



Appendix D

Hurontario Street Parking Study

Town of Collingwood

Type of Document:

Technical Report

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Draft Memorandum

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Project Name:	Collingwood Master Mobility & Transportation Plan	Project No.:	BRM-23015411-A0
To:	Ed Dujlovic, P.Eng., Project Manager, Town of Collingwood	From:	Rick Zarzosa, P.Eng., Project Manager, EXP Services Inc.
Written By:	The EXP Transportation Team	Draft Memorandum	

Subject: Hurontario Street Study and Active Transportation Opportunities

1. Introduction

The Town of Collingwood (the “Town”) has retained EXP to prepare a Master Mobility and Transportation Plan (MMTP) document to provide the Town with a comprehensive strategy to deal with current and future transportation issues. As part of the MMTP, EXP will conduct a study of Hurontario Street between First Street and Hume Street. Hurontario Street is an important link in the Town’s existing transportation network, serving as a major north-south arterial road as well as the focus of the Downtown core. The primary objectives of this study are to:

- Conduct an operational and safety review of Hurontario Street from First Street to Hume Street to identify any existing deficiencies or issues,
- Identify opportunities to introduce additional active transportation facilities along the corridor to make the street more pedestrian and cyclist friendly.

This Hurontario Street Study memorandum will include the following components:

- An operational and safety review of Hurontario Street from First Street/Huron to Hume Street including the assessment of:
 - Existing roadway geometry,
 - Pedestrian and cyclist facilities,
 - Collision history,
 - Existing parking supply,
 - Summary of field visit observations.

- Investigation and proposed alternative to implement additional active transportation facilities along the corridor without requiring modifications to the existing curbs or sidewalks.
- Provide a typical cross section of the active transportation/cycling facility option.
- Evaluation of the impact to on-street parking if active transportation facilities are implemented.
- Determination of the ability to incorporate additional restaurant patio spaces within the proposed roadway cross-sections.

2. Review of Existing Conditions

2.1. Study Area

The study area, presented in **Figure 1**, comprises Hurontario Street from First Street/Huron Street to Hume Street. The road segment is approximately 850 m long. No known future development will be accounted for in the immediate area.

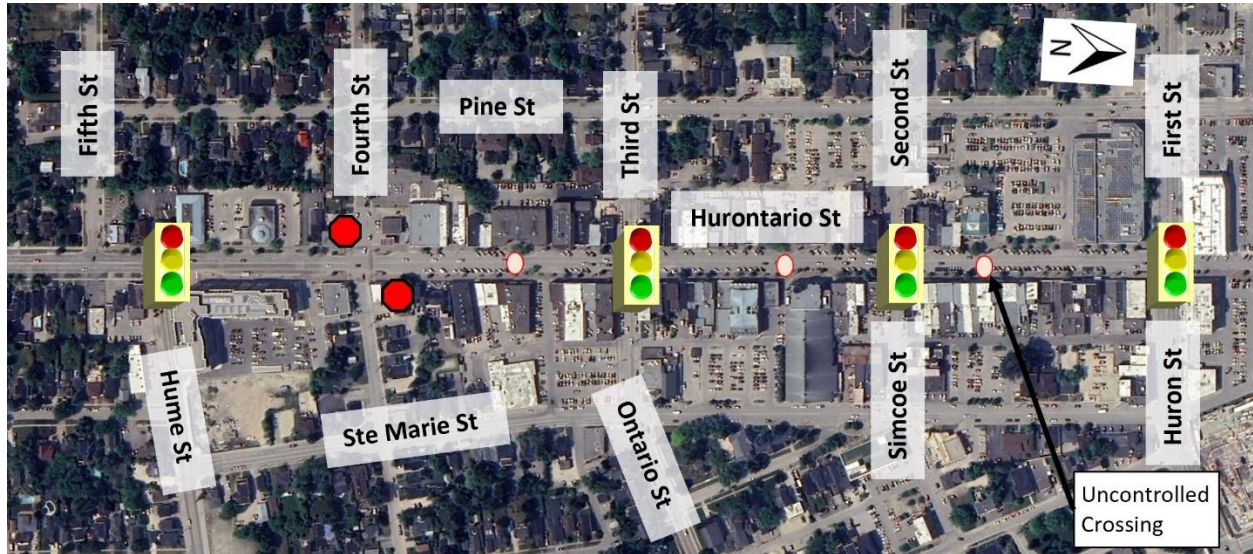


Figure 1 - Study Area

2.2. Existing Road Network

Hurontario Street is a north-south, arterial road under the jurisdiction of the Town. Through the 850 m segment, it is an undivided roadway with a two-lane urban cross section and a speed limit of 30 km/h. The assumed design speed will be 40 km/h, 10 km/h greater than the posted speed. The existing through lanes are approximately 4.25m wide. Along the corridor, there are signalized intersections at First Street/Huron Street, Second Street/Simcoe Street, Third Street/Ontario Street, and Hume Street.

The land use on Hurontario Street is a mix of commercial and institutional with a small amount of residential. Pedestrian facilities are provided on both sides of the road and three uncontrolled pedestrian crossings are provided at midblock locations along the corridor. There are currently no cycling facilities on this segment of Hurontario Street. The boulevard is primarily paving stones (the same material as the sidewalks), containing streetscaping features such as trees, streetlight poles, gardens, and road signs. Paid pull-in angled on-street parking is provided from First Street to Hume Street.

Transit routes can be accessed along Hurontario Street or on Pine Street (which runs parallel to Hurontario Street 120 m to the west). These are the Blue Mountain Transit Link (BLINK), the Collingwood Crosstown Route, the Collingwood East Route, the Collingwood West Route, and Collingwood Wasaga Beach Link. All routes stop at the Collingwood Bus Terminal located at Second Street and Pine Street, except for the Collingwood Wasaga Beach Link, which is operated by Simcoe County LINX transit service.

Driveways and Intersections

The Hurontario Street corridor between First Street/Huron Street and Hume Street includes five (5) intersections and approximately eleven (11) driveways.

First Street/Huron Street is an east-west arterial road under the jurisdiction of the Town. It has a five-lane urban cross-section and a posted speed limit of 50 km/h. At the signalized intersection with Hurontario Street, there are designated eastbound and westbound left turn lanes.

Second Street/Simcoe Street is an east-west local road under the jurisdiction of the Town with an assumed speed limit of 50km/h. Within the study area, it has a two-lane urban cross-section with on-street parallel parking and sidewalks provided on both sides of the road. At the signalized intersection with Hurontario Street, there is one lane in all four directions with no designated turning lanes.

Third Street/Ontario Street is an east-west collector road under the jurisdiction of the Town with an assumed speed limit of 50km/h. Within the study area, it has a two-lane urban cross-section with on-street parallel parking and sidewalks provided on both sides of the road. At the signalized intersection with Hurontario Street, there is one lane in all four directions with no designated turning lanes.

Fourth Street is an east-west collector road under the jurisdiction of the Town with an assumed speed limit of 50km/h. Within the study area, it has a two-lane urban cross-section with on-street parallel parking on the north side and sidewalks provided on both sides of the road. At the unsignalized intersection with Hurontario Street, there is one lane in all four directions and traffic on Fourth Street is stop controlled.

Hume Street is an east-west arterial road under the jurisdiction of the Town with a posted speed limit of 50 km/h. Within the study area, it has a three-lane urban cross-section with sidewalks and unprotected bike lanes provided on both sides of the road. At the signalized “T” intersection with Hurontario Street, there is a designated westbound left turn lane.

There are driveways, primarily commercial and parking lot accesses, on the east and west sides of Hurontario Street. Approximate locations of notable driveways are as follows:

- A driveway to the Loblaws supermarket on the west side of Hurontario Street, approximately 65m south of First Street.
- A driveway to a parking lot on the west side of Hurontario Street, approximately 50m south of Third Street.
- A driveway to a commercial parking lot on the east side of Hurontario Street, approximately 55m south of Third Street.
- A driveway on the west side of Hurontario Street, approximately 80m north of Fourth Street.
- A driveway on the west side of Hurontario Street, approximately 65m north of Fourth Street.
- A driveway to an Esso gas station on the west side of Hurontario Street, on the northwest corner of the intersection with Fourth Street.
- A commercial driveway (Scotiabank) on the east side of Hurontario Street, approximately 30m south of Fourth Street.
- A commercial driveway (Chiropodist) on the west side of Hurontario Street, approximately 40m south of Fourth Street.
- A commercial driveway (Royal Bank) on the west side of Hurontario Street, approximately 55m south of Fourth Street.
- An exit only commercial driveway (Royal Bank drive-thru) on the west side of Hurontario Street, approximately 60m north of Hume Street.
- A commercial driveway (commercial plaza) on the west side of Hurontario Street, approximately 35m north of Hume Street.

2.3. Collision Review

A collision review along the corridor was conducted for the approximately six-and-a-half-year period from January 2017 to early August 2023 to identify any collision patterns or trends that can be observed. Collision data was provided by the Town in XML file format, containing data from individual Motor Vehicle Collision Reports (MVCR). Only collisions that occurred on road network were considered for the analysis. Collisions classified as occurring in a parking lot, off-highway, and on a frozen lake or river were not included.

A total of 109 collisions were reported along the Hurontario Street corridor between First Street and Hume Street (inclusive of bounding intersections) during the analysis period. This amounts to a frequency of approximately 16.5 collisions per year. Of the 109 collisions, 23 (21%) resulted in a non-fatal injury. **Table 1** breaks down the total collisions at locations along the corridor by collision type. The most common type of collisions were rear ends with 34 (31%), followed by turning movement with 24 (22%). From the table, collisions are most prevalent along the northern portion of the corridor, from First Street to the midblock between Third Street and Fourth Street. There may be a pattern in the occurrence of rear end collisions the First Street and Third Street intersections. Rear end collisions account for 48% and 53% of the total collisions at those locations respectively.

Table 1 - Summary of Total Collisions by Location and Collision Type (Hurontario St Corridor)

Location	App. / Head On ¹	Angle	Rear End	Sideswipe	Turning Mvmt ²	SMV Unatt. Veh. ³	SMV Other	Other	Grand Total
At First St	0	1	10	1	4	0	3	2	21
Btwn First St & Second St	0	0	4	0	3	2	0	4	13
At Second St	0	3	3	0	2	0	1	2	11
Btwn Second St & Third St	0	0	3	1	1	2	0	8	15
At Third St	0	2	8	0	2	1	1	1	15
Btwn Third St & Fourth St	0	2	2	0	2	2	2	2	12
At Fourth St	0	2	1	1	2	0	0	0	6
Btwn Fourth St & Hume St	0	0	1	1	3	0	0	0	5
At Hume St	2	1	2	0	5	0	1	0	11
Grand Total	2	11	34	4	24	7	8	19	109
Collision Freq.	2%	10%	31%	4%	22%	6%	7%	17%	2%
Non-Fatal Inj.	0	4	6	1	6	0	6	0	23

Vulnerable Road Users

Within the study area, there were five collisions that involved a pedestrian and five that involved a cyclist. Of these, three pedestrian collisions and three cyclist collisions resulted in a non-fatal injury. Based on the collision statements, four of the five pedestrian collisions involved vehicle turning at a signalized intersection. The locations of these collisions are provided in **Table 2**. Locations with no collisions involving vulnerable road users are not shown.

¹ Approaching / Head On

² Turning Movement

³ Single Motor Vehicle Unattended Vehicle

Table 2 - Collisions involving Vulnerable Road Users by Location

Location	Pedestrian Collisions	Cyclist Collisions
Hurontario St & First St	2	0
Hurontario St & Second St	1	0
Between Second St & Third St	0	1
Between Third St & Fourth St	1	1
Hurontario St & Fourth St	0	1
Hurontario St & Hume St	1	2
Total	5	5
Non-Fatal Injury	3	3

Severity of Collisions

Figure 2 breaks down the collisions within the study area based on collision type and severity. Of the 109 recorded collisions, 23 (21%) resulted in an injury. The figure shows that four angle, six rear end, one sideswipe, six turning movement, and six single motor vehicle collisions resulted in an injury. It should be noted that the pedestrian collisions fall under SMV collisions.

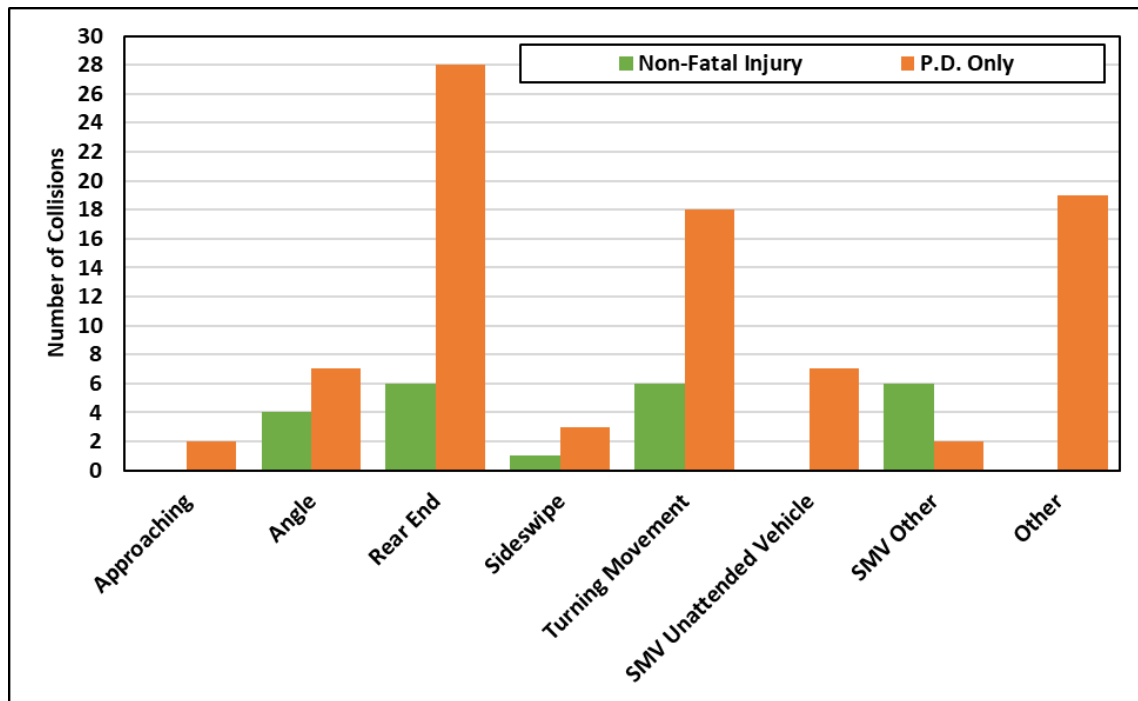


Figure 2 - Collision Severity by Collision Type

Lighting Conditions

Figure 3 illustrates the lighting by collision type at the time of the accident. In total, 18 collisions (17%) occurred during darkness, at dawn, or at dusk. In total, one angle, five rear end, nine turning movement, two SMV unattended vehicle, and one SMV collisions occurred during non-daylight conditions. This may show an overrepresentation of turning movement collisions during darkness as 38% of turning movement collisions occur under those conditions. By looking at each location individually in Table 3, we can note that collisions occurring in darkness are spread throughout the corridor and do not show a pattern.

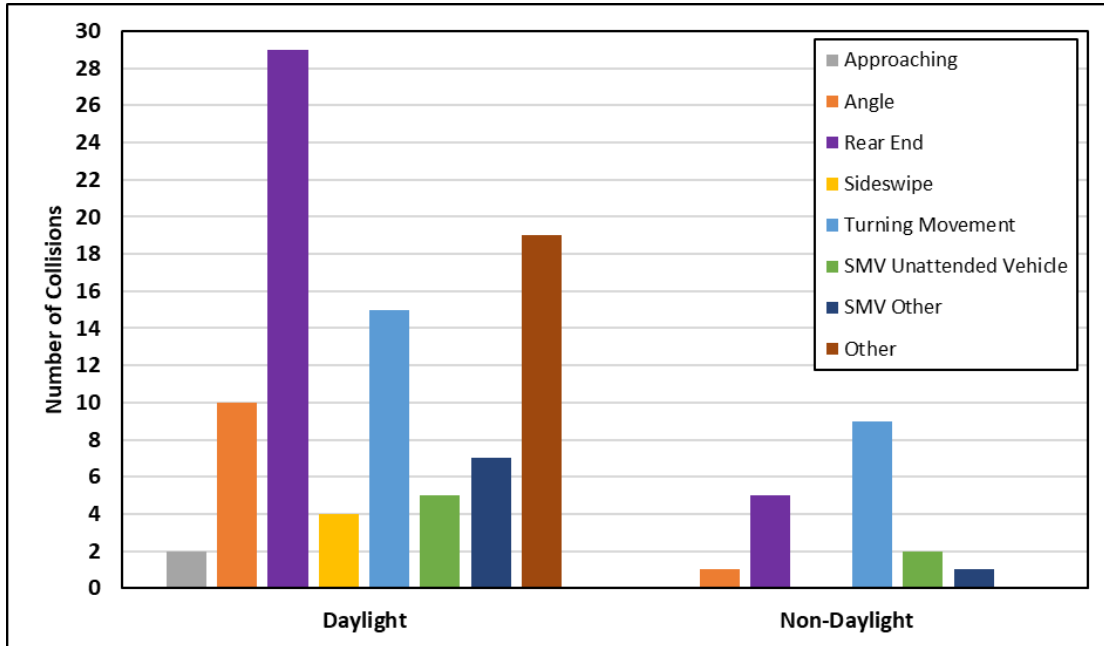


Figure 3 - Lighting Condition by Collision Type

Table 3 - Collision Location by Light Condition & Environmental Condition

Location	Light		Environment		Total Collisions
	Daylight	Non-Daylight	Clear	Non-Clear	
Hurontario St & First St	15	6	16	5	21
Between First St & Second St	11	2	13	0	13
Hurontario St & Second St	10	1	8	3	11
Between Second St & Third St	13	2	10	5	15
Hurontario St & Third St	15	0	10	5	15
Between Third St & Fourth St	11	1	10	2	12
Hurontario St & Fourth St	5	1	5	1	6
Between Fourth St & Hume St	3	2	3	2	5
Hurontario St & Hume St	8	3	8	3	11
Grand Total	91	18	83	26	

Environmental Conditions

Figure 4 illustrates collisions by the environmental condition at the time of the accident. In total, 83 collisions (76%) occurred when it was clear and the remaining 26 occurred during rain, snow, or freezing rain. By looking at each location individually in Table 3, it can be noted that collisions occurring during adverse weather conditions are spread throughout the corridor and do not show a pattern (although none occurred between First Street and Second Street).

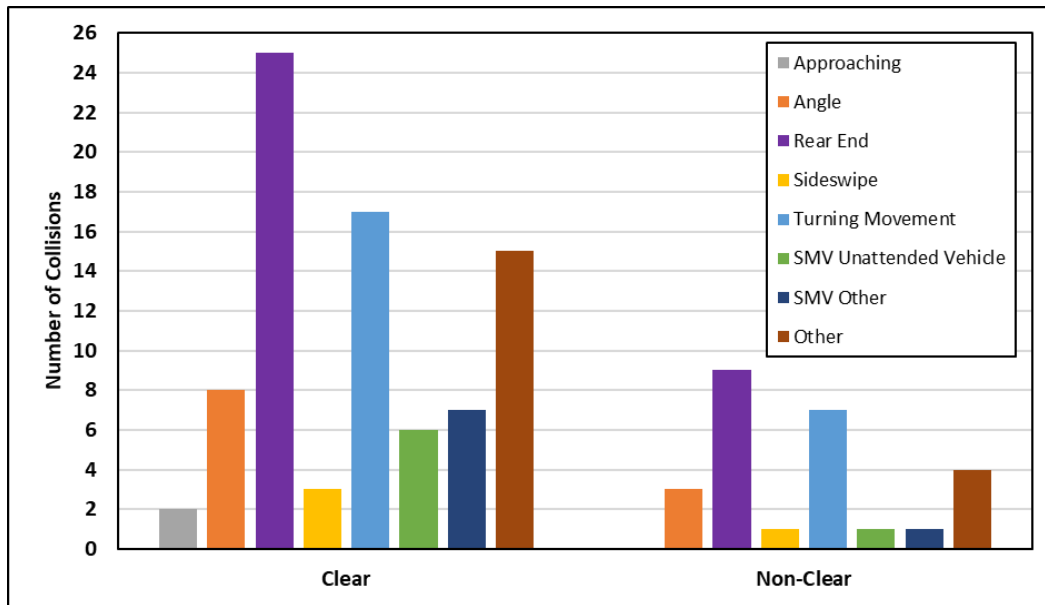


Figure 4 - Environmental Conditions by Collision Type

Angled Parking

The angled parking along Hurontario Street between First Street and Hume Street was examined to determine if vehicles entering and exiting parking spaces was a contributing factor to collisions occurring along the corridor. In total, 20 collisions (18%) occurred that were related to the existing parking on Hurontario Street. The majority (16 out of 20) are classified under “Other” collisions. This was determined by reviewing the collision statements for references to angled parking or a vehicle reversing from a parking spot.

The 20 recorded collisions may represent a pattern of collisions occurring due to vehicles reversing out of the angled parking spaces onto Hurontario Street. This could be the result of it being difficult for drivers to see approaching traffic when they are backing out of a parking space, especially if there are vehicles parked beside them. By looking at locations along the corridor individually in **Table 4**, we can observe that 17 of 20 collisions (85%) occurred between First Street and Third Street/Ontario Street. It should be noted that pull-in angled parking was not present between Fourth Street and Hume Street during the analysis period⁴.

Table 4 - Angled Parking Related Collisions by Location

Location	Angled Parking Related Collisions	Total Collisions
Hurontario St & First St	1	21
Between First St & Second St	5	13
Hurontario St & Second St	2	11
Between Second St & Third St	9	15
Hurontario St & Third St	0	15
Between Third St & Fourth St	3	12
Hurontario St & Fourth St	0	6
Between Fourth St & Hume St	0	5
Hurontario St & Hume St	0	11
Grand Total	20	109

⁴ It was implemented after July 2023.

2.3.1. Collision Review Summary

The results of collision review can be summarized as follows:

- An average of 16.5 collisions per year occurred within the study area.
- The most prominent collision types over the analysis period were rear end with 34 (31%) and turning movement with 24 (22%). Generally, rear end collisions may be caused by congestion, high travel speeds, inadequate clearance time, high number of access points, and driver distraction. Rear end collisions may also involve motorists following the vehicle ahead too closely. Turning collisions may be caused by congestion, high number of access points (as motorists try to turn into a driveway), and driver distraction.
- Of the 109 collisions, 23 resulted in a non-fatal injury. There were five collisions involving cyclists and five collisions involving pedestrians over the analysis period.
- The nine turning movement collisions that occurred in darkness may represent an overrepresentation of this type of collision as they consisted of 38% of the total turning movement collisions that occurred over the study period. However, there was no overrepresentation of turning movement collisions at a specific location along the corridor.
- The collision analysis indicated that 83% of collisions occurred during daylight and 76% occurred during clear conditions. These values are consistent with those observed for the entire Town (82% and 77% respectively). Additionally, when looking at locations individually, it was noted that collisions occurring during adverse weather conditions and during non-daylight conditions are spread throughout the corridor and do not show a pattern.
- The 20 collisions (18% of total collisions) related to pull-in angled parking on Hurontario Street may represent a pattern of collisions occurring due to vehicles reversing out of the angled parking spaces onto Hurontario Street and that there may be a safety improvement opportunity related to this.

2.4. Existing Parking Supply

Within the study area, there is pull-in angled parking provided on Hurontario Street between First Street and Hume Street. This is paid parking for \$1.00 per hour for up to three hours. Additionally, on-street parallel parking is provided on the east side of Hurontario Street between Fourth Street & Hume Street. The existing on-street parking supply on Hurontario Street is illustrated in **Figure 5**. It is approximately 169 parking spaces along the corridor. Of these, seven are accessible parking spaces.

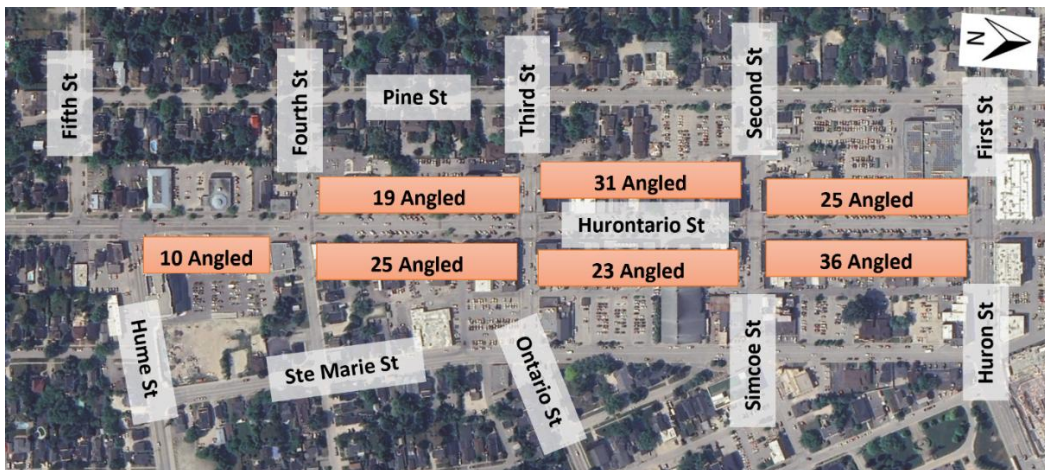


Figure 5 - Existing Parking Supply on Hurontario St

On-street parking is also available on the streets intersecting and adjacent to Hurontario Street, consisting of approximately 207 parking spaces. In addition, there are four municipal parking lots within the downtown area that account for an additional 271 off-street paid parking spaces within 250 metres of Hurontario Street⁵:

- Lot on Ste. Marie Street (between Simcoe Street and Ontario Street) – 80 parking spaces
- Lot on Ste. Marie Street (between Huron Street and Simcoe Street) – 73 parking spaces
- Lot at corner of Pine Street and Second Street – 94 parking spaces
- Lot on St. Paul Street (between Simcoe Street and Ontario Street) – 24 parking spaces

Along the corridor, adjacent to Hurontario Street and in municipal lots, there are approximately 647 parking spaces.

2.5. Field Observations

EXP conducted a site visit on May 7, 2024 between 2:45pm-4:45pm to observe traffic operations and confirm the roadway characteristics for the Hurontario Street corridor. Select photos from the site visit are provided in **Appendix A** and rough field visit notes are provided in **Appendix B**. In general, there were no traffic operations issues observed at signalized intersections. Vehicles were typically able to clear queues during the allotted green time for all approaches. There are existing streetlights along both sides of Hurontario Street from First Street/Huron Street to Hume Street. During the site visit, the following was observed within the study area related to driver behaviour and traffic operations:

- Vehicles were observed improperly passing a stopped vehicle waiting to turn left or right at the intersection, even though only one lane is marked in each direction. There is sufficient space to do this given current lane widths on Hurontario Street and it was observed several times at the Second Street/Simcoe Street and Ontario Street/Third Street intersections.
- Vehicles approaching from side roads and driveway accesses looking to turn onto Hurontario Street must creep up past the sidewalk to be able to see oncoming traffic before turning onto the roadway due to on-street parking and intersection design. Since the sidewalk has a significant offset from the travel lanes, this creates a two-step turning process where vehicles must look for pedestrians, creep forward to cross the sidewalk and then look for vehicles to find a gap in traffic to turn onto Hurontario Street (see **Figure A-12** in **Appendix A**).
- The existing pavement markings are in poor condition along much of the corridor (see **Figure A-4** in **Appendix A**).
- The eastbound traffic signal lenses at the Hurontario Street and First Street/Huron Street intersection are difficult to see.
- Hurontario Street is relatively straight with no vertical or horizontal curves that impact sight distance. However, there are streetscaping features and on-street parking that may impact intersection sight distance for vehicles turning onto the road at certain locations.
- For the stretch of road from south of Third Street/Ontario Street to First Street vehicles were predominately travelling at low speeds due to the 30 km/h speed limit and the amount of traffic during the PM peak. This allows turning vehicles to find gaps in traffic more easily.
- The on-street angled parking was well used but not at capacity during the time of the site visit.

⁵ Parking space data retrieved from Collingwood ArcGIS website:
<https://cwood.maps.arcgis.com/apps/instant/minimalist/index.html?appid=0bb6a1c7194b4f399b3a946667cf23cd>

- In general, slow moving vehicles and gaps in traffic caused by the traffic signals allow vehicles exiting angled parking spaces to find a gap in traffic. It was observed that drivers travelling on Hurontario Street were generally patient with vehicles reversing from angled parking. However, they sometimes needed to break several times while in the process of backing out to allow oncoming traffic to pass. Additionally, vehicles waiting for a vehicle to exit a space sometimes caused a delay in traffic flow.
- A cyclist travelling northbound on Hurontario Street was observed honking at a vehicle reversing from a parking space (to let the driver know they were there).
- A vehicle exiting an angled parking space was observed doing a short reverse then pulling forwards to turn onto roadway, crossing into unoccupied parking spaces to do so. This was observed more than once during the site visit.
- Vehicles travelling northbound on Hurontario Street were observed cutting through empty on-street parking spaces near First Street/Huron Street to enter the northbound right turn/through lane (see **Figure A-11** in **Appendix A**).
- Hurontario Street was busier from First Street/Huron Street to Third Street/Ontario Street where there is a higher concentration of businesses. It also appeared that vehicles travelled slower along this stretch compared to the segment between Hume Street and Third Street.
- Some restaurants had patios on the sidewalk. At the time of the site visit, none were placed within the angled parking spaces on Hurontario Street. However, there was a patio in the on-street parallel parking spaces on one of the sideroads.

2.5.1. Pedestrian and Cyclist Facilities

The existing active transportation facilities within the study area were reviewed to assess the safety for pedestrians and cyclists. There are no cycling facilities on Hurontario Street and there is signage indicating that cycling is prohibited on the sidewalks. There are unprotected bike lanes on Hume Street at Hurontario Street. The lack of dedicated cycling facilities on Hurontario Street presents a safety concern for cyclists travelling along the corridor.

During the site visit, it was observed that pedestrians often cross at unmarked locations. They were generally able to find gaps to cross due to upstream or downstream traffic signals and slow-moving traffic. However, pedestrians crossing at unmarked locations on a busy road presents a potential safety concern.

Sidewalks are provided on both sides of the road and there are three uncontrolled pedestrian crossings with curb extensions at midblock locations along the corridor (see **Figure 1** for locations). Uncontrolled crossings do not have traffic control measures and drivers are not required to yield to pedestrians. Instead, pedestrians must use their judgement to wait for a safe gap in traffic to cross. There are also uncontrolled crossings for pedestrians to cross Hurontario Street at Fourth Street (there is no traffic control for vehicles on Hurontario Street and Fourth Street is stop controlled). These uncontrolled crossings are marked with near side and far side non-standards signs that read “CAUTION PEDESTRIANS YIELD TO TRAFFIC” as shown in **Figure 6**. As a guideline, *OTM Book 15 – Pedestrian Crossing Treatments* states that uncontrolled crossings must not be considered if the road classification is higher than a collector road. Additionally, the uncontrolled crossings lack AODA (The Accessibility for Ontarians with Disabilities Act) features such as tactile plates at the bottom of the ramps. Given Hurontario Street is considered an arterial road with high traffic volumes, a controlled crossing may be appropriate at some or all the uncontrolled crossing locations along the corridor. This would improve pedestrian safety, accessibility, and connectivity. It is noted that the requirement of having a minimum 200 m between a pedestrian crossover (PXO) and other signal-protected pedestrian crossings, specified in *OTM Book 15* and the Town’s *Crosswalk Policy*, may preclude them from being implemented.

At intersections, the crosswalks are the same design as the uncontrolled pedestrian crossings. They are constructed with interlock brick in the roadway with curb extensions. The curb extensions at crosswalks and uncontrolled crossings serve the purpose of making pedestrians more visible to motorists at crossing locations. They also do not meet current AODA accessibility standards since they lack tactile plates (except at the northeast corner at Hume Street) and many of the pushbuttons are too far back from the curb. Additionally, many pushbuttons are installed too high off the ground due to the pole design (1.1m above the ground should be the maximum height).

During the site visit, it was observed that leading pedestrian intervals (LPI) have been implemented at the signalized intersections of First Street/Huron Street and Hume Street. LPI is used to improve motorist yielding towards pedestrians in the crosswalk. It provides an advance walk signal for pedestrians a few seconds before the green signal for vehicles. This allows pedestrians to begin to cross before the vehicle signal turns green, increasing their visibility in the intersection.



Figure 6 - Uncontrolled Crossing on Hurontario Street between First Street & Second Street

2.6. Review Summary

Based on the review of existing conditions through an office review and field investigation, notable findings can be summarized as follows:

- The existing supply of pull-in angled parking spaces on Hurontario Street is 169. Additionally, there is a significant parking supply nearby (approximately 478 parking spaces within 250m of Hurontario Street) due to paid public on-street and off-street parking.
- The results of the collision analysis within the study area recorded 109 recorded collisions within the study area over the approximately six-and-a-half-year analysis period. The most prominent collision types were rear end and turning movement. Book 12 of the Ontario Traffic Manual recommends a minimum signal spacing at 215 meters on roadways where the posted speed limit is 60 km/h or less. In the built-up, urbanised environment where traffic speeds operate at less than 50 km/h, a further reduction in the minimum signal spacing is often observed should signals be found to be warranted for right-of-way control. The proliferation of unwarranted traffic control signals can lead to an increased collision experience, however where traffic speeds are low, the minimum signal spacing is

less of a concern. Collision experience along the Hurontario corridor is not attributed to the overuse of traffic control signals.

- There were 10 collisions that involved vulnerable road users, five involving a pedestrian and five involving a cyclist.
- The 20 collisions (18% of the total) related to pull-in angled parking on Hurontario Street may represent a pattern of collisions occurring due to vehicles reversing out of the angled parking spaces onto Hurontario Street. This may be indicative of a potential safety improvement opportunity.
- The field investigation revealed that, in general, traffic within the study area operates as expected.
- Due to the lane width at intersections, vehicles can improperly pass turning vehicles at the signalized intersections at Second Street/Simcoe Street and Ontario Street/Third Street, even though only one lane is provided in each direction.
- Vehicles looking to turn onto Hurontario Street from side roads and driveway accesses must creep up towards the travel lanes to have sufficient sightlines and find a gap in traffic.
- There are no existing cycling facilities on Hurontario Street. This presents a safety concern for cyclists travelling along the corridor.
- Uncontrolled pedestrian crossings along the corridor may not be appropriate considering the guidance of *OTM Book 15* since Hurontario Street is an arterial road with high traffic volumes.
- The uncontrolled pedestrian crossings and crosswalks within the study area do not meet current accessibility standards.

3. Active Transportation Opportunities

The study area currently lacks any cycling facilities along Hurontario Street. Therefore, the opportunity to implement a cycling facility along the corridor was investigated. The recommended cycling facility type for the corridor was developed in accordance with the facility selection process outlined in Section 5 of the *Ontario Traffic Manual Book 18 – Cycling Facilities (OTM Book 18)*, the latest version of which was released in 2021. The guidance for the facility selection includes content from the *2017 TAC Geometric Design Guide*, the 2017 National Association of City Transportation Officials' (NACTO) *Designing for All Ages & Abilities* guidelines, and the 2019 Federal Highway Administration (FHWA) *Bikeway Selection Guide*. It is noteworthy that the latest version of *OTM Book 18* has put more emphasis on the Vision Zero approach; the speed and volume thresholds to trigger a protected or separated bikeway are generally lower than the prior guidance.

In identifying cycling facility opportunities along the Hurontario Street corridor, the feasibility constraint of maintaining the current sidewalks and curbs in place was considered throughout the selection process.

3.1. High-Level Cycling Facility Selection

This section outlines the high-level process for defining the appropriate cycling facility. The cycling facility selection process outlined in *OTM Book 18* consists of three steps.

1. **Step One:** Pre-select the desirable facility type based on the motor vehicle speed and the average daily traffic volume using the appropriate nomograph based on the adjacent land use.
2. **Step Two:** Undertake a detailed and contextual evaluation of the cycling route.
3. **Step Three:** Document the rationale for the final decision and associated design treatments.

Step One

As this section of Hurontario Street comprises the “downtown” area of the Town and the land use along the corridor is primarily a mix of commercial and institutional, the level of separation required for the cycling facility is reviewed based on the criteria for the urban / suburban environments (as opposed to a rural context). For urban and suburban environments, the cycling facility options are categorized into three groups: shared operating space, designated operating space, and physically separated bikeways.

The first step is to pre-select the facility type options using the nomograph provided in *OTM Book 18* for the urban / suburban context. The nomograph uses average daily traffic volume and posted speed limit as the input parameters. For Hurontario Street, the average daily traffic volume is 15,000 vehicles per day⁶ and the posted speed limit is 30 km/h. The inputs plotted on the nomograph, as displayed in **Figure 7**, show that a physically separated bikeway (separated bicycle lane, cycle track, or multi-use path) is most desirable for the cycling facility along the corridor.

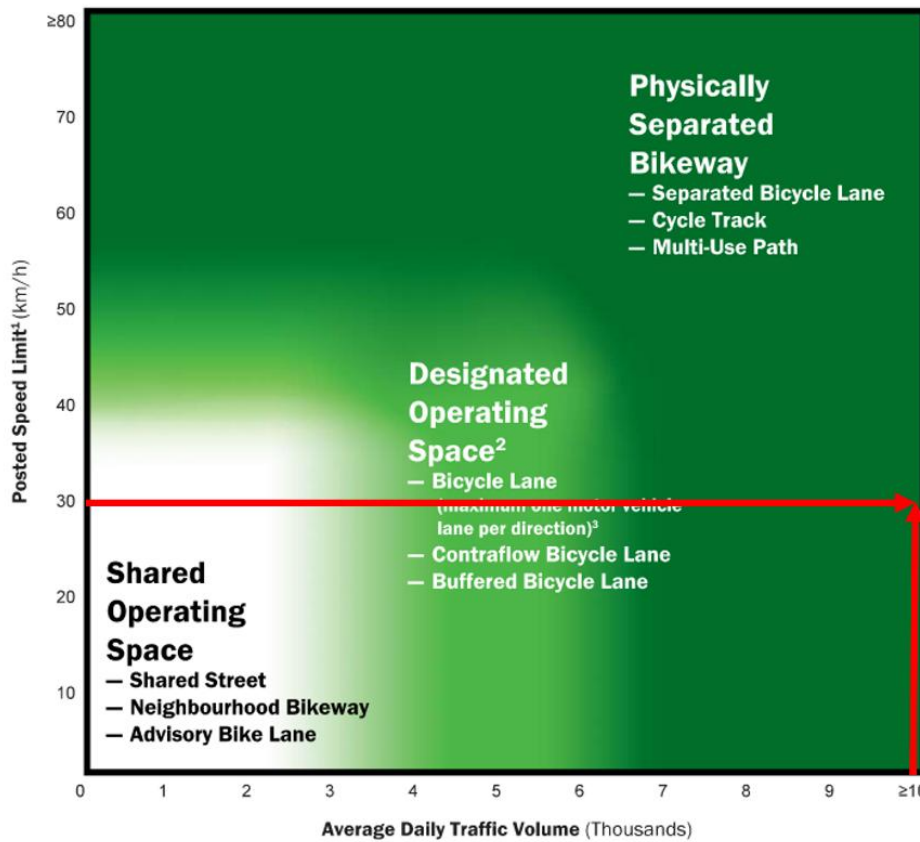


Figure 7 - Desirable Cycling Facility Pre-Selection Nomograph (Urban / Suburban Context)⁷

Step Two

The next step of the selection process involves a detailed and contextual evaluation based on multiple roadway characteristics that are considered and assessed. The factors include motor vehicle speed, motor vehicle volumes, function of the street, vehicle mix, pedestrian activity, on-street parking, and frequency of intersections and crossing. Feasibility and facility attractiveness are also considered during this step. The objective of this stage is to confirm whether the cycling facility pre-selected in Step One is appropriate for the roadway.

⁶ Average daily traffic volume for Hurontario Street obtained from GIS data provided by the Town.

⁷ From *OTM Book 18* p. 121

Referring to the guidance in *Table 5.3 - Roadway Characteristics Application Heuristics from OTM Book 18*⁸, **Table 5** presents which cycling facilities are appropriate based on the roadway characteristics of Hurontario Street within the study area. In the table, a check mark indicates the facility is appropriate in the context of the given roadway characteristic while a question mark indicates that further evaluation of the site-specific context is required. The results show that the preferable cycling facilities are a separated bicycle lane, cycle tracks, or multi-use path, the same result as in Step One.

When considering feasibility in the context of this study, cycle tracks and a multi-use path are not feasible since they require vertical separation from the roadway. This is not possible if the current sidewalks, curbs, and streetscaping features are to remain. Therefore, separated bicycle lanes remain as the preferred cycling facility option.

Table 5 - Step Two, Roadway Characteristics Application Heuristics Summary - Hurontario Street

Roadway Characteristics	Hurontario Street	Shared Roadway	Neighbourhood Bikeway	Advisory Bicycle Lane	Bicycle Lane	Buffered Bicycle Lane	Separated Bicycle Lane	Cycle Track	Multi-Use Path
85th Percentile Speed	Unknown, 30 km/h is the current posted speed	✓	✓	?					
Vehicle Volume (vpd)	15,000						?	✓	✓
Function of Street	Arterial				?	?	✓	✓	✓
Pedestrian Activities	High	✓	✓	✓	✓	✓	✓	✓	?
Frequency of Intersections and Crossings	High (signalized Intersections, driveways, and pedestrian crossings).					?	✓	✓	?
Vehicle Mix	Bus stops along route				?	?	✓	✓	✓
On-Street Parking	Angled Parking						✓	✓	✓

Step Three

Step Three involves the justifying and documenting the selection of the recommended facility type and additional design features or enhancements that are incorporated into the design. The design of the cycling facility along the corridor is beyond the scope of this memorandum. Justification and documentation of proposed design features and decisions should continue throughout the design process.

For the proposed cycling facility along the Hurontario Street corridor, separated bicycle lanes were selected as the preferred option. The pre-selection process (Step One) indicated that a physically separated bikeway would be desirable based on the posted speed and average daily traffic volume of the roadway. The Step Two evaluation based on the roadway characteristics of Hurontario Street yielded the same results. Finally, the cycle track and multi-use path options were eliminated from consideration since they would require significant civil works and changes to the existing cross-section to implement.

3.2. Preliminary Cross-Section

The preliminary typical cross-section option for implementing separated bike lanes on Hurontario Street is illustrated in **Figure 8**. It is based on the guidance provided in *OTM Book 18*, Section 4.3.2 and can be summarized as follows.

⁸ From *OTM Book 18* p. 124

- The existing pavement width is approximately 17.2m where there is parking on both sides of the road.
- Two vehicle driving lanes (one northbound and one southbound) at 3.5m wide.
- Two parallel parking lanes (one northbound and one southbound) at 2.6m wide.
- Two physically separated bike lanes (one northbound and one southbound) at 1.8m wide.
- A buffer between the parking and bike lanes (minimum 0.6m wide). *OTM Book 18* specifies the minimum buffer width should be 0.6m when the bike lane is adjacent to a parking lane.
- Flexible bollards installed as the separation technique in the buffer between the parallel parking lane and the bike lanes. Removable rubber curbs or pre-cast concrete curbs could also be considered to supplement the bollards.

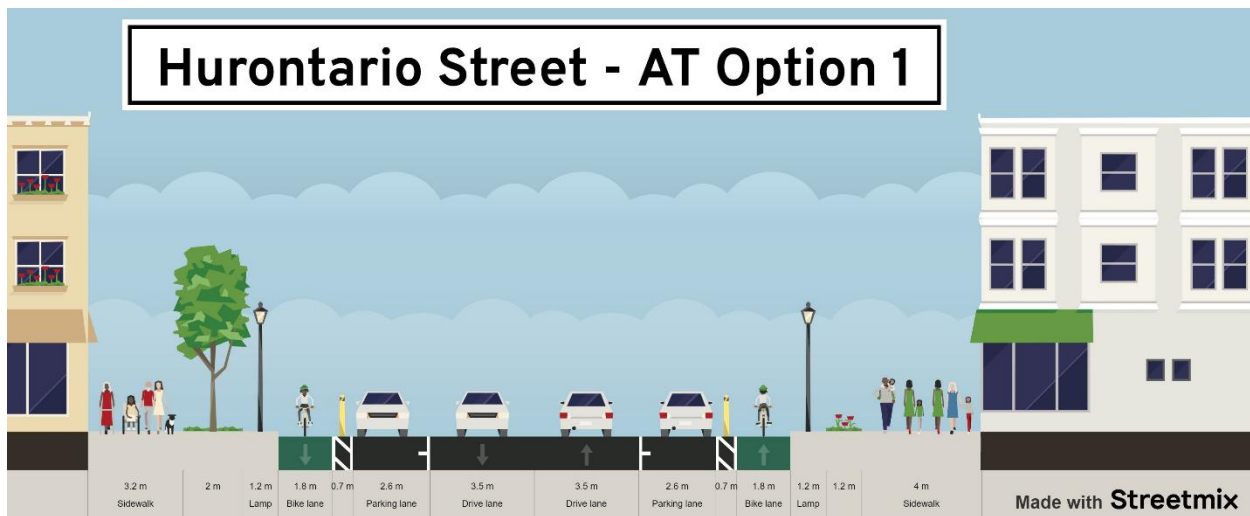


Figure 8 - Hurontario Street Active Transportation Facility Option

Additional impacts and design considerations for implementation of the typical cross-section illustrated in **Figure 8** include the following. One of the primary considerations is the variation in pavement width along the corridor. **Figure 9** shows the differences in pavement width at intersections and uncontrolled pedestrian crossings (note measurements are approximate).

- Angled parking spaces are converted to parallel parking spaces (see Section 3.3 for further details).
- At intersections, the existing pavement width is approximately 10.0m wide. Therefore, the bike lanes would not be physically separated as there is only room for conventional bike lanes (for example with 3.5m vehicle travel lanes and 1.5m bike lanes). Civil works (curb relocation) would be required to allow space for the physically separated bike lane.
- At the uncontrolled pedestrian crossing locations, the existing pavement width is approximately 8.5m wide. Therefore, civil works would be required to widen the pavement width in order to allow space for the bike lane.
- The bike lane alignment would need to curve around existing streetscaping elements at intersections and uncontrolled pedestrian crossing locations. This could potentially decrease the attractiveness of the bike lane for active transportation users by making it more difficult to navigate.
- Restaurant patios located in parking spaces are not feasible on an ad hoc basis as is currently done.
- Regular maintenance of pavement markings and flex bollards (and other chosen separation techniques) required.

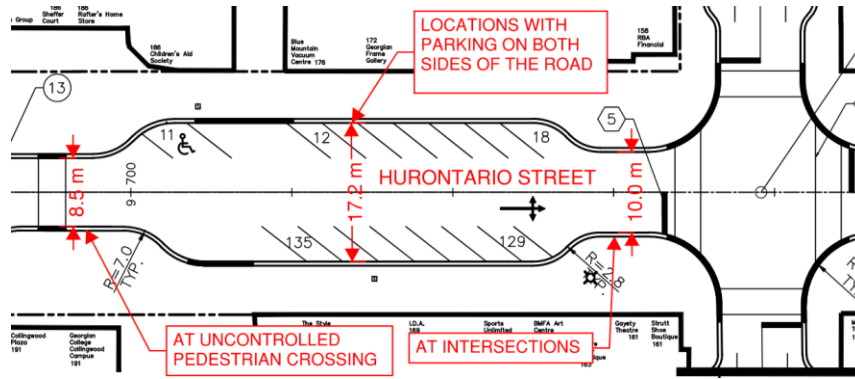


Figure 9 - Pavement Widths Along the Hurontario Street Corridor

Should the Town not proceed with implementing the proposed cycling facility on Hurontario Street, there should be consideration for implementing one on a nearby parallel route. Indeed, on Town’s *Cycling Plan* (2019) prepared by Paradigm Transportation Solutions, future shared on-street bike routes are in place parallel to Hurontario Street on Pine Street (one block west) and Maple Street (two blocks west).

3.3. Active Transportation Option Impacts on Parking

The option to install a cycling facility on Hurontario Street within the study area would necessitate the change of the existing pull-in angled parking spaces located along the roadway to parallel parking spaces. The estimated on-street parking supply along the corridor with the conversion to parallel parking would be approximately 97 parking spaces as illustrated in **Figure 10**.

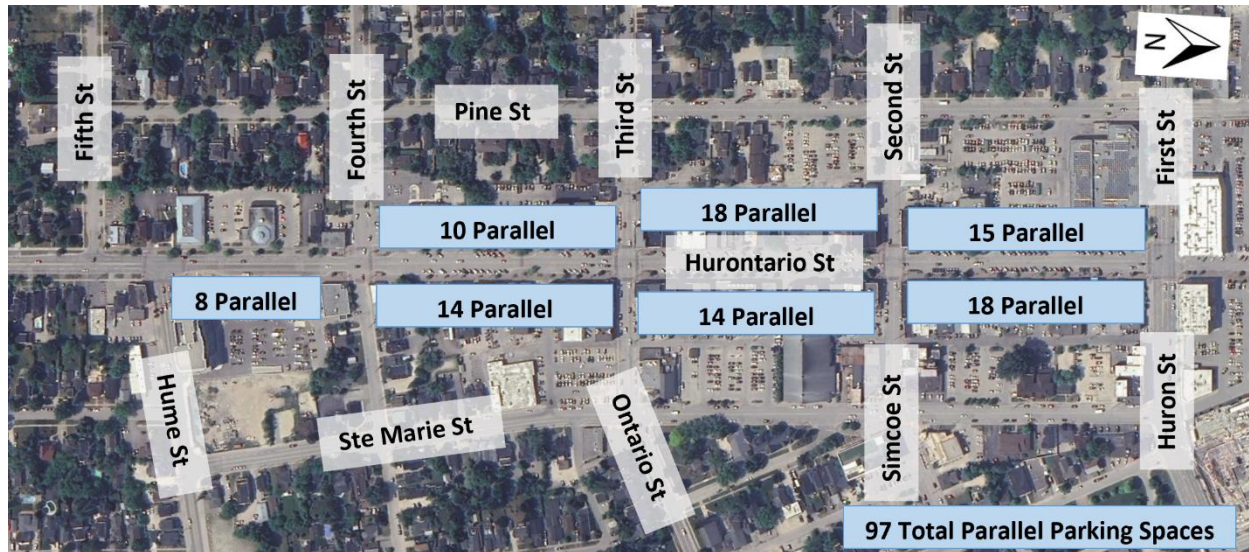


Figure 10 - Estimated Parallel Parking Supply on Hurontario St with Cycling Facility Option



Figure 11 - Estimated Loss of Parking Spaces on Hurontario St with Cycling Facility Option

The estimated difference in total parking spaces from the existing condition (see **Figure 5**), broken down by segment, is presented in **Figure 11**. As shown, the introduction of the cycling facility would result an estimated loss of 72 parking spaces. This represents a 43% decrease in available on-street parking along Hurontario Street, a significant reduction. However, it should be noted that there are four municipal parking lots throughout the downtown area that account for an additional 271 off-street paid parking spaces within 250 metres of Hurontario Street. Additionally, within the same radius, there are approximately 207 existing on-street parallel parking spaces located on the streets adjacent to Hurontario Street.

4. Comparison of On-Street Parking Configurations

The collision review found that approximately 18% of the total collisions that occurred within the study area were related to the existing pull-in angled parking on Hurontario Street. This may represent a pattern. Additionally, field observations found that while vehicles were generally able to find gaps to reverse out of their parking spaces, some had difficulty due to their limited ability to see conflicting traffic. When space permitted, some vehicles performed maneuvers to enable themselves to pull forwards into traffic instead of reversing the full way, indicating that some drivers may be uncomfortable with reversing into traffic or at least that they prefer to avoid the maneuver when possible.

Therefore, potential alternatives to pull-in angled parking were investigated and compared. One alternative is parallel parking, which would need to be implemented as part of the installation of the cycling facility option. Another alternative is back-in angled parking, which has been implemented in several municipalities across Canada such as Halifax, Fredericton, and Winnipeg. **Table 6** provides a comparison summary of pull-in angled, back-in angled, and parallel parking configurations.

Table 6 - Comparison of On-Street Parking Configurations⁹

Type of Parking	Advantages	Drawbacks
Pull-In Angled Parking	<ul style="list-style-type: none"> - Easy to enter the parking space. - More efficient than parallel parking in terms of providing more parking spaces per metre of curb. - Safer to exit vehicle than parallel parking (avoids exit to travel lanes). 	<ul style="list-style-type: none"> - Sightlines can make it difficult to exit the parking space and clearly see approaching vehicles and cyclists. - Can cause vehicle delays when waiting for someone to exit a parking space. - Requires a wider roadway cross-section.
Back-In Angled Parking	<ul style="list-style-type: none"> - Safer and easier to exit parking space due to forward maneuver and having better sightlines of conflicting traffic. - Back-in parking maneuver is easier than parallel parking. - More efficient than parallel parking in terms of providing more parking spaces per metre of curb. - Safer to exit vehicle than parallel parking (avoids exit to travel lanes). 	<ul style="list-style-type: none"> - Can cause vehicle delays when waiting for someone to park. - Higher difficulty parking maneuver compared to pull-in angled parking. - Requires a wider roadway cross-section. - Vehicles may pull in to parking spaces on the opposite side of the road. This creates a safety issue when they exit. - Less common, so motorists visiting the Town may have less familiarity with it.
Parallel Parking	<ul style="list-style-type: none"> - Can be implemented with a narrower roadway cross-section, leaving more space for active transportation facilities and streetscaping features. - Safer and easier to exit parking space than pull-in angled parking. 	<ul style="list-style-type: none"> - Can cause vehicle delays when waiting for someone to park. - Higher difficulty parking maneuver. - Requires reduction in parking spaces compared to angled parking. - Driver side of the vehicle exits into the travel lane.

Back-in angled parking has the same advantages of pull-in angled parking while also being safer and easier for motorists to exit the parking space since the driver’s visibility of approaching vehicles and cyclists is significantly improved and the vehicle is travelling forwards to enter traffic. This is a significant improvement to pull-in angled parking where driver is backing onto the roadway and may not be able to see approaching vehicles and cyclists.

⁹ Halifax: https://cdn.halifax.ca/sites/default/files/documents/about-the-city/regional-community-planning/YoungKayelsville_TacticalNotificationLetter_FINAL.pdf
Winnipeg: <https://legacy.winnipeg.ca/publicworks/trafficControl/projects/angledparkingpilot.stm#tab-background>
Fredericton: <https://www.cbc.ca/news/canada/new-brunswick/back-in-angle-parking-fredericton-1.4652802>
DriveSmartBC: <https://www.drivesmartbc.ca/backing/safety-concept-back-angled-parking>

The potential drawbacks of back-in angled parking can be countered with the installation of clear signage and public engagement/education. One of the primary concerns with back-in angled parking is that it can cause traffic delays when vehicles are waiting for another vehicle to park. However, this is also the case with pull-in angled parking (when exiting) and parallel parking. Another concern is that since back-in angled parking is less common, drivers will have less familiarity with it. Town residents will become more comfortable with the parking maneuver over time but since the Town receives many visitors, especially during the summer months, there will always be motorists that are unfamiliar with it. However, backing into a parking space is typically easier than parallel parking. Additionally, signage can be posted (an example is shown in **Figure 12**¹⁰), and educational materials can be prepared online and in print to instruct road users on how to properly do it. Finally, a significant concern is that vehicles may cross the road to park nose first into the parking space, creating a substantial safety issue when they exit the parking space as they would either need to back out across a lane of traffic, or swing more than 90 degrees to back out, a maneuver that would have poor sightlines of conflicting traffic and would be difficult to perform without encroaching on adjacent parking spaces or the opposing lane of traffic. This issue could be solved by signage indicating that pulling into the parking spaces is not permitted and that doing so poses a safety risk.



Figure 12 - Back-In Angled Parking Guidance

Due to the safety benefits for vehicles and active transportation users, it is recommended that if angled parking is kept on Hurontario Street, The Town evaluate the possibility of converting the existing pull-in angled parking to back-in angled parking.

¹⁰ Image from: <https://legacy.winnipeg.ca/publicworks/trafficControl/projects/angledparkingpilot.stm#tab-background>

5. Recommendations

An operational and safety review was conducted for the Hurontario Street corridor from First Street / Huron Street to Hume Street. This included a review of the existing roadway characteristics, active transportation facilities, existing parking supply, field observations, and collision history.

To improve access and safety for cyclists along the corridor, a cycling facility option, separated bike lanes, was developed in accordance with *OTM Book 18*. Given the constraint of minimizing any changes to the existing curbs, it is not feasible for the bike lanes to be separated or have a buffer at pinch points such as at intersections and pedestrian crossing locations. Road widening would be required at the existing uncontrolled pedestrian crossing locations. Additionally, it would not be feasible to have restaurant patios within the on-street parking spaces on an ad hoc basis, they would need to be incorporated into the bike lane design and would further reduce the on-street parking supply. Restaurant patios could still be implemented on the sidewalks, where there is space to do so.

Based on the results of the memorandum, the following is recommended:

- Evaluate the possibility for infrastructure upgrades at pedestrian crossings and intersections to conform to current AODA standards to promote safety and accessibility for pedestrians.
- Conduct further review to evaluate whether the current uncontrolled pedestrian crossings using nonstandard signs should be kept removed or converted per *OTM Book 15*. The Town can determine whether a detailed study is needed, or if the existing signs could be updated to the PXO type D as used in Ontario. The existing signage giving motorists right-of-way over pedestrians is no longer in accordance with the HTA.
- Evaluate the possibility of implementing separated bike lanes along Hurontario Street to provide a safe and efficient route for cyclists.
- If a cycling facility is not installed on Hurontario Street, evaluate the possibility of using nearby, parallel routes.
- If angled parking is to remain on Hurontario Street, evaluate the possibility of converting the existing pull-in angled parking to back-in angled parking.