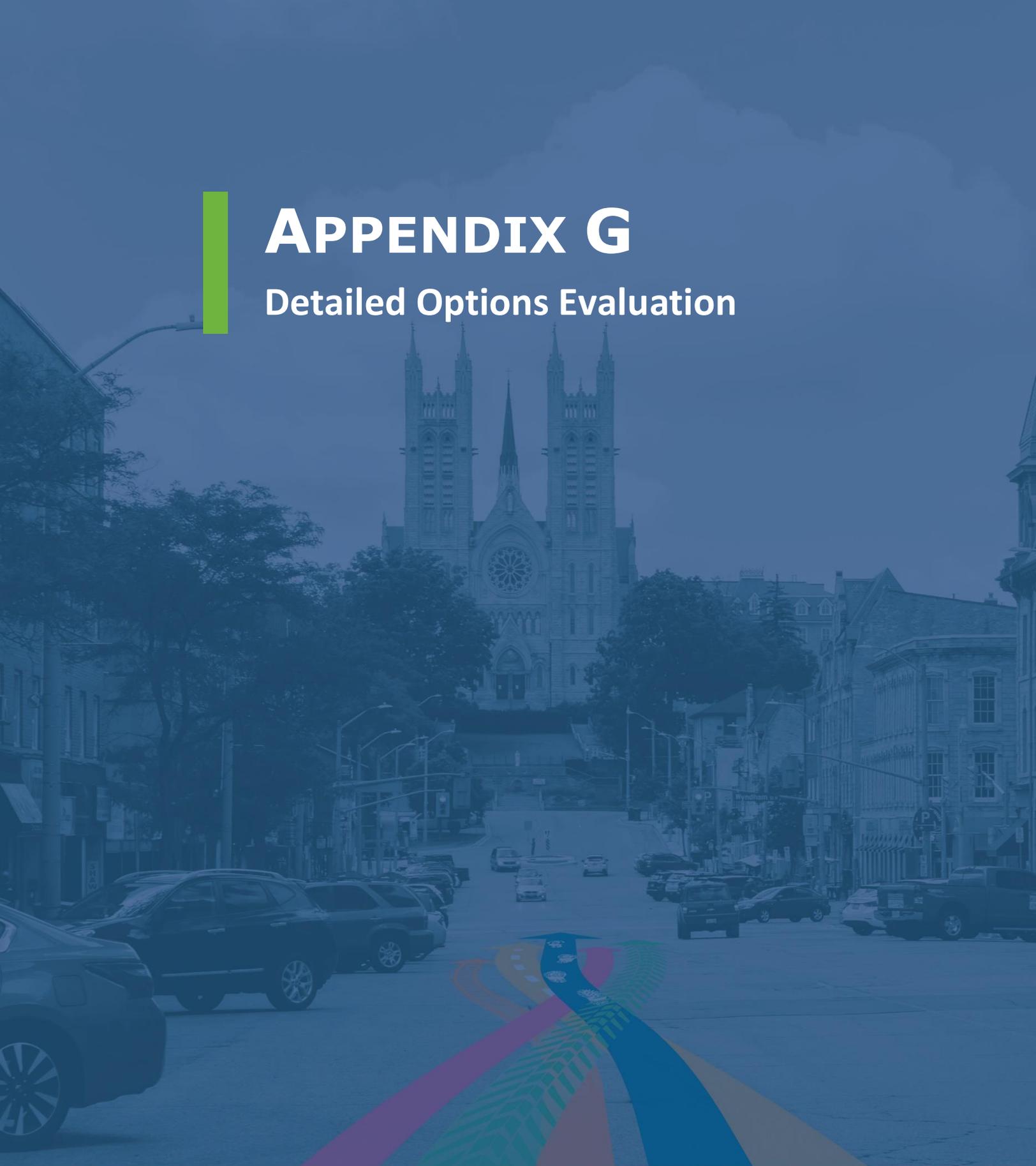
Criteria Group	Criteria	Score	Rationale for Score and Data
Natural and Social Environment	Reduces potential for footprint (property) impacts on natural and social heritage features	67.6	<ul style="list-style-type: none"> 67.6 km of widening resulting in potential impacts to natural and social heritage features
	Creates opportunities for additional streetscaping	67.6	<ul style="list-style-type: none"> 67.6 km widening which creates additional opportunities for streetscaping
	Increases transportation options for all travelers	1	<ul style="list-style-type: none"> Alternative 4 fully implements the Pedestrian and Cycling Spine Networks, improving the options to walk and cycle Alternative 4 partially implements the Quality Transit Network
	Reduces GHG by supporting mode share shift	140.3	<ul style="list-style-type: none"> AM GHG emissions peak is 65.7 and PM peak is 74.6 tonnes of CO₂
	Aligns with Guelph's planning objectives	0	<ul style="list-style-type: none"> Aligns with the City's existing planning directions on enabling walkability and supporting transit Supports: <ul style="list-style-type: none"> Use of transit and active modes, Easy access to a range of transportation options, Growth in the intensification corridors, mixed-use nodes, and Downtown, Development strategies and Secondary Plans for Downtown, GID, and Clair-Maltby, and Minimum impact natural environment

			<ul style="list-style-type: none"> Increases car capacity which may encourage car travel, and does not work toward reducing GHG
Transportation Environment	Improves safety of vulnerable users	3	<ul style="list-style-type: none"> Fully implements the Cycling Spine network, improving the core network of cycling facilities to meet the needs of cyclists of All Ages and Abilities
	Improves resiliency of transportation system	67.6	<ul style="list-style-type: none"> Adds about 67.6 km of four lane street to the network Fully implements the the Pedestrian, Cycling Spine, Quality Transit, and Resilience Networks supporting multiple modes
	Supports increase in use of active transportation modes	1	<ul style="list-style-type: none"> Alternative 4 fully implements the Cycling Spine Network, improving the core network of cycling facilities to meet the needs of cyclists of All Ages and Abilities Alternative 4 also adds 19.9 km of widening for the resiliency network and 10.9 km of widening for car capacity, which increases car capacity
	Supports increase in use of transit	1	<ul style="list-style-type: none"> Alternative 4 implements the Quality Transit Network, but reduces the infrastructure dedicated to transit from 56km (conversion and widening) to 14km (widening), which may not result in an increased use in transit
	Manages congestion on car network	8%	<ul style="list-style-type: none"> Average of AM and PM In the AM there are 7% of all link in the networks that exceed a v/c of 0.9 In the PM there are 9% of links in the networks that exceed a v/c of 0.9

	Manages congestion on truck routes	18%	<ul style="list-style-type: none"> • Average of AM and PM • In the AM there are 17% of all link in the networks that exceed a v/c of 0.9 • In the PM there are 20% of links in the networks that exceed a v/c of 0.9
Cost Environment	Limits capital costs	67.6	<ul style="list-style-type: none"> • 67.6 km widening
	Limits operations and maintenance (O+M) costs	1	<ul style="list-style-type: none"> • Alternative 4 implements the AAA cycling network
	Limits transit operation costs	1	<ul style="list-style-type: none"> • In Alternative 4 the Quality Transit Network corridor improvements are limited to optimization

Summary

- Alternative 4 implements the Pedestrian, Cycling Spine which results in improvements to active transportation options, and safety for vulnerable road users, although there are capital and operations and maintenance associated with implementing these improvements
 - Alternative 4 does not implement the full Quality Transit Network which may not result in significant mode shift toward transit
 - Alternative 4 has footprint impacts due to lane-km widening, which may impact natural and social heritage features, although this would create opportunities to improve the streetscape
 - Alternative 4 does not lower the GHG emissions as much as the other alternatives
 - Alternative 4 aligns with Guelph planning objectives by supporting active transportation modes, but does not support transit prioritization, and add capacity for cars which may encourage car use
- Alternative 4 reduces delay for vehicles and trucks



APPENDIX G

Detailed Options Evaluation

Detailed Options Evaluation

Detailed Alternative Solutions Evaluation for the City of Guelph Transportation Master Plan

Table 1: EA Evaluation Criteria and Rationale

Criteria Group	Criteria	Criteria Justification	Indicator	Rationale for Indicator
Natural and Social Environment	Reduces potential for footprint (property) impacts on natural and social heritage features	EA requirement	Lane-km of street widenings	<ul style="list-style-type: none"> This is a requirement of the EA process, and is a proxy for all of the negative impacts from footprint type of analysis that is completed in EA studies Widenings with potential for impact on sensitive natural or social heritage features were explicitly screened out
	Creates opportunities for additional streetscaping	Aligned with TMP Goal 5	Lane-km of street widenings	<ul style="list-style-type: none"> Reflects alignment with land use objectives Any capital project provides the opportunity to add enhancements
	Increases transportation options for all travelers	Aligned with TMP Goal 1	Provision of new or improved active transportation and transit network elements beyond those approved by Council	<ul style="list-style-type: none"> To measure the difference in geographic equity for the Alternatives; how well the Alternative supports the implementation of the Priority networks to improve balance of system
	Reduces GHG by supporting mode share shift	Aligned with TMP Goal 4	Tonnes of CO2 from passenger vehicles during AM and PM peak hours	<ul style="list-style-type: none"> To measure how GHG will be reduced resulting from the mode share shift Calculated total peak hour vehicle-km using the model
	Aligns with Guelph's planning objectives	Aligned with TMP Goal 5	Aligns with the City's Official Plan, Strategic Plan, and Growth Management Strategy: <ul style="list-style-type: none"> Reduces GHG, Reduces auto mode share; Reduces collision severity by improving safety for vulnerable travelers; Supports intensification through sustainable transportation; Minimizes footprint impacts 	<ul style="list-style-type: none"> To represent alignment of the Alternatives with land use objectives
Transportation Environment	Improves safety of vulnerable users	Aligned with TMP Goal 1	Extent of implementation of recommended All Ages and Abilities (AAA) cycling network	<ul style="list-style-type: none"> Implementation of AAA cycling network improves safety for vulnerable users
	Improves resiliency of transportation system	Aligned with TMP Goal 7	Extent of implementation of new or improved network elements for multiple modes AND implementation of Core 4-Lane network	<ul style="list-style-type: none"> All widenings to four lanes improve the resiliency of the network, regardless of designated purpose, because lanes can be repurposed in future as necessary
	Supports increase in use of active transportation modes	Aligned with TMP Goal 2 Aligned with TMP Goal 4	Extent of implementation of AAA cycling network while also limiting increase in car capacity	<ul style="list-style-type: none"> Increases in car capacity run counter to efforts to shift demands to active modes
	Supports increase in use of transit	Aligned with TMP Goal 3 Aligned with TMP Goal 4	Extent of implementation of Quality Transit network while also limiting increase in car capacity	<ul style="list-style-type: none"> Increases in car capacity run counter to efforts to shift demands to active modes

	Manages congestion on car network	Aligned with TMP Goal 2	Proportion of major road network with V/C >0.9 during peak hours (lane-km of expressways, arterials and collectors)	<ul style="list-style-type: none"> V/C is the standard measure of performance for congestion Considers expressways, arterials, and collector roads
	Manages congestion on truck routes	Aligned with TMP Goal 2	Proportion of truck routes with V/C >0.9 during peak hours (lane-km of expressways, arterials and collectors)	<ul style="list-style-type: none"> V/C is the standard measure of performance for congestion Considers expressways, arterials, and collector roads
Cost Environment	Limits capital costs	Aligned with TMP Goal 6	Lane-km of street widening	<ul style="list-style-type: none"> All Alternatives include the planned new Active Transportation bridges; capital costs for the bridges were not considered as they are common to all options and their costs do not impact the comparative evaluation of Alternatives Street widenings have significant capital costs and vary between Alternatives
	Limits operations and maintenance (O+M) costs	Aligned with TMP Goal 6	Extent of implementation of the AAA cycling network	<ul style="list-style-type: none"> Streets with unique or specialized treatments have significant operational and maintenance costs Dedicated transit lanes will not have unique design treatments Cycle tracks and buffered bike lanes may require increased maintenance costs, depending on individual corridor design
	Limits transit operation costs	Aligned with TMP Goal 6	Extent of implementation of Quality Transit Network	<ul style="list-style-type: none"> Transit priority measures create a more efficient transit service, which lead to operational cost savings

Table 2: Qualitative Criteria Scoring Guide

The table below provides a scoring guide for the criteria with a qualitative indicator. For criteria that used quantitative indicators, that number was used as the score.

Criteria			Score			
Criteria Group	Criteria	Indicator	0 - No change	1 - Minimal	2 - Moderate	3 - Significant
Natural and Social Environment	Increases transportation options for all travelers	Provision of new or improved active transportation and transit network elements beyond those approved by Council	No new elements beyond those already approved	Implements the Core Cycling Network; Quality Transit Network corridor improvements are limited to optimization		Implements the Core Cycling and Quality Transit Network
	Aligns with Guelph's planning objectives	Aligns with the City's Official Plan, Strategic Plan, and Growth Management Strategy: <ul style="list-style-type: none"> Reduces GHG, Reduces auto mode share; Reduces collision severity by improving safety for vulnerable travelers; Supports intensification through sustainable transportation; Minimizes footprint impacts 	Not aligned: <ul style="list-style-type: none"> Supports 0 or 1 objectives 	Minimal alignment: <ul style="list-style-type: none"> Supports 2 objectives 	Moderate alignment: <ul style="list-style-type: none"> Supports 3 or 4 objectives 	Significant alignment: <ul style="list-style-type: none"> Supports 5 objectives
Transportation Environment	Improves safety of vulnerable users	Extent of implementation of recommended All Ages and Abilities (AAA) cycling network	Implements none of the elements of the All Ages and Abilities (AAA) cycling network	Implements some of the All Ages and Abilities (AAA) cycling network	Implements most of the All Ages and Abilities (AAA) cycling network	Fully implements the All Ages and Abilities (AAA) cycling network
	Supports increase in use of active transportation modes	Extent of implementation of AAA cycling network WHILE ALSO limiting increase in car capacity	No AAA cycling network implementation Unlimited car capacity	Complete AAA cycling network implementation Unlimited car capacity Or No AAA cycling network implementation No car capacity increases		Complete AAA cycling network implementation No car capacity increases
	Supports increase in use of transit	Extent of implementation of the Quality Transit Network WHILE ALSO limiting increase in car capacity	No Quality Transit Network implementation Unlimited car capacity	Quality Transit Network through optimization only Unlimited car capacity Or No Quality Transit Network No car capacity		Complete Quality Transit Network No car capacity increases

Cost Environment	Limits operations and maintenance costs	Extent of implementation of the AAA cycling network		Full implementation of AAA cycling network		No implementation of AAA cycling network
	Limits transit operation costs	Extent of implementation of Quality Transit Network	No implementation of the Quality Transit Network	Quality Transit Network corridor improvements are limited to optimization		Fully implements the Quality Transit Network

Table 3: Summary Table

Criteria			Score			
Criteria Group	Criteria	Indicator	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Natural and Social Environment	Reduces potential for footprint (property) impacts on natural and social heritage features	Lane-km of street widenings	0	40.6	67.6	67.6
	Creates opportunities for additional streetscaping	Lane-km of street widenings	0	40.6	67.6	67.6
	Increases transportation options for all travelers	Provision of new or improved active transportation and transit network elements beyond those approved by Council	0	3	3	1
	Reduces GHG by supporting mode share shift	Transportation-related GHG emissions (tonnes of CO2)	140.2	132.1	131.9	140.3
	Aligns with Guelph's planning objectives	Aligns with the City's Official Plan, Strategic Plan, and Growth Management Strategy: <ul style="list-style-type: none"> • Reduces GHG, • Reduces auto mode share; • Reduces collision severity by improving safety for vulnerable travelers; • Supports intensification through sustainable transportation; • Minimizes footprint impacts 	0	3	2	0
Transportation Environment	Improves safety of vulnerable users	Extent of implementation of recommended All Ages and Abilities (AAA) cycling network	0	3	3	3
	Improves resiliency of transportation system	Extent of implementation of new or improved network elements for multiple modes AND implementation of Core 4-Lane network	0	40.6	67.6	67.6
	Supports increase in use of active transportation modes	Extent of implementation of AAA cycling network while also limiting increase in car capacity	0	3	3	1
	Supports increase in use of transit	Extent of implementation of Quality Transit network while also limiting increase in car capacity	1	3	3	1
	Manages congestion on car network	Proportion of major road network with V/C >0.9 during peak hours (lane-km of expressways, arterials and collectors)	8%	10%	9%	8%
	Manages congestion on truck routes	Proportion of truck routes with V/C >0.9 during peak hours (lane-km of expressways, arterials and collectors)	19%	25%	23%	18%
Cost Environment	Limits capital costs	Lane-km of street widening	0	40.6	67.6	67.6
	Limits operations and maintenance (O+M) costs	Extent of implementation of the AAA cycling network	3	1	1	1

	Limits transit operation costs	Extent of implementation of Quality Transit Network	0	3	3	1
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Alternative 1 - Do Nothing

Criteria Group	Criteria	Score	Rationale for Score and Data
Natural and Social Environment	Reduces potential for footprint (property) impacts on natural and social heritage features	0	<ul style="list-style-type: none"> 0 km of lane widening
	Creates opportunities for additional streetscaping	0	<ul style="list-style-type: none"> Alternative 1 does not widen any streets, therefore, it creates no opportunities for adding streetscaping
	Increases transportation options for all travelers	0	<ul style="list-style-type: none"> Alternative 1 does not add or improve active transportation and transit network elements
	Reduces GHG by supporting mode share shift	140.2	<ul style="list-style-type: none"> AM GHG emissions peak is 65.6 and PM peak is 74.6 tonnes of CO2
	Aligns with Guelph's planning objectives	0	<ul style="list-style-type: none"> Does not align with Official Plan because it does not promote transit, cycling and walking to offer a balance of transportation choice or use of transit infrastructure to shape growth for high and density areas Does not support goals of Downtown Secondary Plan because it does not implement street transformations Does not support Climate Change objectives because it does not support shift in mode choice Does not support objectives in the Guelph Strategic Plan
Transportation Environment	Improves safety of vulnerable users	0	<ul style="list-style-type: none"> Alternative 1 does not include any cycling network modifications and does not implement the AAA cycling network
	Improves resiliency of transportation system	0	<ul style="list-style-type: none"> Alternative 1 does not add or improve any network elements for any modes and does not implement the Core 4-Lane network
	Supports increase in use of active transportation modes	0	<ul style="list-style-type: none"> Alternative 1 does not implement Cycling Spine network Alternative 1 continues the existing trend for car capacity and does not include measures to limit car capacity
	Supports increase in use of transit	1	<ul style="list-style-type: none"> Alternative 1 does not implement any elements of the Quality Transit Network
	Manages congestion on car network	8%	<ul style="list-style-type: none"> Average of AM and PM In the AM there are 7% of all links in the networks that exceed a v/c of 0.9 In the PM there are 9% of all links in the networks that exceed a v/c of 0.9
	Manages congestion on truck routes	19%	<ul style="list-style-type: none"> Average of AM and PM In the AM there are 17% of all links in the networks that exceed a v/c of 0.9 In the PM there are 20% of all links in the networks that exceed a v/c of 0.9
Cost Environment	Limits capital costs	0	<ul style="list-style-type: none"> Alternative 1 includes no network modifications.
	Limits operations and maintenance (O+M) costs	3	<ul style="list-style-type: none"> Alternative 1 does not implement the AAA cycling network
	Limits transit operation costs	0	<ul style="list-style-type: none"> Alternative 1 does not implement the Quality Transit Network
Summary			
<ul style="list-style-type: none"> Alternative 1 has no network modifications, which results in no improvements for sustainable transportation options, and does not improve the safety of vulnerable road users, or work to lower GHG emissions Alternative 1 does not align with Guelph's Planning Policies because it doesn't support intensification or promote active transportation or transit 			

- Alternative 1 has the lowest impact on capital and operating and maintenance costs because it contains no network modifications, though it is expected to have the highest delays for transit, resulting in the highest transit operating costs.
- It also makes no improvements to the streetscape, or network performance

Alternative 2 - Sustainability Focus

Criteria Group	Criteria	Score	Rationale for Score and Data
Natural and Social Environment	Reduces potential for footprint (property) impacts on natural and social heritage features	40.6	<ul style="list-style-type: none"> • 40.6 km of widening, resulting in potential impacts to natural and social heritage features
	Creates opportunities for additional streetscaping	40.6	<ul style="list-style-type: none"> • 40.6 km of widening, which creates additional opportunities for streetscaping
	Increases transportation options for all travelers	3	<ul style="list-style-type: none"> • Alternative 2 fully implements the Pedestrian, Cycling Spine, and Quality Transit Networks, which would provide new or improved walking, cycling, and transit network elements
	Reduces GHG by supporting mode share shift	132.1	<ul style="list-style-type: none"> • The AM GHG emissions peak is 61.4 and PM peak is 70.7 tonnes of CO2
	Aligns with Guelph's planning objectives	3	<ul style="list-style-type: none"> • Aligned with Official Plan directions of enabling walkability and supporting transit • Supports: <ul style="list-style-type: none"> ○ Use of transit and active modes ○ Easy access to a range of transportation options, ○ Growth in the intensification corridors, mixed-use nodes, and Downtown, ○ Development strategies and Secondary Plans for Downtown, GID, and Clair-Maltby, and ○ Minimum impact natural environment
Transportation Environment	Improves safety of vulnerable users	3	<ul style="list-style-type: none"> • Fully implements the Cycling Spine network, improving the core network of cycling facilities to meet the needs of cyclists of All Ages and Abilities
	Improves resiliency of transportation system	40.6	<ul style="list-style-type: none"> • Adds approximately 40.6 km of four-lane street to the network • Fully implements the the Pedestrian, Cycling Spine, and Quality Transit Networks supporting multiple modes
	Supports increase in use of active transportation modes	3	<ul style="list-style-type: none"> • Alternative 2 fully implements the Cycling Spine Network, improving the core network of cycling facilities to meet the needs of cyclists of All Ages and Abilities without any increases for car capacity
	Supports increase in use of transit	3	<ul style="list-style-type: none"> • Alternative 2 fully implements the Quality Transit Network without any increases for car capacity
	Manages congestion on car network	10%	<ul style="list-style-type: none"> • Average of AM and PM • In the AM there are 9% of all links in the networks that exceed a v/c of 0.9 • In the PM there are 11% of all links in the networks that exceed a v/c of 0.9
	Manages congestion on truck routes	25%	<ul style="list-style-type: none"> • Average of AM and PM • In the AM there are 23% of all links in the networks that exceed a v/c of 0.9 • In the PM there are 26% of all links in the networks that exceed a v/c of 0.9

Cost Environment	Limits capital costs	40.6	<ul style="list-style-type: none"> 40.6 km lane widening
	Limits operations and maintenance (O+M) costs	1	<ul style="list-style-type: none"> Alternative 2 implements the AAA cycling network
	Limits transit operation costs	3	<ul style="list-style-type: none"> Alternative 2 fully implements the Quality Transit Network
Summary <ul style="list-style-type: none"> Alternative 2 implements the Pedestrian, Spine Cycling and Quality Transit networks which results in improvements to transportation options, and safety for vulnerable road users, although there are capital and operations and maintenance associated with implementing these improvements Alternative 2 has some footprint impacts due to lane-km widening, which results in opportunities to add streetscaping Alternative 2 would result in improvements to lower the levels of GHG and has the lowest projected levels of GHG of the Alternatives Alternative 2 aligns with Guelph planning objectives as it promotes active transportation and supports intensification in key areas with transit 			

Alternative 3 - Sustainability & Resiliency Focus

Criteria Group	Criteria	Score	Rationale for Score and Data
Natural and Social Environment	Reduces potential for footprint (property) impacts on natural and social heritage features	67.6	<ul style="list-style-type: none"> 67.6 km of widening, resulting in potential impacts to natural and social heritage features
	Creates opportunities for additional streetscaping	67.6	<ul style="list-style-type: none"> 67.6 km of widening which creates opportunities for additional streetscaping
	Increases transportation options for all travelers	3	<ul style="list-style-type: none"> Alternative 3 fully implements the Pedestrian, Cycling Spine, and Quality Transit Networks, which would provide new and improved walking, cycling, and transit network elements
	Reduces GHG by supporting mode share shift	131.9	<ul style="list-style-type: none"> AM GHG emissions peak is 61.5 and PM peak is 70.4 tonnes of CO2
	Aligns with Guelph's planning objectives	2	<ul style="list-style-type: none"> Aligns with the City's existing planning directions on enabling walkability and supporting transit Supports: <ul style="list-style-type: none"> Use of transit and active modes, Easy access to a range of transportation options, Growth in the intensification corridors, mixed-use nodes, and Downtown, Development strategies and Secondary Plans for Downtown, GID, and Clair-Maltby, and Minimum impact natural environment Increases car capacity which may encourage some car travel
Transportation Environment	Improves safety of vulnerable users	3	<ul style="list-style-type: none"> Fully implements the Cycling Spine network, improving the core network of cycling facilities to meet the needs of cyclists of All Ages and Abilities
	Improves resiliency of transportation system	67.6	<ul style="list-style-type: none"> Adds 67.6 km of four lane street to the network Fully implements the the Pedestrian, Cycling Spine, Quality Transit, and Resilience Networks supporting multiple modes

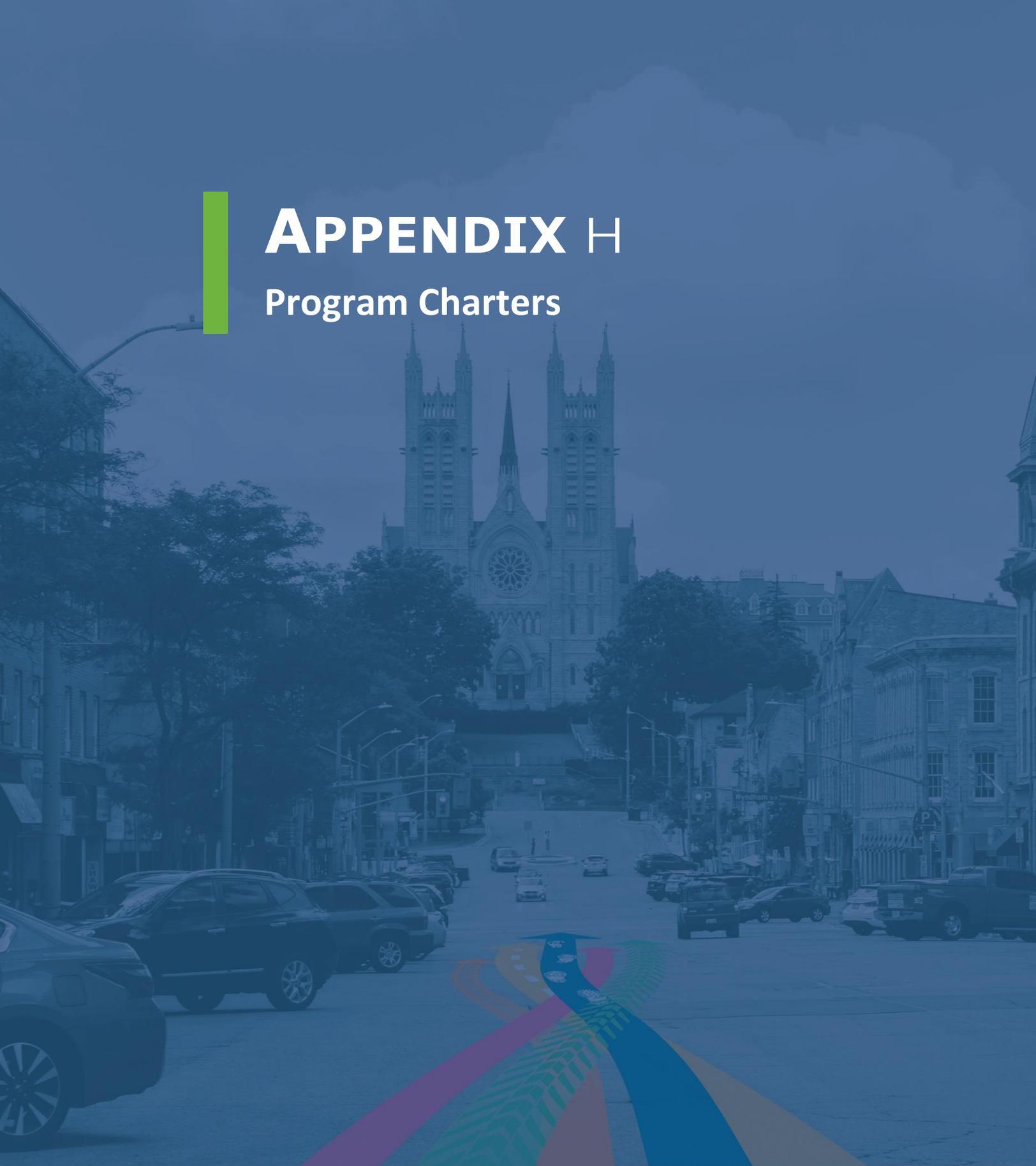
	Supports increase in use of active transportation modes	3	<ul style="list-style-type: none"> Alternative 3 fully implements the Cycling Spine Network, improving the core network of cycling facilities to meet the needs of cyclists of All Ages and Abilities Alternative 3 also adds 13.5 km of widening for the resiliency network, but widenings would have a small benefit to car capacity and a negligible impact on mode choice.
	Supports increase in use of transit	3	<ul style="list-style-type: none"> Alternative 3 fully implements the Quality Transit Network Alternative 3 also adds 13.5km of widening for the resiliency network, but widenings would have a small benefit to car capacity and a negligible impact on mode choice.
	Manages congestion on car network	9%	<ul style="list-style-type: none"> Average of AM and PM In the AM there are 8% of links in the networks that exceed a v/c of 0.9 In the PM there are 10% of networks that exceed a v/c of 0.9
	Manages congestion on truck routes	23%	<ul style="list-style-type: none"> Average of AM and PM In the AM there are 21% of links in the networks that exceed a v/c of 0.9 In the PM there are 24% of networks that exceed a v/c of 0.9
Cost Environment	Limits capital costs	67.6	<ul style="list-style-type: none"> 67.6 km widening
	Limits operations and maintenance (O+M) costs	1	<ul style="list-style-type: none"> Alternative 3 implements the AAA cycling network
	Limits transit operation costs	3	<ul style="list-style-type: none"> Alternative 3 fully implements the Quality Transit Network
Summary <ul style="list-style-type: none"> Alternative 3 implements the Pedestrian, Cycling Spine and Quality Transit Network which results in improvements to transportation options and safety for vulnerable road users, although there are capital and operations and maintenance associated with implementing these improvements Alternative 3 has footprint impacts due to lane-km widening, which results in opportunities to add streetscaping Alternative 3 would result in lower levels of GHG by shifting toward sustainable modes Alternative 3 Aligns with Guelph planning objectives by supporting intensification in key areas with transit and promoting active transportation Alternative 3 does not widen streets to increase car capacity, though streets could be widened in the future to meet a range of transportation needs 			

Alternative 4 - Car Efficiency Focus

Criteria Group	Criteria	Score	Rationale for Score and Data
Natural and Social Environment	Reduces potential for footprint (property) impacts on natural and social heritage features	67.6	<ul style="list-style-type: none"> 67.6 km of widening resulting in potential impacts to natural and social heritage features
	Creates opportunities for additional streetscaping	67.6	<ul style="list-style-type: none"> 67.6 km widening which creates additional opportunities for streetscaping
	Increases transportation options for all travelers	1	<ul style="list-style-type: none"> Alternative 4 fully implements the Pedestrian and Cycling Spine Networks, improving the options to walk and cycle Alternative 4 partially implements the Quality Transit Network
	Reduces GHG by supporting mode share shift	140.3	<ul style="list-style-type: none"> AM GHG emissions peak is 65.7 and PM peak is 74.6 tonnes of CO2

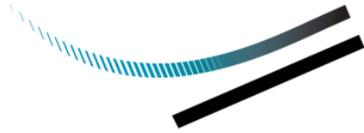
	Aligns with Guelph's planning objectives	0	<ul style="list-style-type: none"> Aligns with the City's existing planning directions on enabling walkability and supporting transit Supports: <ul style="list-style-type: none"> Use of transit and active modes, Easy access to a range of transportation options, Growth in the intensification corridors, mixed-use nodes, and Downtown, Development strategies and Secondary Plans for Downtown, GID, and Clair-Maltby, and Minimum impact natural environment Increases car capacity which may encourage car travel, and does not work toward reducing GHG
Transportation Environment	Improves safety of vulnerable users	3	<ul style="list-style-type: none"> Fully implements the Cycling Spine network, improving the core network of cycling facilities to meet the needs of cyclists of All Ages and Abilities
	Improves resiliency of transportation system	67.6	<ul style="list-style-type: none"> Adds about 67.6 km of four lane street to the network Fully implements the the Pedestrian, Cycling Spine, Quality Transit, and Resilience Networks supporting multiple modes
	Supports increase in use of active transportation modes	1	<ul style="list-style-type: none"> Alternative 4 fully implements the Cycling Spine Network, improving the core network of cycling facilities to meet the needs of cyclists of All Ages and Abilities Alternative 4 also adds 19.9 km of widening for the resiliency network and 10.9 km of widening for car capacity, which increases car capacity
	Supports increase in use of transit	1	<ul style="list-style-type: none"> Alternative 4 implements the Quality Transit Network, but reduces the infrastructure dedicated to transit from 56km (conversion and widening) to 14km (widening), which may not result in an increased use in transit
	Manages congestion on car network	8%	<ul style="list-style-type: none"> Average of AM and PM In the AM there are 7% of all link in the networks that exceed a v/c of 0.9 In the PM there are 9% of links in the networks that exceed a v/c of 0.9
	Manages congestion on truck routes	18%	<ul style="list-style-type: none"> Average of AM and PM In the AM there are 17% of all link in the networks that exceed a v/c of 0.9 In the PM there are 20% of links in the networks that exceed a v/c of 0.9
Cost Environment	Limits capital costs	67.6	<ul style="list-style-type: none"> 67.6 km widening
	Limits operations and maintenance (O+M) costs	1	<ul style="list-style-type: none"> Alternative 4 implements the AAA cycling network
	Limits transit operation costs	1	<ul style="list-style-type: none"> In Alternative 4 the Quality Transit Network corridor improvements are limited to optimization
Summary			
<ul style="list-style-type: none"> Alternative 4 implements the Pedestrian, Cycling Spine which results in improvements to active transportation options, and safety for vulnerable road users, although there are capital and operations and maintenance associated with implementing these improvements Alternative 4 does not implement the full Quality Transit Network which may not result in significant mode shift toward transit Alternative 4 has footprint impacts due to lane-km widening, which may impact natural and social heritage features, although this would create opportunities to improve the streetscape Alternative 4 does not lower the GHG emissions as much as the other alternatives Alternative 4 aligns with Guelph planning objectives by supporting active transportation modes, but does not support transit prioritization, and add capacity for cars which may encourage car use Alternative 4 reduces delay for vehicles and trucks 			

Criteria	Alt 1	Alt 4
Aligns with Guelph's planning objectives	Changed from Red Empty Circle to Orange Half Circle	
Supports increased use in active transportation modes	Changed from Red Empty Circle to Orange Half Circle	
Supports increased use in transit	Changed from Red Empty Circle to Orange Half Circle	
Limits capital costs		Changed from Red Empty Circle to Orange Half Circle
Limits transit operation costs		Changed from Yellow ¾ Circle to Orange Half Circle



APPENDIX H

Program Charters



DILLON
CONSULTING

City of Guelph Transportation Master Plan

Program Charters

November 2021 – 18-8919

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Glossary of Terms

- A -

Active Transportation – The transport of people or goods through human-powered means, including walking, cycling and skateboarding.

Active Transportation Network – On-road and off-road infrastructure network for pedestrians and cyclists.

All Ages and Abilities (AAA) facilities – Bicycle facilities which are comfortable and attractive to use for people of all ages and abilities (including barrier-free, age-friendly, and universal design), with an additional focus on intersection safety.

- C -

Complete Streets Design Guideline – A guide that provides policy and design guidance on the planning, design, and operation of roadways to help implement the City's Official Plan vision for complete streets and other city building objectives.

Cycling Spine Network – A network of cycling routes with high-quality on-street cycling facilities that connect all areas of the City, and designed to support and encourage cycling by people of all ages and abilities. These spine routes represent the core of the City's larger cycling network.

- G -

Goods Movement Strategy – A strategy to help determine the transportation infrastructure improvements need to be made to help the support the goods movement industry.

- I -

Intelligent Transportation Systems – A combination of information and communication technologies used in transportation and traffic management to improve the safety, efficiency, and sustainability of transportation networks, reduce traffic congestion, and to enhance drivers' experiences.

Internet of Things (IoT) – Interconnection of everyday devices via the internet.

- L -

Level of Service (LOS) – A qualitative measure used to determine how well a transportation facility is operating.

Low-Impact Development – A planning and engineering approach to storm water management to minimize storm water runoff and filter, store and return rainwater and snow melt to the ground

- M -

Major Transit Station Areas (MTSA) – The area including and around any existing or planned higher-order transit station within a settlement area, or the area including and around a major

bus depot in an urban core. Station areas generally are defined as the area within an approximate 500 metre radius of a transit station, representing about a 10-minute walk.

Micromobility – Refers to the use of light vehicles that can carry one or two passengers at a time, such as bicycles, scooters, and even small vehicles. Micromobility can be human-powered or powered by an electric motor.

Micro-transit – a form of demand responsive shared transport that offers flexible routing and/or scheduling.

Mobility-as-a-Service (MaaS)– An emerging user-oriented philosophy that takes advantage of digital platforms and real-time data to get a user of the service from point A to point B in the most convenient and personalized way possible for one single fee. MaaS leverages modern transportation options to optimize personal mobility. When planning a route, MaaS platforms can link transit, ride-hailing, car-sharing, micromobility, walking, and more to create one seamless trip for the user of this service.

Multimodal Level of Service Guidelines – A guide that provides policy and design guidance on the planning, design, and operation of roadways and intersection to help implement the City’s Official Plan vision for complete streets. It provides guidance on how to assess the *levels of service* for various modes of transportation and their impacts, and what the specific target service levels for each mode should be given the location and context the transportation project.

- O -

Official Plan – Sets out the City’s vision and goals for the future, and describes policies on how land in the City should be used. The Official Plan helps to ensure that future planning and development will meet the specific needs of your community.

- P -

Park-and-Ride facilities – Parking lots with public transport connections that allow commuters and other people to leave their vehicles and transfer to a bus, rail system, or carpool for the remainder of the journey.

Pedestrian Priority Network – A network of wide sidewalks and high-quality walking environments in areas of highest pedestrian activity in the city, such as Downtown Guelph, designed to support and encourage walking for people of all ages and abilities.

- S -

Smart signals – Traffic signals at intersections that detect traffic conditions and automatically adjust operations to optimize flow.

- T -

Transportation Demand Management (TDM) – A series of policies, programs and incentives intended to influence whether, when, where and how people travel, and encourage them to make more efficient use of the transportation system.

Transit Priority Measures – A collection of techniques and tools to reduce delay for public transit vehicles.

Transportation Systems Management (TSM) – uses operating strategies to increase capacity on the road network without increasing its physical size. Transportation system management includes measures such as transit signal priority at intersections, signal coordination, or dedicated lanes for high-occupancy vehicles.

-V-

Vision Zero – a global movement based on a safe systems approach to eliminate all traffic fatalities and severe injuries, while increasing safe, healthy, equitable mobility for all.



CITY OF GUELPH TRANSPORTATION MASTER PLAN

Active Transportation Program

November 2021 – 18-8919

1.0 Active Transportation

1.1 Definition

Active Transportation requires a person to move themselves to a destination through non-motorized means. Examples of active transportation include, walking, cycling, scooting, and rollerblading. It can also include electric-powered bicycles, scooters and other 'micro-mobility' devices that require human power to move them.

1.2 Background

1.2.1 Purpose

The City aims to reduce greenhouse gas emissions, promote healthy, active living amongst residents, and manage vehicle congestion. To achieve these goals, the City focuses on providing easily accessible active transportation infrastructure and resources.

1.2.2 Goal

The goal of Active Transportation Program is to support the mobility needs of a community in a manner that least damages the environment, while also balancing current and future transportation needs. The main actions include:

- Increase walking mode share target to 15% by 2051;
- Increase cycling mode share target to 10% by 2051;
- Design new and transform existing streets and pathways to meet All Ages and Abilities (AAA);
- Promote, facilitate, and design for micro-mobility;
- Update and implement the Cycling Master Plan, *Active Transportation Network* and Pedestrian Master Plan;
- Increase bicycle parking throughout the Downtown and other commercial/employment centres;
- Develop a comprehensive list of active transportation initiatives currently underway in the City;
- Support efforts to reduce annual community greenhouse gas emissions by 60% from 2007 levels to 7 tonnes of carbon dioxide (equivalent) per capita by 2031;
- Support City efforts toward 100% renewable energy for all City facilities and operations by 2050;
- Form partnerships and support advocacy groups to enhance cycling; and
- Fill connectivity gaps within the active transportation network.

1.2.3 Program Description:

Active transportation is part of the sustainable transportation group at the City of Guelph. The Active Transportation Program supports the mobility needs of a community in a manner that is the least harmful to the environment as possible, while also providing equitable and affordable options for getting around. The Active Transportation program is responsible for implementing context-appropriate cycling and pedestrian infrastructure for road corridors and intersections in the city to complete the planned cycling and sidewalk networks.

The mandate also includes data collection and analysis, network planning, policy development and development review. Active Transportation staff coordinate with Public Works, Parks Planning and Engineering Services regularly to implement the various master plans under its supervision.

The Active Transportation program was initiated with the City's 2013 Cycling Master Plan, and expanded to include the Active Transportation Network and Sidewalk Needs Assessment plans, along with the coordination efforts with other City departments to implement these plans.

In future, the Active Transportation Program will also encompass other forms of *micro-mobility* such as push-scooters and other technologies.

1.3 TMP Objectives for the Program

This section provides an overview of the key objectives the City should fulfill for the future of the Sustainable transportation program.

- Coordinate data collection to support evidence-based policy and planning decisions
- Coordinate the implementation and update of the various plans for active transportation, such as the cycling master plan, pedestrian plan and active transportation network with (Policies 1.1, 2.1.1.2, 2.1.1.3, and 2.1.1.7)
- Incorporate an equity lens into active transportation planning and strategy
- Provide input into road design projects to facilitate implementing the various active transportation networks
- Provide input into city policies such as master plans, zoning by-law, and secondary plans to support the goals of the Transportation Master Plan (TMP) for active transportation
- Review development applications and subdivision applications to ensure compliance with Official Plan and TMP policies that support active transportation
- Deliver *Multimodal Level of Service Guidelines* and *Complete Streets Design Guidelines* (Policy 1.2.1.2)
- Support efforts to expand winter maintenance of the *Cycling Spine Network* and active transportation network (Policy 2.1.2)

1.4 Potential Partnerships

- Community advocacy groups;
- Seniors associations;
- Guelph-Wellington Local Immigration Partnership;
- *Micro-mobility* service providers such as bike-shares or scooter-share programs;
- Local public health agency;
- Other levels of government for infrastructure funding opportunities;
- Chamber of Commerce; and
- Internal partnerships: Economic Development and Tourism, Solid Waste (bike reuse program), Public Works (maintenance and operations), Trails (off-road connectivity).

1.5 Resource Requirements

It is important to reflect the mode share targets in the proportionate staff and budget resourcing for the sustainable transportation program.

There are currently ten full-time positions in Transportation and Engineering Services dedicated to ensuring road design and traffic operations are maintained to support the current mode share of 80% of daily trips made by car. Two full time positions are currently dedicated to sustainable transportation, one of which is fully dedicated to Active Transportation and the other who offers some support but focuses on Transportation Demand Management (Chapter 2).

To support the mode shift to sustainable modes, it is recommended to grow the Sustainable transportation program staff complement between now and 2051 to six full-time positions. Two of these positions would be for supporting the planning, design, construction and use of active transportation facilities.



CITY OF GUELPH TRANSPORTATION MASTER PLAN
Transportation Demand Management (TDM) Program

November 2021 – 18-8919

2.0 Transportation Demand Management (TDM)

2.1 Definition

Transportation Demand Management (TDM) is a term used to describe a suite of initiatives aimed at reducing traffic volumes (demand) on the road network, particularly in the commuter peak hours, by targeting driver behaviour and mode choice. It is different than *Transportation System Management* (covered in Chapter 4.0), which focuses on reducing traffic volumes through physical changes to infrastructure.

TDM include such broad strategies as:

- Influencing how people travel and what mode they choose
- Influencing when people travel to reduce congestion during peak hours
- Influencing where people travel through land use and transportation planning decisions

Approaches to TDM include education, marketing and outreach, policies, development/land use, and travel incentives/disincentives.

2.2 Background

2.2.1 Purpose

TDM is the active management of travel demand in a transportation system to increase system efficiency and achieve a variety of objectives, such as reducing greenhouse gases or improving congestion, by influencing how, why, when, and where people travel. It is an economical and efficient way to maximize the return on investment for transportation services and infrastructure.

2.2.2 Goal

The goal of the Transportation Demand Management (TDM) program is to reduce congestion and shift more trips to sustainable options like walking, cycling, and taking the bus. The main actions include:

- Supporting the TMP's mode share target of 40% by non-auto modes by 2051;
- Develop robust TDM guidelines for development application approvals;
- To influence the shape of development, develop a TDM checklist for development applications;
- Incorporate an equity lens approach to TDM planning and strategy (Policy 3.1.2.2)
- Deliver effective communications and marketing about TDM ;
- Engage with businesses and organizations to encourage the development of TDM programs;
- Support the development and maintenance of a Connectivity Index to track the multimodal connectivity of the City's transportation networks; and
- Develop a comprehensive list of TDM initiatives currently underway in the City.

2.2.3 Program Description

The program targets education and outreach efforts related to walking and cycling, carshare and carpooling. It also participates in development application review to ensure new

development is built according to the Official Plan policies to support sustainable transportation and reduce trip generation where possible.

The 2005 Guelph-Wellington Transportation Strategy led to the creation of the TDM program in 2006. The program has covered educational outreach activities in schools and employers, This section reviews the TDM program in Guelph today, which operates as part of the larger Sustainable transportation program. This program is run by staff from Engineering and Transportation Services.

Both Guelph's *Official Plan* and the 2005 Guelph-Wellington Transportation Study mandate the development of a TDM program. As a result, the existing TDM program was launched in 2006 under the direction of the sustainable transportation program. Below are examples of a few of the initiatives.

Active and Safe Routes to School

Public Health and the TDM group have been co-leads on the Active and Safe Routes to School initiative since 2006. The consortium of stakeholders overseeing this initiative also includes local school boards and Guelph Police Service. As part of the initiative, the TDM group helps develop school travel plans and walk to school programs.

Development Reviews

The TDM group also helps apply a TDM lens to development reviews. Members of the TDM group review site layout and site-specific context in order to inform comments on site plans and development applications. They then use an internal TDM checklist to identify and recommend additional TDM measures if required (e.g. adding bicycle parking, limiting car parking).

In the future, the TDM program has a goal of providing more TDM resources to developers. It also intends to launch a TDM strategic plan that will provide context-sensitive strategies for different areas of Guelph, including industrial areas, institutional areas, and downtown. The strategic plan will identify performance metrics that will be regularly reported to identify the initiative's progress and areas for improvement.

Carshare

The TDM groups works with local carshare providers to help find convenient locations for them to park, and promote these services to the community.

2.3 TMP Objectives for the Program

This section provides an overview of the key objectives the City should fulfill for the future TDM program.

- Develop a comprehensive TDM strategic plan to guide the work of this program
- Update and implement TDM strategies that reflect the needs and opportunities of the community to achieve the TMP's mode share targets and maximize the efficient use of existing transportation infrastructure

- Form partnerships and support community collaborations to facilitate sustainable transportation and TDM initiatives
- Implement a coordinated branding, marketing and wayfinding strategies with active transportation, transit and trails
- Ensure that TDM is disseminated and effectively communicated to both Guelph staff, council and residents. (Policy 5.1.2.7)
- Ensure land use and urban design sustainable transportation include appropriate TDM measures through the development review process (Policy 5.1.2.7)
- Support the City's net zero carbon target by encouraging low or zero-emission transportation options including carsharing, ridesharing, and transit (Policy 5.4.2.1)
- Develop and maintain a TDM checklist for development applications (Policy 5.1.2.7)
- Increase the amount of park and ride and rideshare facilities near transit facilities
- Investigate micro-mobility options (Policy 5.6.1.1)
- Collaborate with regional TDM programs to support inter-city travel

2.4 Potential Partnerships

- School boards;
- University of Guelph and Conestoga College;
- Chamber of Guelph and Downtown Guelph Business Association;
- Guelph-Wellington Local Immigration Partnership;
- Large employers / Chamber of Commerce;
- Local environmental and transportation-related organizations;
- Our Energy Guelph;
- Internal partnerships: Economic Development and Tourism;
- Community advocacy groups;
- SmartCommute / Travelwise and
- Carshare providers

2.5 Resource Recommendations

It is important to reflect the mode share targets in the proportionate staff and budget resourcing for the sustainable transportation program. There are currently ten full-time positions in Transportation and Engineering Services dedicated to ensuring road design and traffic operations are maintained to support the current mode share of 80% of daily trips made by car. Two full time positions are currently dedicated to sustainable transportation.

There is currently one position dedicated to Transportation Demand Management, with some duties to support the Active Transportation program as well. To support the mode shift to sustainable modes, it is recommended to grow the Sustainable transportation program staff complement between now and 2051 to six full-time positions. Two of these positions would be for supporting the Transportation Demand Management program.



CITY OF GUELPH TRANSPORTATION MASTER PLAN
Strategic Transportation Planning Program

November 2021 – 18-8919

3.0 Strategic Transportation Planning

3.1 Definition

Strategic Transportation Planning is the process of designing the transportation network, facilities, and services to align with the Vision and Goals of the TMP. Strategic Transportation Planning requires a strong understanding of the impact of social and economic aspects that impact how, when, and why people move.

3.2 Background

3.2.1 Purpose

Strategic Transportation Planning is required to ensure population and employment growth can be accommodated by the transportation network. It considers regional and provincial policy and development impacts on the local transportation network.

3.2.2 Goal

The goal of Strategic Transportation Planning is to ensure people and goods can move safely and effectively throughout the City. It will inform policies, development and road design decisions through the collection, analysis, and interpretation of multimodal transportation data.

The main outcomes include:

- Confirm and prioritize streets, trails, and routes for improvements in the Capital budget;
- Develop a *Complete Streets Design Guide* to guide all future street design by 2023;
- Develop a *Multimodal Level of Service* Guideline to evaluate the multimodal performance of streets by 2023;
- Develop a comprehensive *Goods Movement Strategy*;
- Maintain the City's Travel Demand Forecasting Model;
- Approach transportation planning with an equity lens;
- Support the required studies and assessments to implement TMP road network improvements; and
- Ensure development is compatible with the road network and transportation safety regulations and guidelines.

3.2.3 Program Description

The City's (Strategic) Transportation Planning group is currently responsible for:

- Maintaining the City's Travel Demand Forecasting Model;
- Leading all transportation network planning studies and corridor studies / Environmental Assessments
- Providing City input to network planning studies and corridor studies/ Environmental Assessments that are of interest to the City that are led by others (e.g., Metrolinx, the Ministry of Transportation of Ontario, County of Wellington)
- Providing transportation planning expertise on multi-disciplined City projects (e.g., the Clair-Maltby Master Servicing Plan, the Downtown Secondary Plan, etc.)

- Review development applications to ensure the road network and road geometrics can support the development and that safety standards are met

Guelph has already begun implementing and incorporating many Transportation Planning network trends including complete streets, complete networks, place-making for transportation corridors, and equity-based initiatives.

3.3 TMP Objectives for the Program

This section provides an overview of the key objectives the City should fulfill for the future Transportation Planning program.

- Prepare and maintain the Comprehensive *Goods Movement Strategy* (Policy 4.1.1)
- Prepare and maintain a City-wide guideline for preventative road safety measures (Policy 5.3.1)
- Develop a city-wide strategy for roundabouts (Policy 5.3.1.3)
- Ensure all related City plans are periodically reviewed and updated to align with the TMP goals (Policy 5.5.1.1)
- Update and maintain the City's transportation model
- Incorporate an equity lens approach to strategic transportation planning (Policy 3.1.2.2)
- Support the completion of Environmental Assessments required to implement the TMP Sustainability and Resiliency network plan
- Review development applications to ensure compatibility with the road network and transportation safety regulations and guidelines
- Continue to ensure the road network and system safely accommodate new development (Policy 5.1.2)
- Review (and if necessary, update) the City's Downtown Parking Strategy to support park-and-ride opportunities;

3.4 Potential Partnerships

Strategic Transportation Planning has the following potential partnerships:

- Metrolinx
- Ministry of Transportation of Ontario
- Adjacent municipalities

3.5 Resource Recommendations

There is currently one Transportation Planning Engineer fulfilling these objectives. To effectively keep up with population and employment growth projections and resulting transportation planning needs, it is recommended that this program be staffed by two full-time strategic transportation planners.



CITY OF GUELPH TRANSPORTATION MASTER PLAN
Transportation System Management (TSM) Program

November 2021 – 18-8919

4.0 Transportation System Management (TSM)

4.1 Definition

Transportation System Management (TSM) uses operating strategies to increase capacity on the road network without increasing its physical size. TSM includes measures such as transit signal priority at intersections, signal coordination, or dedicated lanes for high-occupancy vehicles. It differs from *Transportation Demand Management (TDM)*, which focuses on reducing traffic volumes by targeting driver behaviour and mode choice.

There is no formal TSM program at the City. However, groups and individuals fill many of the common TSM functions, including:

- Data collection
- Traffic signal design and operations
- Traffic investigations related to speed, driver behaviour, local congestion
- Intersection modifications and optimization
- Development review

4.2 Background

4.2.1 Purpose

Existing transportation infrastructure is not always equipped to manage an increase in traffic congestion. To make the transportation system as efficient as possible, communities often turn to TSM.

4.2.2 Goal

The goal of TSM is to increase the safety, capacity, efficiency, or level of service of a transportation facility without the need for new and expensive transportation infrastructure. The main actions include:

- Manage peak period congestion without increasing the physical size of the roadway
- Develop innovative intersection design to reduce delay and emissions from idling;
- Support *transit priority* measures to increase transit service and convenience;
- Accommodate all modes and reduce both delay and emissions by investing in selected capacity improvements to existing major street network operations; and
- Manage parking supply and demand both on- and off-street in the Downtown, and on-street city-wide
- Explore parking regulations and strategies city-wide and update the traffic and parking bylaws accordingly;
- Implement traffic flow improvements on regionally significant roads;
- Maintain the Traffic Bylaw to reflect changes to new infrastructure designs and standards that support active transportation and new technologies in micro-mobility.

4.2.3 Program Description

Transportation Systems Management uses various low-cost strategies to maintain or reduce travel time, maximize the efficiency of the transportation network, and improve the utilization of existing transportation facilities. Key examples include higher frequency public transit, eliminating on-street parking to add lanes, and making active transportation more convenient.

4.3 TMP Objectives for the Program

This section provides an overview of the key objectives the City should fulfill for the future TSM program.

- Develop a Transportation Systems Management Strategy and Action Plan that considers congestion management, access management, *transit priority*, *intelligent transportation systems* and *smart signals*, curbside management, and data collection (Policy 5.6)
- Manage congestion on road network during peak periods through signal optimization, smart signal technologies, alternative transportation facilities, and by maximizing the use of roadway before investing in new or expanded facilities
- Incorporate an equity lens approach to Transportation Systems Management planning and strategy
- Develop planning and design guidelines for roundabouts (Policy 5.3.1.3)
- Implement traffic flow improvements on important arterial roadways
- Collect and manage traffic count and turning movement data
- Coordinate the management of operational impacts of Metrolinx and other rail providers on the city's road network

4.4 Potential Partnerships

This section outlines the potential local partnerships the City can further develop or establish. It is recommended that Guelph continue to research, investigate, and implement Transportation Systems Management strategies. It is recommended that future partnerships be leveraged for engagement and public participation activities when TSM is a priority.

The following partnerships can be levied by the City:

- Wellington County;
- First Responder Committee / Guelph Police Services;
- Business Improvement Association / Downtown Guelph Business Association.
- Metrolinx

4.5 Resource Recommendations

It is recommended that the existing eight positions be maintained to continue to manage and operate the City's traffic signals, road operations and road safety programs.

An additional full-time employee is recommended to support expanding and maintaining the data collection program.



CITY OF GUELPH TRANSPORTATION MASTER PLAN

Road Safety Program

November 2021 – 18-8919

5.0 Road Safety

5.1 Definition

Road safety refers to the strategies, tools, and measures cities can use to prevent collisions resulting in injuries and deaths. All road users are impacted by road safety.

There are four important areas of focus in current industry discussions about improving safety of roads: street function and design, intersection design, designing cycling facilities for all ages and abilities (*AAA facilities*), and *Vision Zero*, a global movement based on a safe systems approach to eliminate all traffic fatalities and severe injuries, while increasing safe, healthy, equitable mobility for all.

Additionally the safe systems approach is a helpful framework for managing road safety and is based on the principles that life and health should not be compromised by the need to travel and that no level of death or serious injury is acceptable in our transportation network. According to the safe systems approach, safe transportation systems consist of four main elements: safer roads, safer road use, safer speeds, and safer vehicles.

5.2 Guelph's History with Road Safety

5.2.1 Purpose

Road-related incidents of injury and death continue to be a persistent challenge in many jurisdictions. Therefore, communities across Canada and around the world are emphasizing road safety in long-range planning and day-to-day operational decisions.

Many communities have developed road safety programs to address the safety concerns impacting all road users. For example, the Safe Roads Waterloo Region campaign is dedicated to reducing injuries and deaths caused by traffic collisions on roads. The program aligns with the global Vision Zero movement. More information can be found on the campaign [website](#).

5.2.2 Goal

The goal of road safety programs is to provide strategies that improve road safety to benefit all users, regardless of their age, ability, or mode of transportation. The main outcomes include:

- Recommend formal Council adoption of Vision Zero
- Reduce roadway speeds on selected streets, as required
- Improve cooperation, communication and collaboration among stakeholders in existing initiatives and programs;
- Reduce the number of collisions and collision severity on roadways;
- Implement safer road and intersection design practices;
- Update and follow the City's Traffic Calming Strategy; and
- Support the development of *Multimodal Level of Service* Guidelines that include safety analysis for links and intersections.

Although the City of Guelph has not formally adopted a Vision Zero approach, many of the safe systems principles and preferred strategies to address road safety are in line with Vision Zero.

5.2.3 Program Description

Guelph has several plans and strategies already in place to improve the safety on the roads for its communities, which are actively managed through a number of initiatives and programs.

These initiatives and programs are briefly described below:

- The City recently developed a Community Road Safety Strategy, which provides a high-level road safety plan that outlines emphasis areas and appropriate mitigation strategies for safety.
- The Community Speed Awareness Program installs temporary dynamic radar boards in residential neighbourhoods to raise awareness of speeding issues.
- The Guelph Road Safety Coalition coordinates and bolsters road safety efforts in the city through educating the public, raising awareness, building capacity, and sharing resources.
- The Active and Safe Routes to School Committee, established in 2009, supports the development and assessment of safe routes to school.

The Community Road Safety Strategy proactively and reactively reviews the operations of the road network and makes recommendations for localized modifications to improve road safety for all users and modes of travel. Three groups from the Engineering and Transportation Services department contribute to the City's Road Safety program. The groups include:

- Transportation Safety Specialists, who develop and update the City's strategy for improving road safety and associated policies like the City's Traffic Calming Policy;
- Traffic Investigations and Operations, who are responsible for the implementation and operation of smart signals and red light cameras. This group also reviews citizen concerns about road network operations, road marking plans, construction drawings, signage, etc. to recommend localized improvements
- Adult School Crossing Guard Program

5.3 TMP Objectives for the Program

This section provides an overview of the key objectives the City should fulfill for the future Road Safety program. To enhance the program further, it is recommended that Guelph formally adopt and endorse Vision Zero. The philosophies of Vision Zero will guide Guelph's objectives with the goal of improving road safety for all users by reducing collision severity and eliminating traffic fatalities.

Key objectives include:

- Formally endorse and adopt the Vision Zero approach to road design (Policy 5.3.1.1)
- Continue to implement the Community Road Safety Strategy, which forms part of Guelph's Vision Zero Plan, and update as necessary (Policy 5.3.1.1)
- Research and test new and innovative street function and design, and intersection design to reduce the likelihood of collisions

- Continue to work with the Ministry of Transportation of Ontario to replace all existing at-grade intersections on the Hanlon Expressway with interchanges, overpasses or underpasses. (Policy 5.3.1.2)
- Continue to review the need for grade-separations of existing at-grade rail crossings (Policy 5.3.1.4)
- Improve cooperation, communication and collaboration among stakeholders in existing initiatives and programs
- Continue to follow the City's Traffic Calming Strategy Policy to reduce collision severity, and improve road safety and update as necessary

5.4 Potential Partnerships

This City has already developed multiple partnerships throughout various communities in Guelph. It is recommended that future partnerships be leveraged for engagement and public participation activities when Road Safety is a priority.

The following partnerships can be leveraged by the City:

- Schools
- Neighbourhood groups
- Public Health Agencies
- Guelph Police and Ontario Provincial Police
- University of Guelph
- Ministry of Transportation

5.5 Resource Recommendations

To support the Vision Zero efforts, additional road safety staff will be required to support new road safety initiatives and expansions of existing programs as a part of a Vision Zero community.

One full-time Transportation Safety Supervisor and one full-time Road Safety Technologist is recommended to support expanding and maintaining the road safety program.



CITY OF GUELPH TRANSPORTATION MASTER PLAN
New Mobility and Emerging Technology Program

November 2021 – 18-8919

6.0 New Mobility and Emerging Technology

6.1 Definition

New Mobility and Emerging Technology are becoming ever more relevant to today's transportation industry. Amidst the rapid evolution of digital technologies and ever improving connectivity, new transportation related innovations continue to emerge at an unprecedented rate, helping residents travel in a more personalized and seamless multimodal way. Specific new mobility and emerging technology examples in the transportation field include, but are not limited to, ride-hailing, micro-transit, micro-mobility, *Mobility-as-a-Service* (MaaS), e-commerce, electrification, self-driving technology, drone delivery and connected mobility.

Today, a common theme amongst municipalities and transit agencies is that they are becoming integrated mobility providers. This means that they are no longer focused on exclusively providing public transit service, but they are integrating public transit with other supporting modes such as car-share and subsidized ride-hailing. Similarly, there is also a call for municipalities and public transit agencies to develop partnerships with new private transportation providers with the goal of maximizing efficiencies and providing benefits to travelers.

6.2 Background

6.2.1 Purpose

The City of Guelph 2019-2023 Strategic Plan calls for Guelph to be “future-ready”. To ensure the City is prepared for opportune or disruptive new technologies or services in the transportation sector, the TMP recommends establishing an Emerging transportation technology office. This office is responsible for the study, analysis and recommendations of which technologies and services to pursue, test or avoid to protect the best interests of the community.

6.2.2 Goal

The goal of new mobility and emerging technology programs is to be a source of research, analysis, partnerships, testing and pilot projects for new transportation technologies and services. The main actions include:

- Support the implementation of smart signals and other emerging “smart” transportation technologies
- Explore opportunities to adopt *Mobility-as-a-Service* in Guelph;
- Monitor and recommend micro-mobility technologies and services suitable for Guelph;
- Develop curb space management strategies to support and develop policy and programs for e-commerce delivery services;
- Develop policy and programs to support future autonomous vehicle technology; and
- Develop a strategy to incorporate connected - or “smart” - features of transportation to make travel more convenient;

6.2.3 Program Description

To embrace the existing and future trends of New Mobility and Emerging Technology, the City will need to ensure a transition that is as seamless as possible and support the anticipated changes.

Micro-mobility

Bikeshare is an example of new transportation service model that changed how we move around cities. Many cities were on the cutting edge of providing Bikeshare services to their communities, but it turned out best adapted to larger cities with strong public transit.

E-scooters (push-scooters that have a small electric throttle) are another emerging popular trend in micro-mobility, and may have more potential for a mid-sized city like Guelph.

Micro-transit

Guelph Transit is currently using elements of *micro-transit* for Transit Mobility Services, its accessible transit service. For this service, Guelph Transit has partnered with a third-party technology provider for automated dispatch and routing to make the service more efficient.

Zero Emissions Vehicles

In 2018, Community Energy Initiative (CEI) set a target of having Guelph produce net zero carbon emissions by 2050. The CEI task force provided 20 potential actions for the City to help Guelph achieve this target. Guelph was one of the first Canadian communities to install an electric vehicle charging station. Today, there are over 20 city-owned public charging ports within 15 kilometres of the city. Most recently, Guelph Transit announced that it will replace 35 older diesel buses with electric buses, and add 30 brand new electric buses to their fleet by 2027.

Connected Mobility

Similar to many other municipalities, Guelph uses traffic signal preemption at select intersections for Fire Services emergency vehicles. Preemption is used to halt conflicting movements in advance of the emergency vehicle arriving at the intersection. This helps improve emergency response times and makes the roads safer for everyone. The City does not currently have any other forms of traffic signal priority measures. In 2020, the City piloted new traffic counting and detection technologies which enabled the City to have real-time traffic counts at select locations during all hours of the day. In the next 5 years, it is anticipated this technology will be installed at up to 50 intersections. Having real time traffic data will help the City make more informed operational decisions about its transportation network.

Mobility-as-a-Service

Mobility-as-a-Service is the integration of various forms of transport services into a single mobility service accessible on demand, usually through a digital platform. It enable users to access, pay for, and get real-time information on a range of public and private mobility options through the use of a single digital application, instead of multiple ticketing and information operations.

6.3 TMP Objectives for the Program

This section provides an overview of the key objectives the City should fulfill for the future New Mobility and Emerging Technology program.

- Review (and if necessary, update) the City's Municipal Zero Emissions Vehicle and Transit Fleet Strategy at regular intervals, to keep up to date with emerging technologies and practices (Policy 5.4.1.2)
- Develop a strategy for increasing the rate of consumer adoption of electric vehicles (Policy 5.4.1.1)
- Develop a strategy for appropriate locations of electric vehicle charging stations, including consideration for public transit facilities (Policies 5.4.1.3)
- Establish an Emerging Transportation Technologies office to assess new transportation modes and opportunities and position the City to respond (Policy 5.6.1.1)
- Consider opportunities for *Alternative Service Delivery and micro-transit*
- Explore opportunities to adopt *mobility-as-a-service* in Guelph and support its digital platforms through private partnerships (Policy 2.2.1.4 and 3.1.2.5)
- Develop and maintain a strategy for the implementation of smart signals and other emerging “smart” transportation technologies (Policy 5.6.1.3)
- Complete bi-annual reviews of autonomous vehicle technology for transit in order to identify the implications on the planning and operation of the transit system (Policy 4.1.1)

6.4 Potential Partnerships

The following partnerships can be leveraged by the City:

- the Ministry of Transportation of Ontario;
- Municipal Alliance for Connected & Autonomous Vehicles Ontario;
- Post-secondary institutions (research and development);
- Private industry;
- Large employers / Chamber of Commerce; and
- First Responder Committee / Guelph Police Association.

6.6 Resource Recommendations

There are no current positions that include researching and analysis of new technologies for the transportation sector. As such, it is recommended that two full-time employees be retained over the course of the next 30 years to resource this program. The *Guelph: Future Ready* strategic plan identifies this need, and the 2022 multi-year operating budget includes a request for one Emerging Transportation Technology analyst.

Appendix:
Alignment with TMP Problem Statements

Alignment with TMP Problem Statements: Active Transportation

This section of the TMP aims to align the TMP Goals and Problem Statements with the Sustainable transportation program. The Goals have been used to structure the Problems Statements. In the table below, a connection to the Sustainable transportation program has been identified for each Goal and the complimentary Problem Statements.

Goal	Problem Statements	Connection
Goal 1: People of all ages and physical ability will be able to travel safely using any transportation mode that they choose	<ul style="list-style-type: none"> ● We need to design our streets to serve the needs of a diverse group of people, of all ages and abilities. ● We need to design our streets to safely serve all modes of transportation, including walking, cycling and transit. 	<ul style="list-style-type: none"> ● Provide transportation to all through sustainable options
Goal 2: Guelph's transportation system will be easy-to-use, reliable and give people and businesses the options they want when they need them.	<ul style="list-style-type: none"> ● We need strong (i.e. fast and direct) transit connections to existing and future jobs ● We need more safe crossings of the rivers, rail lines and highways for people walking and cycling ● We need better walking and cycling connections to transit stops and hubs 	<ul style="list-style-type: none"> ● Support mode shift to sustainable modes
Goal 3: Transit service will provide travel times and traveler convenience at levels that are competitive with travel by car	<ul style="list-style-type: none"> ● We need to reduce transit travel times and improve traveler convenience to most destinations, particularly between neighbouring areas of the city 	<ul style="list-style-type: none"> ● Prioritize transit as a sustainable mode of transportation
Goal 4: The carbon footprint from the transportation sector will aim for net zero by 2050	<ul style="list-style-type: none"> ● We need to reduce the percentage of trips made by car. ● We need to update the downtown parking strategy to align with the objectives of the TMP to reduce downtown car use. ● We need to tap Guelph's unrealized potential for electric vehicles. 	<ul style="list-style-type: none"> ● Prioritize moving away from car dependency and move towards renewable energy for transportation
Goal 5: Guelph's streets, trails and rail networks will align with the City's land use objectives	<ul style="list-style-type: none"> ● We need to redesign streets in key growth areas to prioritize walking, cycling and transit. ● We need to update our road designs to reflect the unique priorities of different areas. 	<ul style="list-style-type: none"> ● Focus on active transportation and transit to support land use density
Goal 6: Investment decisions will be made considering the asset lifecycle costs	<ul style="list-style-type: none"> ● We need to account for lifecycle costs in financial decisions on transportation projects. 	<ul style="list-style-type: none"> ● Consider environmental impact of new

		purchases (i.e. diesel buses) <ul style="list-style-type: none"> • Plan future facilities to be sustainable and adaptable
Goal 7: Guelph's transportation system will plan for the changes of tomorrow, while delivering great service today	<ul style="list-style-type: none"> • We need to improve the resiliency of Guelph's transportation system. • We need to better prepare for the future of mobility. 	<ul style="list-style-type: none"> • Support shift to sustainable modes

Alignment with TMP Problem Statements: Transportation Demand Management

This section of the TMP aims to align the TMP Goals and Problem Statements with the TDM program. The Goals have been used to structure the Problems Statements. In the table below, a connection to the TDM program has been identified for each Goal and the complimentary Problem Statements.

Goal	Problem Statements	Connection
Goal 1: People of all ages and physical ability will be able to travel safely using any transportation mode that they choose	<ul style="list-style-type: none"> ● We need to design our streets to serve the needs of a diverse group of people, of all ages and abilities. ● We need to design our streets to safely serve all modes of transportation, including walking, cycling and transit. 	<ul style="list-style-type: none"> ● Make transportation more accessible to all
Goal 2: Guelph's transportation system will be easy-to-use, reliable and give people and businesses the options they want when they need them.	<ul style="list-style-type: none"> ● We need strong (i.e. fast and direct) transit connections to existing and future jobs ● We need more safe crossings of the rivers, rail lines and highways for people walking and cycling ● We need better walking and cycling connections to transit stops and hubs 	<ul style="list-style-type: none"> ● Design strategies, measures and tools to respond to changes in traveler behaviours ● Support mode shift to sustainable modes
Goal 3: Transit service will provide travel times and traveler convenience at levels that are competitive with travel by car	<ul style="list-style-type: none"> ● We need to reduce transit travel times and improve traveler convenience to most destinations, particularly between neighbouring areas of the city 	<ul style="list-style-type: none"> ● Support mode shift to sustainable modes ● Align demands with network development strategy
Goal 4: The carbon footprint from the transportation sector will aim for net zero by 2050	<ul style="list-style-type: none"> ● We need to reduce the percentage of trips made by car. ● We need to update the downtown parking strategy to align with the objectives of the TMP to reduce downtown car use. ● We need to tap Guelph's unrealized potential for electric vehicles. 	<ul style="list-style-type: none"> ● Reduce GHG and other environmental impacts
Goal 5: Guelph's streets, trails and rail networks will align with the City's land use objectives	<ul style="list-style-type: none"> ● We need to redesign streets in key growth areas to prioritize walking, cycling and transit. ● We need to update our road designs to reflect the unique priorities of different areas. 	<ul style="list-style-type: none"> ● Align demands with network development strategy
Goal 6: Investment decisions will be made	<ul style="list-style-type: none"> ● We need to account for lifecycle costs in financial decisions on transportation projects. 	<ul style="list-style-type: none"> ● Plan future facilities and infrastructure to

<p>considering the asset lifecycle costs</p>		<p>accommodate for demand</p> <ul style="list-style-type: none"> ● Make the network more affordable by reducing peak demands for travel
<p>Goal 7: Guelph's transportation system will plan for the changes of tomorrow, while delivering great service today</p>	<ul style="list-style-type: none"> ● We need to improve the resiliency of Guelph's transportation system. ● We need to better prepare for the future of mobility. 	<ul style="list-style-type: none"> ● Support mode shift to sustainable modes

Alignment with TMP Problem Statements: Strategic Transportation Planning

This section of the TMP aims to align the TMP Goals and Problem Statements with the Transportation Planning program. The Goals have been used to structure the Problems Statements. In the table below, a connection to the Transportation Planning program has been identified for each Goal and the complimentary Problem Statements.

Goal	Problem Statements	Connection
<p>Goal 1: People of all ages and physical ability will be able to travel safely using any transportation mode that they choose</p>	<ul style="list-style-type: none"> ● We need to design our streets to serve the needs of a diverse group of people, of all ages and abilities. ● We need to design our streets to safely serve all modes of transportation, including walking, cycling and transit. 	<ul style="list-style-type: none"> ● Provide access and mobility to everyone, regardless of abilities
<p>Goal 2: Guelph's transportation system will be easy-to-use, reliable and give people and businesses the options they want when they need them.</p>	<ul style="list-style-type: none"> ● We need strong (i.e. fast and direct) transit connections to existing and future jobs ● We need more safe crossings of the rivers, rail lines and highways for people walking and cycling ● We need better walking and cycling connections to transit stops and hubs 	<ul style="list-style-type: none"> ● Provide simple and safe connections for all modes
<p>Goal 3: Transit service will provide travel times and traveler convenience at levels that are competitive with travel by car</p>	<ul style="list-style-type: none"> ● We need to reduce transit travel times and improve traveler convenience to most destinations, particularly between neighbouring areas of the city 	<ul style="list-style-type: none"> ● Enable the transit system to be competitive with other modes
<p>Goal 4: The carbon footprint from the transportation sector will aim for net zero by 2050</p>	<ul style="list-style-type: none"> ● We need to reduce the percentage of trips made by car. ● We need to update the downtown parking strategy to align with the objectives of the TMP to reduce downtown car use. ● We need to tap Guelph's unrealized potential for electric vehicles. 	<ul style="list-style-type: none"> ● Build new connections and diversify modes to address climate change issues
<p>Goal 5: Guelph's streets, trails and rail networks will align with the City's land use objectives</p>	<ul style="list-style-type: none"> ● We need to redesign streets in key growth areas to prioritize walking, cycling and transit. ● We need to update our road designs to reflect the unique priorities of different areas. 	<ul style="list-style-type: none"> ● Respond to the changing interests of where people want to live and work through the road network planning

<p>Goal 6: Investment decisions will be made considering the asset lifecycle costs</p>	<ul style="list-style-type: none"> ● We need to account for lifecycle costs in financial decisions on transportation projects. 	<ul style="list-style-type: none"> ● Improve network planning facilities and services
<p>Goal 7: Guelph's transportation system will plan for the changes of tomorrow, while delivering great service today</p>	<ul style="list-style-type: none"> ● We need to improve the resiliency of Guelph's transportation system. ● We need to better prepare for the future of mobility. 	<ul style="list-style-type: none"> ● Track and respond to future trends for land use and transportation planning

Alignment with TMP Problem Statements: Transportation System Management

This section of the TMP aims to align the TMP Goals and Problem Statements with the Transportation Systems Management program. The Goals have been used to structure the Problems Statements. In the table below, a connection to the Transportation Systems Management program has been identified for each Goal and the complimentary Problem Statements.

Goal	Problem Statements	Connection
Goal 1: People of all ages and physical ability will be able to travel safely using any transportation mode that they choose	<ul style="list-style-type: none"> ● We need to design our streets to serve the needs of a diverse group of people, of all ages and abilities. ● We need to design our streets to safely serve all modes of transportation, including walking, cycling and transit. 	<ul style="list-style-type: none"> ● Monitor existing infrastructure to accommodate new growth
Goal 2: Guelph's transportation system will be easy-to-use, reliable and give people and businesses the options they want when they need them.	<ul style="list-style-type: none"> ● We need strong (i.e. fast and direct) transit connections to existing and future jobs ● We need more safe crossings of the rivers, rail lines and highways for people walking and cycling ● We need better walking and cycling connections to transit stops and hubs 	<ul style="list-style-type: none"> ● Safe and efficient infrastructure and services
Goal 3: Transit service will provide travel times and traveler convenience at levels that are competitive with travel by car	<ul style="list-style-type: none"> ● We need to reduce transit travel times and improve traveler convenience to most destinations, particularly between neighbouring areas of the city 	<ul style="list-style-type: none"> ● Provide higher level of service for public transit through low-cost strategies
Goal 4: The carbon footprint from the transportation sector will aim for net zero by 2050	<ul style="list-style-type: none"> ● We need to reduce the percentage of trips made by car. ● We need to update the downtown parking strategy to align with the objectives of the TMP to reduce downtown car use. ● We need to tap Guelph's unrealized potential for electric vehicles. 	<ul style="list-style-type: none"> ● Provide greater efficiency and reduce congestion, which would result in higher air pollution rates
Goal 5: Guelph's streets, trails and rail networks will align with the City's land use objectives	<ul style="list-style-type: none"> ● We need to redesign streets in key growth areas to prioritize walking, cycling and transit. ● We need to update our road designs to reflect the unique priorities of different areas. 	<ul style="list-style-type: none"> ● Change infrastructure to accommodate future growth
Goal 6: Investment decisions will be made considering the asset lifecycle costs	<ul style="list-style-type: none"> ● We need to account for lifecycle costs in financial decisions on transportation projects. 	<ul style="list-style-type: none"> ● Plan for low-cost changes

<p>Goal 7: Guelph's transportation system will plan for the changes of tomorrow, while delivering great service today</p>	<ul style="list-style-type: none">• We need to improve the resiliency of Guelph's transportation system.• We need to better prepare for the future of mobility.	<ul style="list-style-type: none">• Focus on developing strategies instead of changing infrastructure
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Alignment with TMP Problem Statements: Road Safety

This section of the TMP aims to align the TMP Goals and Problem Statements with the Road Safety program. The Goals have been used to structure the Problems Statements. In the table below, a connection to the Road Safety program has been identified for each Goal and the complimentary Problem Statements.

Goal	Problem Statements	Connection
Goal 1: People of all ages and physical ability will be able to travel safely using any transportation mode that they choose	<ul style="list-style-type: none"> ● We need to design our streets to serve the needs of a diverse group of people, of all ages and abilities. ● We need to design our streets to safely serve all modes of transportation, including walking, cycling and transit. 	<ul style="list-style-type: none"> ● Provide safe and easy to access facilities and infrastructure
Goal 2: Guelph's transportation system will be easy-to-use, reliable and give people and businesses the options they want when they need them.	<ul style="list-style-type: none"> ● We need strong (i.e. fast and direct) transit connections to existing and future jobs ● We need more safe crossings of the rivers, rail lines and highways for people walking and cycling ● We need better walking and cycling connections to transit stops and hubs 	<ul style="list-style-type: none"> ● Provide safe connections for all modes
Goal 3: Transit service will provide travel times and traveler convenience at levels that are competitive with travel by car	<ul style="list-style-type: none"> ● We need to reduce transit travel times and improve traveler convenience to most destinations, particularly between neighbouring areas of the city 	<ul style="list-style-type: none"> ● Provide safe transit options on board and street at stops
Goal 4: The carbon footprint from the transportation sector will aim for net zero by 2050	<ul style="list-style-type: none"> ● We need to reduce the percentage of trips made by car. ● We need to update the downtown parking strategy to align with the objectives of the TMP to reduce downtown car use. ● We need to tap Guelph's unrealized potential for electric vehicles. 	<ul style="list-style-type: none"> ● Rebalance mode share by improving safety of other sustainable modes
Goal 5: Guelph's streets, trails and rail networks will align with the City's land use objectives	<ul style="list-style-type: none"> ● We need to redesign streets in key growth areas to prioritize walking, cycling and transit. ● We need to update our road designs to reflect the unique priorities of different areas. 	<ul style="list-style-type: none"> ● Review how density impacts the usability and safety of surrounding road network
Goal 6: Investment decisions will be made considering the asset lifecycle costs	<ul style="list-style-type: none"> ● We need to account for lifecycle costs in financial decisions on transportation projects. 	<ul style="list-style-type: none"> ● Safety improvements need to be prioritized
Goal 7: Guelph's transportation system	<ul style="list-style-type: none"> ● We need to improve the resiliency of Guelph's transportation system. 	<ul style="list-style-type: none"> ● Future growth accommodated by

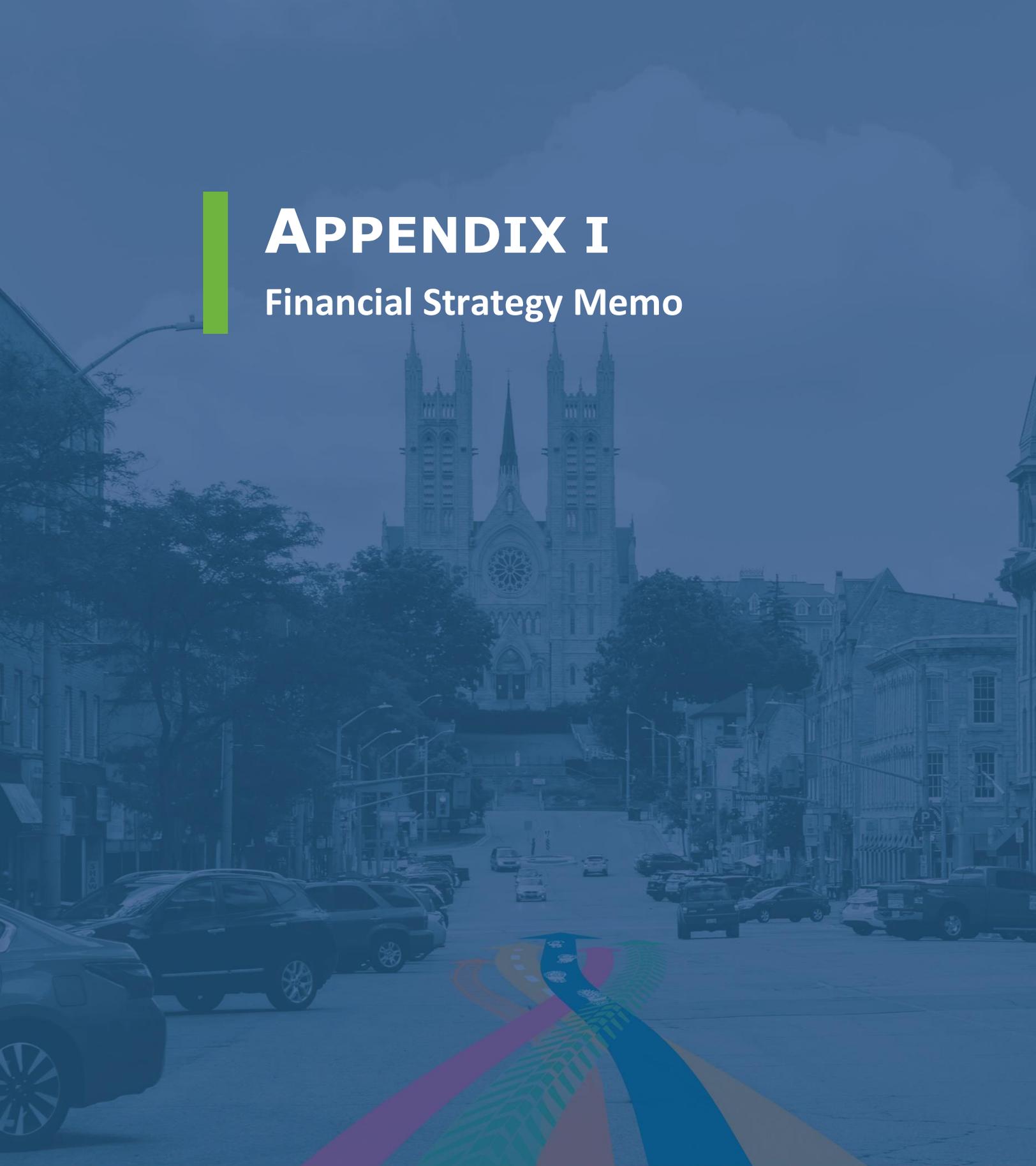
will plan for the changes of tomorrow, while delivering great service today	<ul style="list-style-type: none">• We need to better prepare for the future of mobility.	improved safety of network
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Alignment with TMP Problem Statements: New Mobility and Emerging Technology

This section of the TMP aims to align the TMP Goals and Problem Statements with the New Mobility and Emerging Technology program. The Goals have been used to structure the Problems Statements. In the table below, a connection to the New Mobility and Emerging Technology program has been identified for each Goal and the complimentary Problem Statements.

Goal	Problem Statements	Connection
Goal 1: People of all ages and physical ability will be able to travel safely using any transportation mode that they choose	<ul style="list-style-type: none"> • We need to design our streets to serve the needs of a diverse group of people, of all ages and abilities. • We need to design our streets to safely serve all modes of transportation, including walking, cycling and transit. 	<ul style="list-style-type: none"> • Consideration of future modes
Goal 2: Guelph's transportation system will be easy-to-use, reliable and give people and businesses the options they want when they need them.	<ul style="list-style-type: none"> • We need strong (i.e. fast and direct) transit connections to existing and future jobs • We need more safe crossings of the rivers, rail lines and highways for people walking and cycling • We need better walking and cycling connections to transit stops and hubs 	<ul style="list-style-type: none"> • Diverse modes and new features are easy to use
Goal 3: Transit service will provide travel times and traveler convenience at levels that are competitive with travel by car	<ul style="list-style-type: none"> • We need to reduce transit travel times and improve traveler convenience to most destinations, particularly between neighbouring areas of the city 	<ul style="list-style-type: none"> • Newer technologies improve convenience and reliability
Goal 4: The carbon footprint from the transportation sector will aim for net zero by 2050	<ul style="list-style-type: none"> • We need to reduce the percentage of trips made by car. • We need to update the downtown parking strategy to align with the objectives of the TMP to reduce downtown car use. • We need to tap Guelph's unrealized potential for electric vehicles. 	<ul style="list-style-type: none"> • Electric vehicles and infrastructure considered • Increased ridesharing minimizes need for parking • Improved reliability of other modes to reduce trips by car
Goal 5: Guelph's streets, trails and rail networks will align with the City's land use objectives	<ul style="list-style-type: none"> • We need to redesign streets in key growth areas to prioritize walking, cycling and transit. • We need to update our road designs to reflect the unique priorities of different areas. 	<ul style="list-style-type: none"> • New technology to improve functionality of existing network • New tools to respond to changes in traveler behaviours

<p>Goal 6: Investment decisions will be made considering the asset lifecycle costs</p>	<ul style="list-style-type: none"> ● We need to account for lifecycle costs in financial decisions on transportation projects. 	<ul style="list-style-type: none"> ● Plan future facilities and infrastructure with new mobility and emerging technology in mind
<p>Goal 7: Guelph's transportation system will plan for the changes of tomorrow, while delivering great service today</p>	<ul style="list-style-type: none"> ● We need to improve the resiliency of Guelph's transportation system. ● We need to better prepare for the future of mobility. 	<ul style="list-style-type: none"> ● Support change in mode share shift with new and emerging trends



APPENDIX I

Financial Strategy Memo

Memo

To: Jennifer Juste, City of Guelph
From: Adam Prokopanko, Dillon Consulting Limited
cc: Shawn Doyle, Dillon Consulting Limited
Stephanie Magnanelli, Dillon Consulting Limited
Date: December 10, 2021
Subject: Financial Strategy
Our File: 18-8919

1.0 Overview

This memo summarizes the four individual memos prepared to examine different aspects of the financial considerations required to evaluate transportation alternatives and inform the recommendations of the Guelph Transportation Master Plan (TMP).

- The Cost of Building True Multi-modal Transportation Networks
- Stepping Away from a Car-centric Approach
- Potential Development Charges Recovery
- Funding Sources

Taken together, these components form the financial strategy of the Guelph TMP and provide direction to ensure that the TMP can be implemented in a sustainable and cost-effective manner.

The Cost of Building True Multi-modal Transportation Networks

This memo estimates the impact on future Capital Budgets of transitioning to design practices that represent the Complete Streets philosophy proposed by the Transportation Master Plan from existing road design practices. Details are provided in **Section 2.0**.

Stepping Away from a Car-centric Approach

This memo provides a brief explanation as to why the City of Guelph chose a sustainability approach for the Transportation Master Plan, instead of continuing the auto-centric, business-as-usual approach. Details are provided in **Section 3.0**.

Potential Development Charges Recovery

This memo was prepared by Watson & Associates Economists Limited to assess the capital projects contained within the Transportation Master Plan and identify their potential development charges eligibility. The listing of capital projects is based on the Recommended Network, as approved by Council. Details are provided in **Section 4.0**.

Funding Sources

This memo identifies existing funding options and possible non-property tax revenue tools, which informs an evaluation of preferred revenue tools the City of Guelph may use in future toward funding of the infrastructure projects recommended as part of the Transportation Master Plan. Details are provided in **Section 5.0**.

The Cost of Building True Multi-modal Transportation Networks

There is a cost associated with building a transportation network that is greener, safer, and more accessible than what currently exists within much of the City of Guelph. This section determines the additional cost (delta) of building infrastructure to the standards set out in the TMP recommendations.

Comparison of Right-of-Way Design Components

The City's Development Engineering Standards

The Development Engineering Standards include road design standards that reflect the industry state of practice from 2010/2011 when the latest update was completed. The standards contain a mix of rural and urban cross-sections, with only the urbanized sections being considered as part of the memo. The City's Standard Drawings include the following within the road right-of-way:

- 1.5 m sidewalks provided on one or both sides of all urbanized section;
- No provisions for cycling facilities;
- No defined space for transit amenities though boulevards are generally wide enough to include them;
- No inclusion of street trees; and
- Vehicular lanes that vary in width from 3.5 to 4.5 m for urbanized cross-sections.

A Move in the Right Direction (2021 Design Approach)

In recent years, City staff have endeavored to create more modern, multi-modal transportation corridors despite the absence of a formal policy document or design standard to guide decisions. When (re)constructed by the City, modern arterial and collector right-of-way designs have aimed to include both pedestrian and cycling amenities per the recommendations of OTM Books 15 and 18. This more modern standard has typically included the following within the available road right-of-way:

- 1.5 m sidewalks on both sides of every collector and arterial roadway;
- 1.5 m on-road cycle lanes or 3.0 m multi-use pathways on both sides of every arterial or collector roadway;
- Space for transit pads within the boulevard for arterial or collector cross-section;
- No standard requiring the inclusion of street trees; and
- Vehicular lanes that vary between 3.5 and 3.75 m.

A City for the Future (TMP Design Recommendations)

The Guelph of the future is a City in which people can safely choose walking, cycling, or transit for local trips – leaving road capacity for goods movement and longer distance travel. The types of right-of-way amenities envisioned through the TMP Update include the following:

- All Ages and Abilities (AAA) cycling facilities on all arterial and collector roadways. Facility types include a mix of: wider, physically separated on-road cycling lanes, off-road cycle tracks, and multi-use pathways where space is limited;
- Wider, AODA-compliant sidewalks on both sides of all arterial and collector roadways. Sidewalks will have a minimum width of 1.8 m and may be wider where anticipated pedestrian volumes are higher or where the need is supported by adjacent land uses;
- Transit shelters provided at every transit stop on arterial and collector roadways; and
- Street trees within grassed and/or landscaped boulevards on both sides of all arterial and collector roadways wherever space permits.
- Underground relocation of above-ground hydro wires and other utilities is likely required to maximize efficient use of the Right-of-Way and reduce the property impacts. Placing utilities underground can add up to \$2M per kilometer to a project assuming full underground relocation on two sides of a street. These costs are project-specific and have not been included in the cost comparison below.

Summary

Table 1 provides an overview of the differences between the design standards discussed in the previous three sections.

Table 1: Overview of Proposed Changes to Design of Guelph's Arterial and Collector Right-of-Ways

Design Standard	Guelph's Development Engineering Standards	2021 Approach to Design	TMP Recommendations
Vehicular Facilities	3.5 to 4.5 m lanes, minimum 8.1 m curb face to curb face	3.5 to 3.75 m lanes, minimum 8.0 m curb face to curb face	3.3 to 3.5 m lanes, minimum 8.0 curb face to curb face
Pedestrian Facilities	1.5 m sidewalks, both sides	1.5 m sidewalks, both sides	Minimum 1.8 m sidewalks, both sides
Cycling Facilities	None	1.5 m cycle lanes or 3.0 m multi-use pathways	AAA Cycling Facilities (including physically separated on-road lanes, 2.0 cycle tracks, or 3.0 m multi-use pathways)
Streetscaping	Grassed Boulevards	Grassed boulevards with some street trees	Grassed boulevards with street trees on both sides
Transit Amenities	Undefined	Shelters at some stops	Shelters at all stops
Location of Electrical Lines	Overhead	Mix of overhead and underground ¹	Fully underground on both sides ²

¹ For comparison purposes, electrical lines have been assumed to be overhead in the 2019 approach.

² Generally required to facilitate the placement of street trees within the right-of-way on both sides of the roadway.

The Cost of Driving Change

While the TMP endeavors to mitigate the need to widen roadways by shifting mode choices, implementing enhanced sidewalks, AAA cycling facilities, higher quality transit amenities and improved streetscapes is not without cost. That being said, without the need for costly widening projects, more space and capital resources will be made available to improve road right-of-ways beyond the curb. This will include the resources to improve the equity of the overall transportation network, maintain or improve the character of existing historic corridors, and enhance the public realm with street trees and other amenities to encourage a sense of community.

Table 2 and 3 provides a comparison of capital costs associated with planned transportation facility improvement categories. The comparison of costs indicates that implementation of the enhanced multi-modal corridors put forward through the TMP can be expected to increase overall capital costs by an average of 3%³.

Note that these costs include new street trees but do not include underground utility relocations, transit shelters, or contingencies to account for complexity of the installations. Transit shelters are not included because the pad designs are consistent across the design standards. The only change for the TMP Recommendations is that shelters be provided at all stops instead of at limited stops. An average of four shelters per kilometre is anticipated, at a cost of \$8,000 per shelter. These costs are not significant enough to affect the delta % value. All calculations are in 2021 dollars.

Table 2: Comparison of Facility Costs by Design Standard

Design Standard	Guelph's Development Engineering Standards	2021 Approach to Design	TMP Recommendations ⁴
Pedestrian Facilities	1.5 m sidewalk	1.5 m sidewalk	1.8 m sidewalk
	\$280	\$280	\$335
Cycling Facilities ⁵	None	New 1.5 m on-road	New 2.0 m cycle track
	\$0	\$1,185	\$410
			New 2.8 m buffered lane
			\$1,489

³ Not including corridor retrofit solely to implement AAA cycling facilities.

⁴ Costs for TMP Recommendations include street trees but do not include potential need to relocate overhead utilities.

⁵ Presented costs represent retrofits to widen the roadway for cycle lanes or install cycle track in the boulevard. Note cost to relocate transit amenities or modify intersections are not included in these unit costs.

Design Standard	Guelph's Development Engineering Standards	2021 Approach to Design	TMP Recommendations⁴
Two Lane Arterial	4.1 m lanes, sidewalks	4.0 m lanes, cycle lane and sidewalk	4.0 m lanes, cycle track and sidewalk
	\$2,953	\$3,491	\$3,727
Three Lane Arterial	3.5 m lanes, TWLTL ^c , sidewalks	3.5 m lanes, sidewalks, cycle lanes, and TWLTL ⁶ or parking	3.5 m lanes, sidewalks, AAA cycling ⁷ , and TWLTL ^c or parking
	\$3,264	\$3,740	\$3,715
Four Lane Arterial	3.5 and 3.75 m lanes, sidewalks	3.3 and 3.5 m lanes, cycle lanes and sidewalk	3.3 and 3.5 m lanes, cycle track and sidewalk
	\$3,670	\$3,845	\$3,945
Five Lane Arterial	No standard	3.5 and 3.75 m lanes, TWLTL ^c cycle track, sidewalk	3.3 and 3.5 m lanes, TWLTL ^c cycle track, sidewalk
	n/a	\$4,395	\$4,450
Two Lane Collector	3.95 m lanes, sidewalks	3.3 – 3.5 m lanes, sidewalks and cycle lanes	3.3 – 3.5 m lanes, sidewalks and buffered cycle lanes
	\$3,100	\$3,350	\$3,565
Three Lane Collector	3.5 m lanes, TWLTL ^c , sidewalks	3.5 m lanes, TWLTL ^c , and multi-use pathways	3.5 m lanes, TWLTL ^c , and multi-use pathways
	\$3,265	\$3,465	\$3,465

⁶ Two way left turn lane, 4.0 m wide.

⁷ Either cycle track or buffered on-road cycle lanes.

Table 3: Comparison of Facility Costs by Design Standard

Facility Type	Estimated cost per km (000) and Delta		
	2021 Cost	TMP Cost	Delta (TMP-2021)
Two Lane Arterial	\$3,491	\$3,727	7%
Three Lane Arterial	\$3,740	\$3,715	0%
Four Lane Arterial	\$3,845	\$3,945	3%
Five Lane Arterial	\$4,395	\$4,450	3%
Two Lane Collector	\$3,350	\$3,565	6%
Three Lane Collector	\$3,465	\$3,465	n/a

Stepping Away from a Car-centric Approach

Guelph is growing to a population of 203,000 people and an employment base of 116,000 jobs by 2051; an increase of about 50% from today's levels. An equivalent increase in the demand for travel is expected, and Guelph faces a choice about how to meet the demand of the future. Guelph has not chosen to continue the current auto-centric approach to transportation, for several reasons.

Why not continue with the current auto-centered approach?

Guelph cannot continue to follow its current auto-centred approach to transportation service. Today's approach is:

- **Unaffordable**, for both the City and for travelers
- **Unsustainable**, with significant negative impacts on the climate and natural and human environments
- **Less equitable**, in that it fails to provide a variety of travel options and it does not meet the needs of all travelers
- **Less safe**, as more cars and wider streets leaves pedestrians and cyclists more vulnerable to serious injury

Unaffordable

The current auto-centred approach to transportation service (as represented by *Alternative Solution 4: Car Efficiency Focus*) would require almost 15km of road widening more than *Alternative Solution 2: Sustainability Focus*. At costs ranging from \$4.5M to \$7.0M per km for road widening, this translates to between \$65M and \$100M in additional capital costs. The larger network would also have higher asset management and operating/maintenance costs.

An auto-centred approach would also increase the average cost of travel for individuals. Consider the following data on traveler costs per mode:

- Annual cost of owning and operating a car are typically between \$8,000 and \$12,000 per year⁸
- Annual costs of a transit pass are currently \$960/year
- One-time costs for purchasing a bicycle range from \$200-\$500, depending on the bike
- Walking is free to the traveler

Note that an auto-centric solution forces these higher individual costs onto a greater portion of the traveling public, as the current auto mode share of 80% is maintained (instead of being reduced to 55% under the sustainable approach).

⁸ Average of the costs of owning a vehicle from the CAA Driving Cost Calculator

Unsustainable

Transportation is the largest single source of greenhouse gas (GHG) emissions in Guelph, a condition that Guelph has committed to changing through a number of strategic planning documents (such as the Official Plan, Strategic Plan, Climate Emergency, Community Energy Efficiency).

The Guelph Community Energy Initiative's Business-as-Usual Report provided a snapshot of current and projected 2050 emissions (tonnes of CO₂) from the transportation sector based on forecasted population and employment growth and assuming no additional policies, actions or strategies to address energy and emissions will be implemented between 2017-2050, other than those planned or currently underway.

Table 4: Community emissions tabulated results, 2016 & 2050 Business-as-Usual (BAU)

Emissions by sector (tCO₂e)	2016	Share 2016	2050 (BAU)	Share 2050	% +/- (2016-2050)
Commercial	275,300	23.8%	256,800	23.2%	-6.7%
Fugitive	69,500	6.0%	63,200	5.7%	-9.1%
Industrial	148,900	12.9%	150,700	13.6%	1.2%
Residential	208,400	18.0%	205,300	18.6%	-1.5%
Transportation	374,200	32.4%	336,900	30.5%	-10.0%
Waste	80,400	7.0%	92,100	8.3%	14.6%
Total	1,156,700		1,105,000		-4.5%

Source: City of Guelph Energy and Greenhouse Gas Emissions, 2018

As Error! Reference source not found. presents, transportation remains the largest contributor to atmospheric impacts under a Business-as-Usual (BAU) approach.

The Energy and Emissions Report (2012) provided some direction to reducing climate impacts from transportation, notably committing to more sustainable transportation modes, such as cycling and public transit.

Environmental impacts do not stop at climate impacts. A traditional auto-centric transportation solution would require street widenings through mature neighbourhoods such as Old City west of Downtown or the Ward east of Downtown, and significant natural areas such as the Natural heritage areas, river crossings, and Arboretum lands.

Less Equitable

The current auto-centred approach to transportation service prioritizes auto mobility, which puts those who cannot or do not wish to drive at a disadvantage. For instance, someone who owns a car can make a cross-town trip in 10 minutes, but this trip could take up to an hour on transit with current service

levels. Not only does this make transit inconvenient, but it makes key services, employment, and parts of the city or transportation system (such as frequent transit, safe cycling routes or continuous sidewalks) less accessible. This disproportionately affects communities of traditionally marginalized people and vulnerable residents who are more likely to depend on transit and other forms of mobility for their daily travel needs, and is a major barrier to self-efficiency.

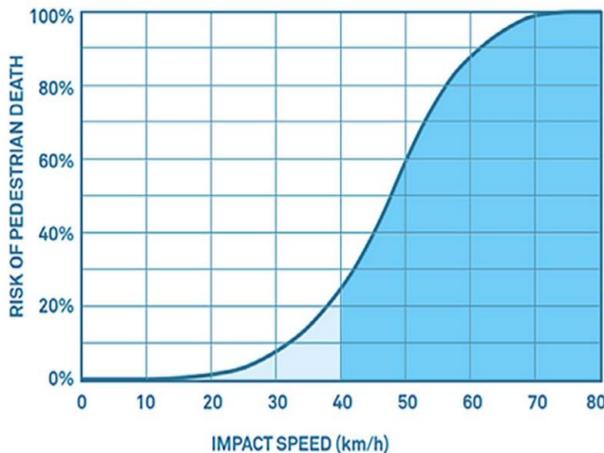
A traditional auto-centric transportation solution would only put these communities at more of a disadvantage, while undermining the goals of the City and other investments directed at transit. A sustainable approach prioritizes investments that help improve access to and increase the efficiency of sustainable travel options, like transit, which will help make these modes more attractive and convenient, and meet the transportation needs of more residents.

Less Safe

In most cities in Canada, active transportation road users (pedestrians, cyclists, etc.) are disproportionately injured or killed in road incidents. Although some improvements for vulnerable users have been made in Guelph, these have not always been significant or suitable for all users. For instance, paved shoulders or painted bike lanes are only comfortable for a small fraction of cyclists. The current auto-centred approach does not prioritize a significant amount of investments into making streets safe for all modes and users of all ages and abilities. This has a societal cost of about \$100 million annually in expenses related to collision-related injuries.

In Guelph:

- 1 person is injured in a collision every 9 hours
- 6 collisions occur every day
- 2 collisions with pedestrians or cyclists occur every 10 days
- 1 road fatality occurs every 4 months



Source: *Safe Streets Save Lives Global Designing Cities Initiative*

Figure 1: Relationship between impact speed and risk of pedestrian death

Traditionally, road safety was the responsibility of the driver to prevent collisions and focus was on what causes the collisions instead of how to prevent them and proactively take actions to increase safety for all road users.

An auto-centric approach may not consider facilities that make other modes of transport safer, like intersection crossings, sidewalks, and bike lanes, forcing these users onto the road. Depending on the operating speeds on the road, the severity of injuries and risk of death for pedestrians and cyclists increases drastically. **Figure 1** illustrates this relationship.

Moving on from traditional transportation approaches to a sustainable approach will enable the City to achieve their TMP and strategic goals of City's goals of shifting mode share, improving road safety, reducing Guelph's carbon footprint, and designing an increasingly sustainable city as Guelph grows.

Potential Development Charges Recovery (Watson)

As per the request of the City, we have examined each of the capital projects identified within the Transportation Master Plan (TMP) and evaluated their potential Development Charges (DC) allocations. To assess the potential DC eligible component of the capital projects, we have utilized the assumptions from the 2018 Development Charges Background Study as a basis for the analysis undertaken herein. As noted above, there are different types of projects included within the listing which may require the attributions to be further refined as part of the City's next formal DC study process.

Through the 2018 DC study process, Watson worked with City staff to develop growth percentage allocations for transportation-related projects based on the scope of the capital works. For example, road projects that were expansionary and provided additional lanes were deemed to be 70% growth-related, while projects with a focus on active transportation additions were considered 50% growth-related. **Figure 2** provides the growth percentage criteria on which all of the TMP projects were evaluated.

Criteria	Growth %
Downtown Projects	25%
Upgrade Existing Rural to Urban	50%
Active Transportation - Biking	50%
Expand Road with Additional Lanes	70%
Basic Urban Road to Enhanced Arterial*	70%
Intersection Improvement - New Signalization	90%
New Road	100%
Road Upgrade resulting from direct adjacent development	100%
Additional Lanes Only (No reconstruction)	100%

*New Category in the T.M.P.

Figure 2: Criteria for Growth Percentages

In addition to the 2018 DC growth percentages, we have added a new category for urban roads being upgraded to enhanced arterial roads. These types of projects have been assumed to be 70% growth-related as they provide an expansionary aspect to the existing road and adds boulevards/bus pads throughout the road segments.

Using this framework, we have applied the appropriate criteria noted in Figure 2 to the TMP capital projects. Through City staff's review of the proposed projects, a list was provided to identify 54 projects that could occur by 2031. Of these projects, 37 are considered most likely to occur and already in the 2031 capital budget forecast. The other 17 are considered as potential projects that could be recommended to advance if the pace of implementing the TMP needs to be increased. As it is unknown at this time if all the projects from the additional 17 projects would need to be considered within the

2021 to 2031 timeframe, a sensitivity analysis has been undertaken to assess the potential DCs from projects of capital budget-only, and capital budget-plus projects.

Figures 3 and 4 summarize the total costs and potential DC recovery for 2021 to 2031 forecast period for capital budget-only projects and “capital budget-plus” projects, respectively.

Project Criteria	2021-2031	
	Gross Project Costs	Potential D.C. Recovery
Downtown Projects	\$ 15,133,277	\$ 3,783,319
Upgrade Existing Rural to Urban	\$ 28,693,797	\$ 14,346,899
Active Transportation - Biking	\$ 77,915,070	\$ 38,957,535
Expand Road with Additional Lanes	\$ 41,966,101	\$ 29,376,270
Basic Urban Road to Enhanced Arterial*	\$ 12,957,842	\$ 9,070,489
Intersection Improvement - New Signalization	\$ -	\$ -
New Road	\$ 9,319,049	\$ 9,319,049
Road Upgrade resulting from direct adjacent development	\$ -	\$ -
Additional Lanes Only (No reconstruction)	\$ -	\$ -
Total	\$ 185,985,136	\$ 104,853,562

Figure 3: Summary of Potential DC Recovery (2031 capital budget only)

Project Criteria	2021-2031	
	Gross Project Costs	Potential D.C. Recovery
Downtown Projects	\$ 15,133,277	\$ 3,783,319
Upgrade Existing Rural to Urban	\$ 66,909,573	\$ 33,454,787
Active Transportation - Biking	\$ 136,271,580	\$ 68,135,790
Expand Road with Additional Lanes	\$ 41,966,101	\$ 29,376,270
Basic Urban Road to Enhanced Arterial*	\$ 29,265,573	\$ 20,485,901
Intersection Improvement - New Signalization	\$ -	\$ -
New Road	\$ 9,319,049	\$ 9,319,049
Road Upgrade resulting from direct adjacent development	\$ -	\$ -
Additional Lanes Only (No reconstruction)	\$ -	\$ -
Total	\$ 298,865,154	\$ 164,555,117

Figure 4: Summary of Potential DC Recovery (2031 capital budget plus 17 additional projects)

Funding Sources

This memo identifies existing funding options and possible non-property tax revenue tools, which informs an evaluation of preferred revenue tools the City of Guelph may use to generate the funding for the infrastructure projects recommended as part of the Transportation Master Plan.

The City of Guelph is exploring new transportation funding options to support the TMP capital plan.

Potential sources that are being considered include:

- New Mobility Charge (particularly on ridesharing)
- Sponsorship of the Built Environment
- Tax-Increment Financing
- Curbside User Fees

There are also potential sources that should be considered as future possibilities. These are all used in other jurisdictions in Canada and the United States but require provincial approval in Ontario:

- Municipal Sales Tax
- Municipal Excise Taxes (particularly on fuel)
- Employer Payroll Tax

The full version of this memo with supporting documentation and evaluation will be provided to the City for internal purposes.