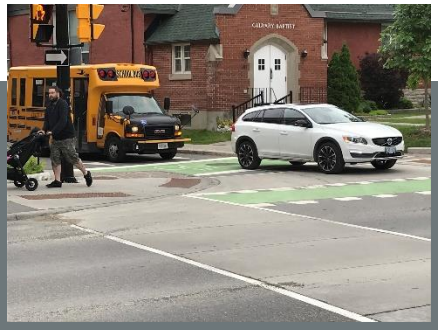
# City of Ottawa

## Main Street Road Safety Audit

FINAL REPORT



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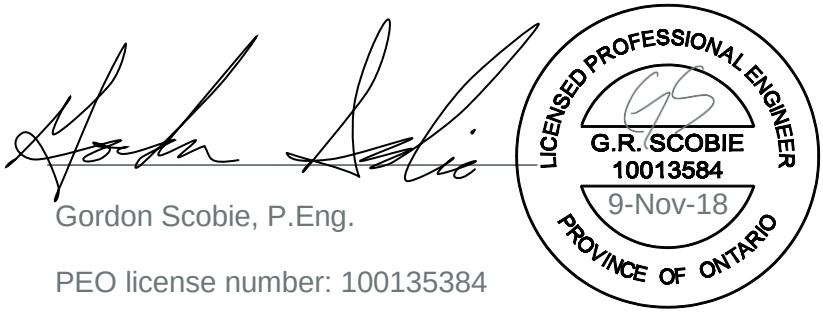


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November 9, 2018 – DRAFT REPORT

# Executive Summary

CIMA Canada Inc. (CIMA+) was retained by the City of Ottawa (the City) to undertake a Road Safety Audit (RSA) of the recently reconstructed Main Street, between Colonel By Drive and the Rideau River (approximately 2.0 km). Main Street has recently gone through a significant change in function and cross-sectional elements, from a traditional 4-lane arterial to a complete street design with cycle tracks, on-street parking and single northbound/southbound travel lanes for general purpose traffic. Following the complete opening of the retrofitted corridor, the Councillor's office has received a number of safety related complaints from the public. Given that Main Street serves as a critical arterial link that crosses the Rideau River, connecting Smyth Road in the south to Colonel By Drive in the north, this RSA is intended to identify safety related concerns and provide recommendations to mitigate and improve safety within the study area for all road users.

This RSA included a desktop review of the most recent as-built design drawings, with a focus on the safety performance of the basic design elements, as well as field observations that were conducted on Thursday, June 14, 2018 between 09:00 and 17:30, and on Wednesday, June 13, 2018 at approximately 22:30. Elements reviewed included geometric design, horizontal and vertical alignments, cross-sectional elements, intersection design and layout, traffic operations, interactions between all road users and environmental considerations. This audit also explicitly considered human factors and road users in the context of the final design.

The findings and recommendations of the road safety audit are provided in a tabular format in Section 3 of this report, in which a total of 25 findings were observed. The table consists of a description of each finding, suggested countermeasures, a map identifying the approximate location of each finding, a photo of each finding and level of severity risk assessment for each finding.

It should be noted that the suggested countermeasures and findings included herein are intended for consideration by the City; however, the City is under no obligation to accept all safety recommendations provided by the audit team, but must respond to each suggested countermeasure by stating acceptance or rejection with reasoning. The suggested countermeasures are based solely on safety performance, while it is understood that there are other constraints that must be balanced with safety performance, such as traffic operations, property requirements, life-cycle costs, etc. The decision to accept or reject the suggested countermeasures shall be at the discretion of the City, with consideration given to all influencing factors. Included in the tabular summary of each finding, space is provided in Section 3 for the City to provide their response, and Appendix A and B includes additional community comments and City responses, respectively.

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# 1. Introduction

## 1.1 Background and Purpose

CIMA Canada Inc. (CIMA+) was retained by the City of Ottawa (the City) to undertake a Road Safety Audit (RSA) of the recently reconstructed Main Street, between Colonel By Drive and the Rideau River (approximately 2.0 km). Main Street has recently gone through a significant change in function and cross-sectional elements, from a traditional 4-lane arterial to a complete street design with cycle tracks, on-street parking and single northbound/southbound travel lanes for general purpose traffic. Following the complete opening of the retrofitted corridor, the Councillor's office has received a number of safety related complaints from the public. As a result, it has been requested that a formal RSA be conducted.

The issues identified in the complaints are mainly related to conflicts between vehicles and pedestrians/cyclists, including:

- Motorists not yielding the right of way to cyclists at signalized intersections, leading to near misses;
- Motorists making left-turns not looking for cyclists approaching the intersection on the cycle track, resulting in near misses;
- Motorists heading west on Riverdale Avenue not making a complete stop from the southbound approach on Main Street (e.g. right-turn-on-red), resulting in near misses with both cyclists and pedestrians crossing westbound on the north leg of the intersection. This may be aggravated when cyclists have significant speed due to the southbound approach being on a downhill;
- Cyclists riding the wrong-way on the cycle tracks;
- Cyclists crossing on crosswalks, without dismounting;
- Cyclists not ceding priority to pedestrians when they are getting on/off buses;
- Cyclists biking too fast and being impatient with other non-vehicular traffic;
- Cyclists not stopping at red lights;
- Cyclists passing each other using the sidewalks;
- Cyclists not using bike boxes on side streets to engage the green phase; and
- Pedestrians walking or standing in the cycle track (including waiting for buses).

Based on the foregoing, this RSA identifies safety concerns and provides recommendations to mitigate and improve safety within the study area for all road users. It should be noted that the suggested countermeasures and findings included herein are intended for consideration by the City; however, the City is under no obligation to accept all safety recommendations provided by the audit team, but must respond to each suggested countermeasure by stating acceptance or rejection with reasoning. The suggested countermeasures are based solely on safety performance, while it is understood that there are other constraints that must be balanced with safety performance, such as traffic operations, property requirements, life-cycle costs, etc. The decision to accept or reject the suggested countermeasures shall be at the discretion of the City, with consideration given to all influencing factors.

## 1.2 Study Area

The study area for this assignment includes an approximate 2 km segment of Main Street, between Colonel By Drive and the Rideau River. Main Street is a two-lane arterial road, providing a north-south

route through the Old Ottawa East neighbourhood. It connects to Smyth Road in the south and to Colonel By Drive in the north, and can be used as a route to access Highway 417 Westbound via Greenfield Avenue. The posted speed limit along Main Street is 50 km/h.

The study area and local area context is illustrated in **Figure 1**.


*Figure 1: Study Area*

South of Clegg Street, land uses along Main Street are predominantly low density residential and north of Clegg Street, there is a mix of low-medium density residential/commercial/institutional land uses. The institutional land uses that front directly onto Main Street include Saint Paul University and Immaculata High School, and within one block east or west of Main Street, there are a number of churches and schools, which all contribute to all modes of traffic along Main Street.

The typical cross section along Main Street includes two general purpose traffic lanes (i.e. one travel lane per direction), cycle tracks (i.e. raised and physically separated from vehicular traffic by a curb) and sidewalks on each side of the road. The cycle tracks and sidewalks present different surface treatments (i.e. cycle tracks are asphalt and sidewalks are concrete); however, there is no physical separation between these facilities. Where the roadway is wide enough, on-street parking lanes and/or boulevards are also provided along Main Street. At certain locations within the study area, exclusive left-turn lanes and/or bike boxes[1] are provided at intersections for vehicular and bicycle traffic, respectively.

[1] A bike box is a designated area placed between the crosswalk and the stop bar, at a signalized intersection, which enables cyclists to wait ahead of queued traffic during the red signal phase. This allows cyclists to proceed ahead of motorists at the beginning of the green signal phase.

# 2. Study Methodology

According to the Transportation Association of Canada's (TAC) Canadian Road Safety Audit Guide, a RSA "*is a formal and independent safety performance review of a road transportation project by an experienced team of safety specialists, addressing the safety of all road users*."

The objectives of a Road Safety Audit include:[2]

- *"Minimize the frequency and severity of preventable collisions;*
- *Consider the safety of all road users (including pedestrians, cyclists, motorcycles, trucks, buses, and automobiles);*
- *Ensure that collision mitigation measures aimed to eliminate or reduce the identified safety problems are considered fully; and*
- *Minimize potential negative safety impacts beyond the project limits (i.e., to avoid inadvertently increasing the collision risk elsewhere on the network)."*

RSAs can be completed at different stages of the life cycle of a transportation facility: planning, preliminary design, detailed design, construction, pre-opening, or in-service. The Main Street RSA was completed during the in-service stage. During in-service RSAs, the audit team seeks to identify potential collision hazards, and to suggest potential countermeasures.

An essential element of a RSA is a site visit. As such, CIMA+ conducted a field investigation on Thursday, June 14, 2018 between 09:00 and 17:30, and a night time investigation on Wednesday, June 13, 2018 around 22:30. The following elements within the study area were reviewed (where applicable):

- **Conformance, Consistency, and Condition:** relating to all site geometrics, traffic control devices (signs, signals, pavement markings etc.), and all other roadway features present within the roadway environment on the day of the field investigation;
- **Traffic Control Devices:** traffic signals, signs and pavement markings;
- **Site Operations and Road User Interactions:** road user operations and interactions from the perspective of all users (pedestrians, cyclists, motorcycles, trucks, buses, and automobiles), road user behaviour and conflict observations;
- **Night-time Visibility:** roadway illumination/luminaire poles and reflective guidance devices.

In addition to the site visit, CIMA+ conducted a desktop review of the most recent as-built design drawings, with a focus on the safety performance of the basic design elements.

The next section of this report provides a summary of our findings and recommended countermeasures, which also includes a level of severity risk assessment. Based on an example provided in the TAC RSA Guide, the following **Table 1** provides a qualitative severity rating that was developed for the context of the Main Street study area. Regardless of the identified severity rating for each finding, countermeasures aimed to eliminate or reduce the identified safety problems are recommended.

[2] The Canadian Road Safety Audit Guide. Transportation Association of Canada, December 2001.

*Table 1: Level of Severity Ratings*

| Severity Rating | Potential Collision Severity Due to the Identified Issue | Typical Collision Types Expected Due to the Identified Issue |
|---|---|---|
| Extreme | Potential Fatality | • Collisions between motor vehicles and pedestrians or cyclists<br>• Collisions involving trucks<br>• High speed collisions |
| High | Potential moderate to incapacitating injury | • Head-on collisions<br>• Angle (T-bone) or left-turn collisions<br>• Run-off-road collisions<br>• Medium to High Speed Collisions |
| Medium | Potential minor to moderate injury | • Right-turn collisions<br>• Collisions between more than one cyclist<br>• Collisions between cyclists and pedestrians<br>• Low to medium speed collisions |
| Low | Low potential for injury | • Rear-end and sideswipe collisions<br>• Low speed collisions |

# 3. RSA Findings and Recommended Countermeasures

| Findings | Countermeasure Summary |
|---|---|
| Finding #1: Trucks Encroaching on Bicycle Lane | Monitoring or traffic calming (e.g. flex-stakes) |
| Finding #2: Reserved Bicycle Lane Signs Pointing to Sidewalk | Revise signs or sign location |
| Finding #3: Lane End Near Intersection | Extend SB lane or restrict left-turns |
| Finding #4: Offset Bicycle Crossing | Add signage and/or realign bicycle crossing |
| Finding #5: Potential for Conflicts between NB Left-turning Vehicles and SB Bicycles | Add signage and/or protected signal phasing |
| Finding #6: “Keep Right” Sign for Cyclists Facing Opposite Direction | Add signage |
| Finding #7: Inconspicuous Sign on Bicycles’ Path + Conflict Between Pedestrian and Bicycle Paths | Add and relocate signage |
| Finding #8: Light Fixture Encroaching on Cycle Track | Relocate or remove light standard |
| Finding #9: Bike Box Used with Stop Control | Remove bike box |
| Finding #10: Bicycle Crossing Location Only for One Direction | Provide bicycle crossing treatment |
| Finding #11: Bicycle Signal Heads Obstructed by Signage | Relocate signal heads and/or signage |
| Finding #12: Tree Branches Encroaching over Bicycle Lane | Monitor and maintain encroaching vegetation |
| Finding #13: Cluttered Signage | Relocate and/or rearrange signage |
| Finding #14: Potential for Conflict between Bus Passengers and Cyclists | Revise signage and/or pavement markings |
| Finding #15: Inappropriate Cyclist Behaviours | Increase enforcement and/or education |
| Finding #16: Location of Bike Box Creates Conflict Points | Relocate Bike Box and/or restrict right-turn-on-red |
| Finding #17: Unclear Indication of Start of Cycle Track | Provide coloured pavement and/or formal cross-ride |
| Finding #18: Faded “Sharrows” | Maintain pavement markings |
| Finding #19: Left-turning Bicycles May Block Through Bicycles | Provide coloured pavement and/or modify area |
| Finding #20: Short Section of Cycle Track Near Bus Stop | Extend cycle track or replace with sharrows |
| Finding #21: Tight Turning Radii and Building Setback | Increase building setback or provide curb extension |
| Finding #22: Short Section of Cycle Track Near Lane Change Location | Replace cycle track with bike lane |
| Finding #23: Contradicting Signage, Pavement Markings and Poor Pavement Conditions | Relocate pavement markings and repair pavement |
| Finding #24: Sharrow Pavement Marking on Painted Island | Remove painted island |
| Finding #25: Absence of Bicycle Crossing Facilities / Guidance at North End of Study Area | Review intersection configuration |

The following is a more in-depth review of our findings, including finding locations and a severity risk assessment.

## Finding #1: Trucks Encroaching on Bicycle Lane – Severity Rating: Extreme

### Description

Trucks were observed encroaching the northbound bicycle lane on the curve located north of the Rideau River bridge. The width of the bicycle lane at this point is 1.80 metres, which is the desirable width according to Ontario Traffic Manual. The width of the general purpose lane is 3.50 metres. Although these lanes are within the range recommended by Transportation Association of Canada for urban roads, similar to Main Street, large vehicles appear to have difficulty remaining within their lane along this curve (potentially due to their speed).


### Suggested Countermeasures

With enforcement and/or traffic calming treatments, the occurrence of trucks encroaching the bicycle lane can be reduced. It should be noted that since our field investigation, the City has installed vertical flex-stakes between the dedicate bike and general purpose lanes, as a measure to better delineate the two separate facilities. As such, the City should monitor truck behaviours to verify if this modification was effective.

### Location


| Client Response | Flexible delineators ("flex stakes") are installed annually at this location (removed during the winter months due to road maintenance requirements). The flex stakes are expected to keep vehicles (including trucks) from encroaching in the cycling lane. **The City will review opertations during the winter months when the flex stakes are not in place.** |
|---|---|

## Finding #2: Reserved Bicycle Lane Signs Pointing to Sidewalk – Severity Rating: Medium

### Description

At some locations, the ground mounted Reserved Bicycle Lane signs are installed adjacent to the sidewalk. This makes the diagonal arrow on the sign point at the sidewalk, as opposed to the cycle track. This was observed at three locations along Main Street: northbound near Toronto Street and near Hawthorne Avenue, and southbound near Harvey Street.


### Suggested Countermeasures

Where this condition occurs, the Reserved Bicycle Lane signs should be mounted to the left of the cycle track, such that the diagonal arrow points at the cycle track. Although this may not be a typical standard, it provides a more clear indication of where cyclists should ride.

### Location


| Client Response | Moving the signs to the left of the cycle track would increase the driver workload, particularly in locations where there are already other signs posted nearby (such as in the photo above). Additionally, primary signs are typically placed on the right side of a facility, making this sign placement consistent with what cyclists may expect. No changes are planned since it is not expected that the sign placement would be the cause of conflicts or collisions. |
|---|---|

## Finding #3: Lane End Near Intersection – Severity Rating: Low

### Description

A second southbound through lane is introduced on Main Street's approach to Riverdale Avenue. This lane terminates approximately 100 metres south of the intersection, with its taper ending near Centennial Boulevard. During the PM peak hour, southbound vehicles would block traffic while waiting for gaps to turn left onto Centennial Boulevard. This has the potential to contribute to rear end collisions.


### Suggested Countermeasures

If feasible, consideration should be given to extending the second southbound lane on Main Street past the intersection with Centennial Boulevard. This would allow through vehicles to use the curb lane to bypass vehicles waiting to turn left on Centennial Boulevard. If not feasible, rear end collisions and near misses should be monitored over time and, if significant, consideration may be given to restricting left-turns onto Centennial Boulevard during peak hours. Although restricting southbound left-turns at Centennial Boulevard would simply migrate left-turners to Toronto Street; however, this movement at Toronto Street is less complex, given it is not in close proximity to the end of a taper and is further away from the busier Riverdale Avenue.

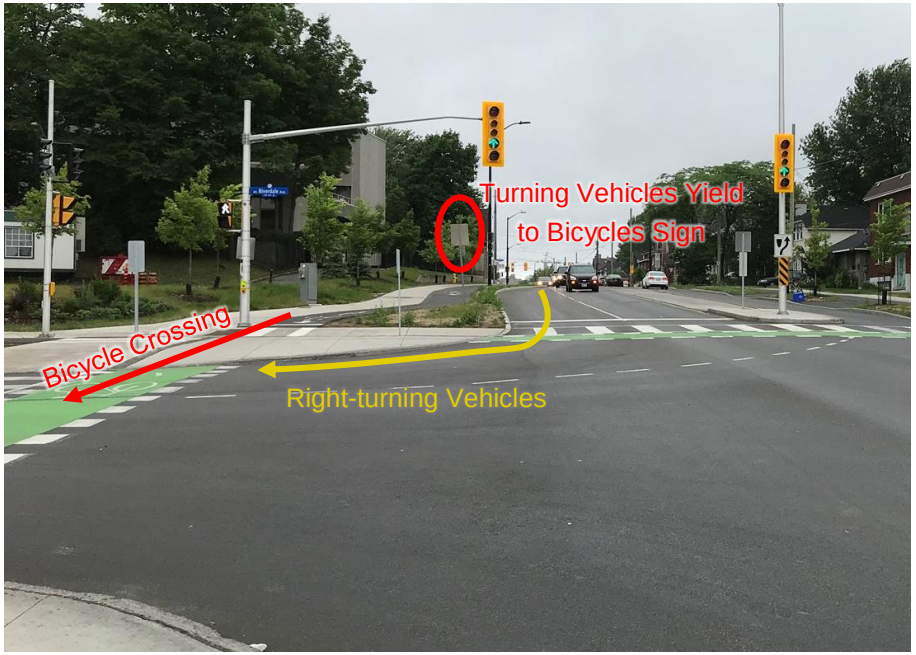
### Location

| | |
|---|---|
| **Client Response** | The length of the lane is constrained by infrastructure (a barrier wall) at the hydro station, therefore extending the lane to the south is not considered to be feasible. During design, the City identified that the second (curbside) southbound receiving lane was beneficial for traffic operations (added capacity at the signalized intersection), therefore shortening the lane is also not considered to be feasible.<br><br>Restricting the left turns onto Centennial Boulevard is not preferred because Centennial Boulevard is median-separated, which means that residents need to be driving eastbound to reach their driveways (they cannot simply turn down Toronto Street and "loop back" to their residence, since the median would block access to their house if they are travelling westbound). Banning left turns onto Centennial is therefore expected to have one or more of the following impacts:<br>• Result in low compliance (as motorists may chose to make the movement regardless of the posted restriction) which may lead to issues with driver expectations;<br>• Increase U-turns on Main Street (south of Centennial);<br>• Increase southbound right turns onto Toronto Street (west of Main Street), followed by U-turns (or similar movements) on Toronto Street, followed by eastbound left turns from Toronto Street onto Main Street; or<br>• Increase southbound left turns onto Toronto Street (east of Main Street), followed by U-turns (or similar movements) on Toronto Street, followed by westbound right turns from Toronto Street onto Main Street.<br>Additional safety issues may occur with each of these impacts. As such, implementing a southbound left turn restriction at Centennial Boulevard should only occur if the City of Ottawa identifies that a serious safety issue is present and that the potential impacts of banning the turn do not outweigh the impacts of allowing the turn.<br><br>**The City of Ottawa will monitor collisions (once 3-year data is available) at this location and will consider changes if collision history indicates a serious safety issue at this location.** |

## Finding #4: Offset Bicycle Crossing – Severity Rating: Extreme

### Description

The southbound bicycle crossing at Main Street & Riverdale Avenue is offset from the intersection by approximately 4.50 metres. Although a "Turning Vehicles Yield to Bicycles" sign is provided on the curbside at this location; however, the offset could make it difficult for right-turning drivers to see approaching cyclists.




### Suggested Countermeasures

It is likely not possible to realign the north-south bicycle crossing closer to the intersection, since there are also east-west crossings, sidewalks and signal poles in this area. To reinforce the presence of the bicycle crossing, a second Turning Vehicles Yield to Bicycles sign could be provided on the signal mast-arm for the southbound direction. The City can then monitor driver behaviour to determine if the second sign is effective. If not effective, innovative solutions could be considered (e.g. signs with LED contours or other means to make the signs more conspicuous).

### Location

| | |
|---|---|
| **Client Response** | The design of this intersection was based on the "bend-out" cycle track design which is popular in Europe and has been becoming increasingly popular in North America. A "bend-out" design pushes the crossride and cycle track away from the intersection, such that there is a distance of at least 2.0m (6.0m preferred) between the tangent of the road and the nearest portion of the crossride (or crosswalk). Engineering literature have indicated that the benefits of a "bend-out" design include:<br>• Allowing an approximate 90 degree angle between the direction of a vehicle's travel and the crossride/crosswalk<br>• Allowing for a buffer space between the tangent of the road and the cycle track such that a vehicle has additional space to slow or stop<br>• Depending on the size of the offset, potentially allowing for storage of 1 vehicle between the tangent of the road and the crossride, such that capacity of the intersection may be improved<br>• Slowing the cyclists approaching the intersection, due to the curvature in the cycling facility.<br><br>It should be noted that the community has idicated that a bend-in design (where cyclists move in towards the intersection rather than away from it) would be beneficial in the sense that a bend-in design would orient cyclists such that they are facing oncoming traffic, rather than facing away from it (which may help cyclists identify potential conflicts). The community has also indicated that they feel that it would be safer to have the crossride closer to the intersection where they may be more visible.<br><br>As bend-out design is not yet common within the City's limits, motorists may not yet be familiar with how to best interact with the crossrides in this type of design. **The City will monitor operations and collisions at this intersection, and will react accordingly**. **The City will also complete a conflict analysis for this location to identify potential near-misses.**<br><br>At this time, an additional sign is not recommended since the sign would add to driver workload and may or may not actually provide a benefit. Currently there are two "yield to cyclist" (Rb-37 TAC) signs: A ground-mounted sign on the nearside of the intersection and a secondary sign mounted on the signal pole on the southwest corner (the pole which houses the pedestrian push button for the north-south crosswalk). |

## Finding #5: Potential for Conflicts between NB Left-turning Vehicles and SB Bicycles – Severity Rating: Extreme

### Description

The northbound left-turn at Main Street & Riverdale Avenue presents high volumes during the PM peak hour. When southbound gaps are available, vehicles complete the northbound left-turn at relatively high speeds. Given the southbound cycle track presents a jog away from the road (refer to Finding #4), cyclists may not be obvious to drivers who are focused on gaps in vehicular traffic. Additionally, when cyclists enter the jog at the cycle track, a driver who quickly notices a cyclist, or only sees the cyclist through their peripheral vision, may think the cyclist is turning right onto Riverdale Avenue (which is a common movement for cyclists) instead of continuing southbound.

It should also be noted that due to the downslope of Main Street at this location, in the southbound direction, cyclists gain speed and will have difficultly completing an emergency stop, if needed.

### Suggested Countermeasures

Installing a “Turning Vehicles Yield to Bicycles” sign on the signal mast arm can increase left-turning drivers’ awareness of the presence of southbound cyclists.

Additionally, subject to traffic operational analysis, consideration may be given to implementing protected-only left-turn signal phasing for the northbound direction. This would completely separate this movement from southbound cyclists and reduce the potential for conflicts; however, this will further impact vehicle capacity constraints at this location.

### Location

| | |
|---|---|
| **Client Response** | See response to Finding # 4 above. At this time, an additional sign facing northbound traffic is not recommended since the sign would add to driver workload and may or may not actually provide a benefit.<br><br>**The City will monitor operations and collisions at this intersection, and will react accordingly. The City will also complete a conflict analysis for this location to identify potential near-misses.** |

## Finding #6: "Keep Right" Sign for Cyclists Facing Opposite Direction – Severity Rating: Medium

### Description

At the northwest corner of Main Street & Riverdale Avenue a "Keep left/right" sign is provided for pedestrians and cyclists (pedestrians to keep left, cyclists to keep right). An equivalent sign is not provided facing east (as illustrated in the right-side figure).


### Suggested Countermeasures

Provide a sign facing east to indicate pedestrians to keep right and cyclists to keep left.

### Location


| Client Response | Pathway organization sign to be added. |
|---|---|

## Finding #7: Inconspicuous Sign on Bicycles' Path + Conflict Between Pedestrian and Bicycle Paths – Severity Rating: Medium

### Description

At the southwest corner of Main Street & Riverdale Avenue, a sign intended for north-south pedestrians and cyclists (to keep left/right, respectively) is located in the path of eastbound cyclists. This sign is difficult to see when approaching in the eastbound direction, and could be struck by cyclists.

Additionally, the pedestrian path along the west sidewalk intersects the eastbound cyclist's path. It may not be clear to all pedestrians that they are supposed to wait for the Walk signal indication on the tactile plate (circled in red). Pedestrians could proceed to wait near the curb, while eastbound cyclists have a green light, which could contribute to a bicycle-pedestrian collision.

### Suggested Countermeasures

Relocate the "Keep Left/Right" sign further north so it is outside of the potential path of eastbound cyclists.

Additionally, consider providing signage indicating where northbound pedestrians should stop to wait for the Walk signal indication before crossing Riverdale Avenue.


### Location

| | |
|---|---|
| **Client Response** | The eastbound cycling facility theoretically bends toward the south (away from the sign) at this location, since cyclists must either bend towards the eastbound cycle track, or turn right to proceed south on Main Street. The sign therefore is not actually in the path of a cyclist if the cyclist is following the facilities as intended. Regardless, to improve visibility of the sign post, **the City install retroreflective material on the post**.<br><br>It is noted that the cycling facilities are not well delineated at this location, since the asphalt cycle tracks lead into concrete facilities. In order to better delineate this space, **the City will be installing additional thermoplastic to show there the cycling facilities are located**. This will also assist in providing information to pedestrians regarding where they should wait (when waiting for the signal). |

## Finding #8: Light Fixture Encroaching on Cycle Track – Severity Rating: Medium

### Description

At the southwest quadrant of Main Street & Herridge Street, there is a light fixture encroaching the cycle track. This is located at the beginning of a jog to the right, and cyclists could potentially strike the post with their shoulder. This light fixture appears to be the only one of this type on the west side of Main Street (more are present on the east side, in front of Saint Paul University). It also seems to have a more decorative function, rather than providing required illumination (e.g. overhead lights are provided on adjacent hydro poles along the west side).

### Suggested Countermeasures

Consider removing this light fixture.

### Location


| Client Response | The City will review the lighting needs for this area and will consider whether it would be appropriate to remove the light fixture. |
|---|---|

## Finding #9: Bike Box Used with Stop Control – Severity Rating: High

### Description

A bike box is provided at Herridge Street & Main Street. During the field investigation, vehicles were observed encroaching the bike box while advancing to clear sight lines (i.e. pulling up to look for oncoming traffic).

Based on OTM Book 18, bike boxes are treatments typically used at signalized intersections where it is difficult for cyclists to merge across general purpose lanes to turn left.

Additionally, on-street parking is provided on the south side of Herridge Street, so cyclists would need to move to the curbside and then return to the centre to use the bike box. This would occur over a distance of only 20 metres.

### Suggested Countermeasures

Given Herridge Street is stop controlled and a single lane approach to a T-intersection, consideration may be given to removing the bike box on the approach to Main Street.

### Location

| | |
|---|---|
| **Client Response** | Based on feedback received, it appears as though the purpose of this bike box is not well understood. During a public meeting with the Old Ottawa East Community Association, there was quite a bit of discussion regarding the intent of the bike box. Additionally, the written feedback received from the Community Association also indicates that cyclists could cross Main Street at Hazel or Clegg (both of which are signalized), rather than crossing at Herridge. Whereas this is true, these routes would lead cyclists to either go out of their way in order to reach their destination, or to cycle the wrong direction on the east side of Main Street.<br><br>The intent of this bike box is to allow for southbound left turning cyclists to have a space to queue in order to cross Main Street towards Saint Paul University. The depressed curb across from Herridge allow for cyclists to make a direct connection without having to back-track or cycle in the wrong direction on the east side of Main Street.<br><br>Given that it is not expected that the bike box is likely to cause any collisions or near misses, the bike box will remain. If, however, the City observes concerns regarding cyclist safety at this crossing (ie: complaints regarding near misses, or collision data), the City will consider removing the depressed curb on the east side of Main Street (across from Herridge) and the bike box on Herridge**. The City will review 3-year collision data once available.** |

## Finding #10: Bicycle Crossing Location Only for One Direction – Severity Rating: Extreme

### Description

A Stop sign and waiting area is provided opposite to Herridge Street (i.e. east side of Main Street) to indicate to cyclists where to cross Main Street. A similar treatment is not provided on the west side of Main Street. This location is in front of Saint Paul University, which is a major pedestrian and cyclist generator within the study area. During field investigations, several cyclists were observed arriving at the University from the north, riding on the sidewalk on the east side of Main Street (i.e. riding the wrong way on the cycle track or sidewalk). This could be due to the lack of an indication for where to cross Main Street from the west to the east side.


### Suggested Countermeasures

Consider providing a proper bicycle crossing treatment on Main Street, in the vicinity of Saint Paul University, or, at a minimum, provide a more apparent indication for where cyclists should cross from the west to the east side.

### Location


| Client Response | See client response for Finding #9. The bike box is intended to facilitate the eastbound crossing.<br><br>**To improve clarity of the crossing, the City will be adding a cycling stop bar with a short yellow "tail" (centerline) to delineate the space between the eastbound cycling facility and the westbound cycling facility on this short segment of asphalt.** |
|---|---|

## Finding #11: Bicycle Signal Heads Obstructed by Signage – Severity Rating: Extreme

### Description

At several locations, bicycle signal heads were found to be obstructed by signage as cyclists approach intersections. This may not provide cyclists sufficient distance/time to observe red light indications. This was observed at several intersections within the study area, particularly where the cycle track shifts laterally on the approach to an intersection.



### Suggested Countermeasures

Relocate bicycle signal heads and/or signage where practical, ensuring signals are not obstructed as cyclists approach them.

### Location


| Client Response | The City will review signage along the corridor and will determine if any changes should be made to improve visibility of signal heads. |
|---|---|

## Finding #12: Tree Branches Encroaching over Bicycle Lane – Severity Rating: Medium

### Description

The section of Main Street between Oblate Avenue and Hazel Street presents several young trees on the west side of the road. Some of these trees have low branches that are starting to encroach over the cycle track. With continued growth, the trees may obstruct cyclists' path (i.e. branches are low enough to hit a cyclist). This could lead to cyclists losing control and falling, or cyclists choosing to ride on the sidewalk to avoid the trees.

This finding may apply to other sections along Main Street. The highlighted section is where this finding was most prominent.

### Suggested Countermeasures

Monitor tree growth over time and trim branches as necessary to prevent obstructions to cyclists.

### Location


| Client Response | Forestry Services is aware of the need to monitor growth and take appropriate action when required. |
|---|---|

## Finding #13: Cluttered Signage – Severity Rating: Low

### Description

At several locations, particularly close to intersections, there are multiple signs installed on the same support or in close proximity to each other. These signs compete for users' attention, and important messages can be overlooked.

The picture and location figure shows a bus stop near Main Street & Oblate Avenue; however, this finding was observed at multiple locations within the study area.

### Suggested Countermeasures

Where possible, rearrange signage to reduce clutter. For example, in the picture shown, the "Turning Vehicles Yield to Cyclists" sign could be relocated to the left side of the cycle track on its own support, and the bus stop sign could be relocated above the parking regulations on the hydro pole.

### Location


| Client Response | **The City will review signage along the corridor to identify if there is any signage that should be changed due to sign clutter and driver workload.** It should be noted however that in situations such as the one shown above, it is generally accepted that the signs can be located in near proximity to each other if required and/or if the general message of the signs are compatible. |
|---|---|

## Finding #14: Potential for Conflict between Bus Passengers and Cyclists – Severity Rating: Medium

### Description

Pavement Markings with a zigzag pattern are provided on the cycle tracks, at bus stops along Main Street, to indicate to cyclists the areas where pedestrians are expected to cross the cycle track. In advance of these areas, a pictographic sign (shown in the top right red box) indicates to cyclists the requirement to yield to pedestrians. However, the message on these signs (which are not standard signs) may not be completely clear to cyclists, particularly at locations where they are installed close to bicycle signals (as illustrated in the bottom right red box).

Additionally, one bus was observed offloading passengers outside the areas designated bus stops (i.e. areas with zigzag patterns). This was observed during the PM peak hour, when congestion created long queues. A passenger was seen getting off the bus and across the cycle track without looking for approaching cyclists.


### Suggested Countermeasures

Consider revising the sign pictogram to clearly indicate that the message relates to pedestrians getting on an off buses.

As opposed to zigzag pavement markings, consider pictographic pavement markings (e.g. yield sign pavement markings, “watch for pedestrians” message markings, etc.)

### Location

| | |
|---|---|
| **Client Response** | The signs and markings implemented at this location are based on the design that the City of Ottawa was using while the Main Street facilities were being designed. Since this time, there have been changes made to the standard design that the City uses. OC Transpo is currently finalizing the recommended standard design. The input received at this location will be provided to OC Transpo for their information in creating the new design standard.<br><br>**The City will consider updating the signs and markings where the cycle track interacts with bus stops, at a time when reconstruction is taking place, or sooner if funding becomes available.**<br><br>If concerns regarding bus passengers and cyclist conflicts persist, the City may employ education or enforcement at specific locations. |

## Finding #15: Inappropriate Cyclist Behaviours – Severity Rating: Medium

### Description

Several cyclists were observed riding on the sidewalk and travelling the wrong way on the provided cycle tracks, as well as crossing Main Street using crosswalks without dismounting. One cyclist was asked if there was a specific reason why they preferred using the sidewalk in the opposite direction of the cycle track, and she indicated that it felt safer than riding under the construction scaffolding on the east side of Main Street, near Oblate Avenue.

Other inappropriate cyclist behaviours included disobeying the red light at bicycle signals. This was observed at several locations within the study area, with one of the most critical locations being the southbound approach to Riverdale Avenue, where the downgrade can encourage high bicycle speeds.


### Suggested Countermeasures

Under the Ontario Highway Traffic Act, cyclists must obey their traffic signals, and are not allowed to ride on crosswalks. Additionally, cycling on the sidewalk is prohibited by the City of Ottawa Traffic and Parking By-law, except where it is permitted by official or authorized signs. Consideration should be given to conducting targeted cyclist enforcement and education to reduce these occurrences over time.

### Location

| | |
|---|---|
| **Client Response** | Cycling behaviours were also identified as a priority item in the written feedback received from the Old Ottawa East Community Association, as were pedestrian behaviours and motorist behaviours. **The City will employ ambassadors in Spring/Summer 2019 (near the start of the next cycling season) in order to help emphasize the purpose of various cycling facilities.** If required, enforcement may be requested in the future. |

## Finding #16: Location of Bike Box Creates Conflict Points – Severity Rating: Medium

### Description

Bike boxes are provided at the intersection of Main Street and Lees Avenue to assist cyclists to turn left from Main Street onto Graham Avenue. The bike box is located between the stop bar for motor vehicles and the crosswalk on Lees avenue. This configuration requires cyclists to move across the pedestrian path, across the crosswalk to get to the bike box.

Additionally, the right-turn volumes from Lees Avenue onto Main Street are high during the peak hours and, most of the time, vehicles stand on the bike box while waiting to turn right-on-red. This configuration creates conflicts between cyclists and pedestrians, and between cyclists and motor vehicles.

A similar configuration exists at Bower Street/Beckwith Street; however, the potential for conflicts is lower due to the lower volume of vehicles and pedestrians.


### Suggested Countermeasures

The crosswalk on Lees Avenue can be shifted east, such that a bike box can be accommodated between the northbound cross-ride and crosswalk. This treatment is similar to what is used at the intersection of Laurier Avenue West and Bank Street. Alternatively, restricting right-turn-on-red from Lees Avenue can also be considered; however, this would not address potential conflicts between cyclists and pedestrians or capacity constraints for vehicles.

### Location

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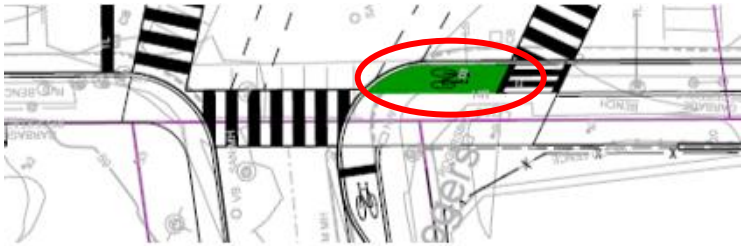
|---|---|
| **Client Response** | This location of the bike box was selected during the design process for a number of reasons. Benefits of the bike box location include:<br>• The bike box serves both as a facility for cyclists making a northbound left turn, and as a facility for cyclists travelling westbound on Lees Avenue.<br>• Cyclists waiting in the bike box are protected from through (northbound) traffic on Main Street.<br>• Cyclists waiting in the bike box are protected from the sweeping path of southbound left turning vehicles on Main Street (turning onto Lees Avenue)<br>• The location of the bike box allows for cyclists to be detected using the same loop system as westbound through vehicles on Lees Avenue.<br><br>**The City will monitor operations to identify whether "no right on red" should be provided.**<br><br>Additionally, it should be noted that during a public meeting with the Old Ottawa East Community Association, it was noted that there is general misunderstanding of what regulations are in place regarding motorist and cyclist rights at intersections (signalized or stop-controlled) with a bike box in place. **The City will employ ambassadors in Spring/Summer 2019 (near the start of the next cycling season) in order to help emphasize the purpose of various cycling facilities. Additionally, the City will continue to consider city-wide and site-specific education programs and initiatives which will help all road users to understand various design components, particularly when a new design concept is introduced.**<br><br>Feedback received from the Community Association also suggested that "the box remain but that the turn arrow be removed and that signs be posted on Lees about yielding to cyclists for right-hand turns." **The City will review this suggestion from a site-specific stance as well as in terms of policy.** |

## Finding #17: Unclear Indication of Start of Cycle Track – Severity Rating: Medium

### Description

The southbound Main Street cycle track begins at Graham Avenue. The design drawings indicate green coloured pavement at the southwest corner to show where cyclist should enter the cycle track. However, the actual field condition does not include the coloured pavement. The start of the cycle track appears to be a regular sidewalk. During the site visit, cyclists were observed riding on the crosswalk and part of the sidewalk before getting to the cycle track.



### Suggested Countermeasures

Provide coloured pavement (per the design drawing) to clearly indicate the start of the southbound cycle track at Main Street & Graham Avenue.

Alternatively, provide a southbound cross-ride with an overhead bike signal indicator, similar to the northbound direction.

### Location


| Client Response | Based on our current design practices, this section of cycle track would typically be asphalt rather than concrete. Given that it is not cost effective to remove the concrete and replace it with asphalt, **the City will add green thermoplastic paint to this location to help delineate the cycling facility.** |
|---|---|

## Finding #18: Faded "Sharrows" – Severity Rating: High

### Description

At the northernmost section of the study area, cyclists share the road with motor vehicles. "Sharrow" pavement markings are provided to indicate the shared condition; however, several of these markings are significantly faded.

### Suggested Countermeasures

Ensure pavement markings are maintained throughout the year to indicate to drivers and cyclists the shared condition of the roadway.

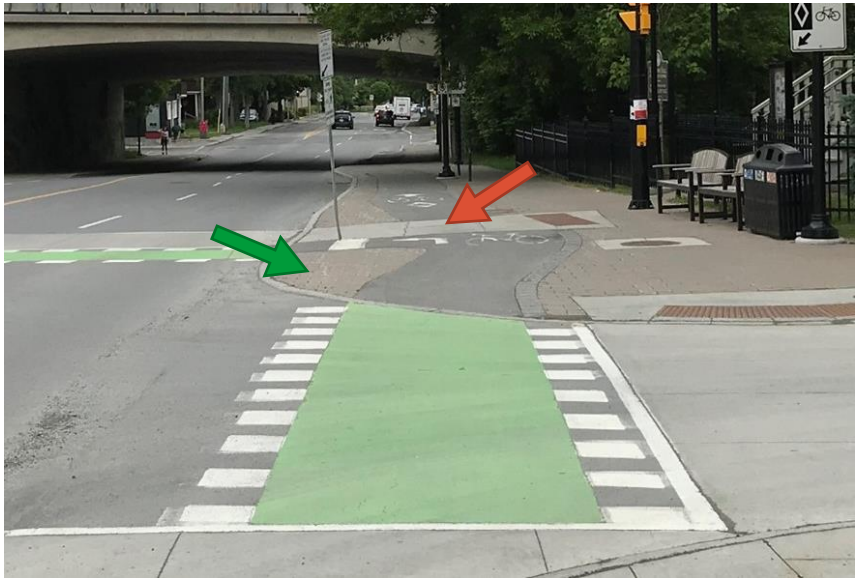
### Location


| Client Response | These markings are already be included in the City's annual pavement marking maintenance schedule. |
|---|---|

## Finding #19: Left-turning Bicycles May Block Through Bicycles – Severity Rating: Medium

### Description

A stop bar and a left-turn arrow are painted at the northeast corner of Main Street & Hawthorne Avenue, to indicate where left-turning cyclists should stop before crossing Main Street. The waiting area provided is not long enough to accommodate the full length of a bicycle. As such, cyclists stopped while waiting to turn left may block cyclists who want to go through at this location. This may result in northbound cyclists to swerve right and encroach on the sidewalk to avoid waiting northbound left-turning cyclists.



### Suggested Countermeasures

Consider rearranging the configuration in this area. Potential modifications include moving the stop bar closer to the curb and/or modifying the area indicated by the green arrow in the picture to the right, using green coloured pavement, to better define the left-turn waiting area.

### Location


| | |
|---|---|
| **Client Response** | The stop bar will not be moved closer to Main Street since a certain amount of clear space should be provided between the roadway and the stop bar (in order to ensure that cyclists do not encroach on the roadway when they do not have right-of-way). No changes are recommended to the "eyebrow" island (shown by the green arrow) since this is considered and essential component of protected intersection design and because cyclists would not be angled appropriate to see the traffic light if they were located where the eyebrow island currently exists. Additionally, it is not feasible to shift the cycling facility further east (to obtain more room for cyclist storage) since there needs to be adequate space for pedestrian facilities. Consequently, there is considered to be no extra space available to provide additional storage for turning cyclists. Cyclists approaching this location are expected to yield to any cyclist that is ahead of them. |

## Finding #20: Short Section of Cycle Track Near Bus Stop – Severity Rating: Extreme

### Description

A very short section of cycle track (approximately 10 metres) is provided on the north side of Hawthorne Avenue, immediately west of Main Street. A bus stop is located west of the termination of this cycle track section. Buses were observed encroaching this cycle track with the front overhang when completing a northbound left-turn from Main Street.

Additionally, multiple cyclists were observed not using this cycle track (either riding on the sidewalk or on the roadway). Potential reasons for this are; there is no cycle track on Main Street southbound, and using the cycle track may be uncomfortable for cyclists, as the cycle track is raised and depressed over a short distance.

### Suggested Countermeasures

Consider extending this section of cycle track. However, this would require moving the existing bus stop further away from the intersection. Alternatively, the cycle track could be removed and replaced with sharrow pavement markings, which will better indicate to cyclists and drivers that these modes are mixed on Hawthorne Avenue.

### Location


| Client Response | The cycle track is planned to be extended (further west) with the upcoming Hawthorne Avenue project. The comments above, as well as the comments provided by the Old Ottawa East Community Association, will be forwarded to the City's Project Manager for the Hawthorne Avenue Project, as well as to OC Transpo. |
|---|---|

## Finding #21: Tight Turning Radii and Building Setback – Severity Rating: Extreme

### Description

The tight turning radius for the eastbound right-turn at Hawthorne Avenue & Main Street, combined with the short building setback results in a small pedestrian refuge area. This may result in heavy vehicles mounting an occupying the small pedestrian refuge area to complete an eastbound right-turn at this location. The Main Street road sign was observed to be bent, likely as a result of a heavy vehicle encroaching the sidewalk.

### Suggested Countermeasures

Subject to traffic operational analysis, consider providing a curb extension/bulb-out to increase the size of the pedestrian refuge area on the southwest quadrant of the Main/Hawthorne intersection. This will require eliminating either an existing westbound travel lane or the auxiliary eastbound right-turn lane on Hawthorne Avenue.

Additionally, at the time of redevelopment, consider increasing building setbacks for the property located on the southwest quadrant of the Main/Hawthorne intersection.

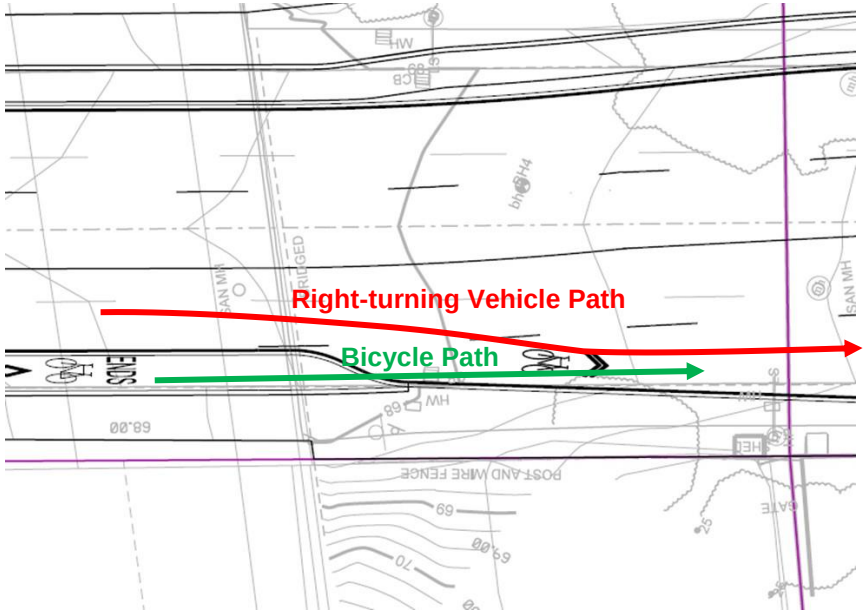
### Location

| | |
|---|---|
| **Client Response** | It should be noted that the feedback received from the Old Ottawa East Community Association indicated that the community does not agree with the comment above with regard to increasing the building setbacks for 62 Hawthorne Avenue at the time of redevelopment. The community Association also does not appear to agree with the recommendation to provide a bulb-out (due to existing geometry). This section is considered a constrained area and therefore there are no countermeasures being considered. **The City will review 3-year collision history (once available) to identify if there are collision trends that could be mitigated.** |

## Finding #22: Short Section of Cycle Track Near Lane Change Location – Severity Rating: Extreme

### Description

A short section of cycle track (approximately 50 metres) is provided on the west side of Main Street, between Harvey Street and Hawthorne Avenue. This cycle track is interrupted, approximately 40 metres in advance of Hawthorne Avenue, and after this point, cyclists share the road with motor vehicles. At this same point, the roadway is widened from 1 to 2 southbound general purpose lanes, and motor vehicles can be expected to change lanes. Drivers may not be fully aware of the interruption in the cycle track, and may not expect cyclists to enter the general purpose lane, which could contribute to sideswipe or rear end collisions.




### Suggested Countermeasures

Consider removing the cycle track on Main Street between Harvey Street and Hawthorne Avenue, and replacing it with a bicycle lane, on grade with general purpose lanes. By providing proper pavement markings and signage, driver awareness can be increased and potential conflicts can be reduced.

### Location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|---|---|
| **Client Response** | Upcoming reconstruction of Main Street (from under Highway 417 to Colonel By Drive) will allow for the off-road cycling facility on the west side of Main Street to be extended further north (towards Colonel By Drive). Current plans do not however include extending the cycling facility further south, presummably due to space constraints. The comments proivded above, as well as all comments received from the Community Association will be sent to the City's Project Manager for the Greenfield reconstruction project. |

## Finding #23: Contradicting Signage, Pavement Markings and Poor Pavement Conditions – Severity Rating: Extreme

### Description

On Main Street, north of Harvey Street, a sign is provided in the northbound direction indicating that motor vehicles and bicycles should move in single file. However, the "sharrow" pavement markings are located on the right side of the lane, near the curb. The curb lane also requires motor vehicles to turn right at the intersection of Main Street & Greenfield Avenue; however, cyclists can proceed through the intersection from the curb lane (e.g. the "sharrows" continue north of Greenfield Avenue). This can create conflicts between right-turning motor vehicles and through bicycles.

Additionally, the pavement at this location was also noted to be in relatively poor conditions (e.g. pot holes) and given the sidewalk surface treatment is asphalt, cyclists were typically found riding on the sidewalk (i.e. because the sidewalk is not concrete, it looks like a cycle track).


### Suggested Countermeasures

Relocate sharrows to the centre of the lane. It should be noted that this lane is approximately 3.2 metres wide, which makes it a narrow lane according to Ontario Traffic Manual. In these cases, sharrows should be painted at the centre of the travel lane. The "sharrows" should also be carefully positioned in order to not interfere with the existing right-turn arrow pavement markings.

Repair damaged asphalt to create a smooth surface for cyclists and consider upgrading the sidewalk surface treatment to concrete.

### Location

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|---|---|
| **Client Response** | Note that asphalt condition and cycling facilities will be addressed during the Greenfield reconstruction project. **In the interim, the City may repaint the sharrows centered in lane (depending on timelines).** |

## Finding #24: Sharrow Pavement Marking on Painted Island – Severity Rating: Extreme

### Description

On Main Street, north of Grenfield Avenue, a sharrow pavement marking is located within a painted island (used to indicate to drivers that they should keep left). This may be confusing for some cyclists, who may swerve left, into the general-purpose lane, to avoid the painted island.

### Suggested Countermeasures

Remove the painted island. Additionally, in order to indicate to drivers that they should keep left, the painted island can be replaced with green coloured pavement and bicycle lane pavement markings in accordance with Ontario Traffic Manual.

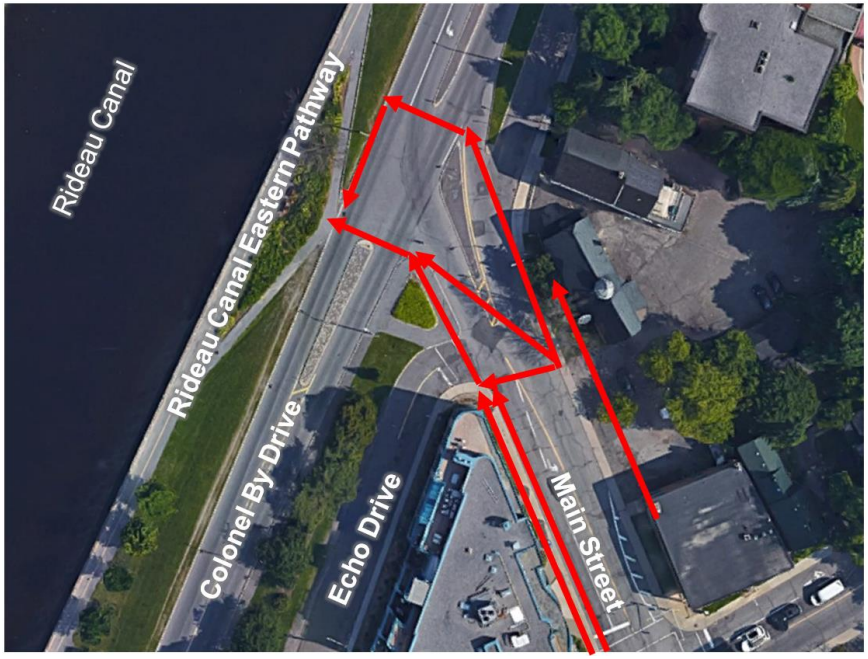
### Location


| Client Response | Note that cycling facilities in this area will be addressed during the Greenfield reconstruction project. **In the interim, the City may remove the painted island and leave a sharrow in place at this location (depending on timelines).** |
|---|---|

## Finding #25: Absence of Bicycle Crossing Facilities / Guidance at North End of Study Area – Severity Rating: Extreme

### Description

The Rideau Canal Eastern Pathway is located across from Colonel By Drive, and is expected to be used by cyclists. However, there is no guidance or crossing facilities to indicate where cyclists should cross. As a result, several cyclists were observed riding on the sidewalks on Main Street, including in the opposite direction of traffic (e.g. riding northbound on the west sidewalk or on the roadway). The figure illustrates observed northbound routes that cyclists used to cross Colonel By Drive, some of which exposed them to motor vehicle traffic.




### Suggested Countermeasures

Consider reviewing the intersection configuration to reduce its complexity and provide a safe and convenient connection between Main Street and the Rideau Canal Eastern Pathway.

A possible solution is to provide separate north and south cross-ride crossings that provide direction connections to/from the Rideau Canal Eastern Pathway, as opposed to a single access/egress point. However, given the substantial complexity of this intersection, a more detailed study is recommended to determine the most adequate solution. This may include reviewing operational impacts of potential modifications.

### Location


| Client Response | Access to the Rideau Canal Eastern Pathway will be considered during the Greenfield reconstruction project, depending on funding and NCC approval. |
|---|---|

# A

# Appendix A
# Community Input

# A. Community Input

The following text was provided by the Old Ottawa East Community Association in response to the Road Safety Audit:

**Report on Walk-About for Main Street Safety Audit**

The walk-about along Main Street took place on Tuesday, October 2, 2018 starting at 6:00 PM from Brighton Beach Park. While there was a light rain, the group decided to proceed anyway because Wednesday also had a forecast of showers. As we proceeded north from the point of Finding #1, the group lost and gained members as others came to participate.

We observed each of the points of the twenty-five findings in the draft report from CIMA to the City, and then considered the consultant's recommendation for each. Based on a presentation from City staff at the September OOECA meeting, we already had a good indication of how the City intended to reply in its formal responses to each. In most cases, the group consensus was in agreement with both the consultant's recommendations and the City's proposed responses. There are some general comments at the end but additional information or disagreements are highlighted below for each Finding:

Finding #1

**Trucks encroaching on bicycle lane off Galbraith Bridge**; we did not observe any large trucks during the walk-about and the flex-stakes certainly keep vehicles wide on the northbound curve down to Main Street. The cycling lane was not viewed as being impeded. We also considered that, in the winter when stakes are removed and there are snowbanks on the roadside, this finding may be more relevant and the City needs to monitor this area during those months when there are no flex-stakes protecting the cycling lane. We had no data about cyclist volumes in winter months.

Finding #2

**Reserved cycling lane signs points to the pedestrian sidewalk at Toronto Street**; we agree that a simple relocation of the sign as recommended should suffice.

Finding #3

**The second southbound lane ends before Centennial Boulevard so that any left-turning cars could block all traffic**; then, the consultant's recommendation and solution were complex and we viewed that there was insufficient room to retain a through right-lane past Centennial without major infrastructure re-working and pushing back the barrier wall at the hydro transmission station. We observed cars readily turning left onto Centennial which has one-way lanes along a boulevard but the situation might be quite different during rush hours. Vehicles entering this neighbourhood south-bound do not have a choice to use Elliot since left turns there are prohibited and physically blocked. While closer to the Riverdale intersection, Elliot could have room for a left-hand turn lane and we questioned why left turns had been blocked in the complete street design. Further we noted that the white (mandatory) 'no left turn' sign on the west side of Main at Elliot was blocked by the yellow (advisory) lane-merging sign and this could be a more easily accomplished adjustment.

Finding #4

**The offset bicycle [and pedestrian] crossing southbound at Main and Riverdale makes it difficult for right turning drivers southbound on Main.** The recommendation is complex. We observed that the S-bend in the pathways (for both cyclists and pedestrians) swings the wrong way such that cyclist in particular would be turning their backs to the intersection as they approach rather than facing it and seeing cars coming to turn. We agreed that if the S-bend had been designed in the reverse then the swing (in theory to slow cyclists coming downhill) would bring the riders back towards the intersection both **i)** closer to the turn where they might more readily be observed by vehicles southbound on Main and **ii)** facing towards the intersection corner so that they might more readily observe cars switching to the turning lane off Main. Such a reversal of the S might also make access to Mutchmor Road a bit easier for southbound cyclists. There seems to be no reason for a matching S-bend going south on Main from Riverdale (along the west side of Main towards the transformer station) except that it was needed to align with the counterpart coming down from the north. That creates a concern for eastbound cyclists and pedestrians from Riverdale either crossing Riverdale going north, or crossing Main going east.

Finding #5

**The northbound left-turn lane on Main at Riverdale creates potential conflicts with southbound cyclists** [and pedestrians from both directions, although not included in the consultant's note]. This finding was similar to #4 – cyclist and pedestrians have their crossing set back about four meters from the corner such that vehicles with drivers' views fixed on the southbound roadway ahead are often into the intersection and turning before the cyclists and walkers are readily visible at which time the vehicle is usually committed to completing the turn. We noted that the advanced-green arrow for left turns is not a 24/7 feature but that that walk signal was synchronized with the advanced-green when it was working (we think prior to 6:30 PM). We agreed that re-aligning the S-bends and bringing their end points closer to the intersection would improve sight-lines and visibility for all. Additional signage on northbound Main to alert left-turning drivers to yield to cyclists would also help. A 24/7 left-turn signal based on roadway pressure sensors might also aid in having a more consistent set of light synchronizations throughout the day and night.

Finding #6

**Keep right sign for cyclists at north side crossing of Main at Riverdale**. We agree with the recommendation that a simple addition of a sign facing east would deal with this issue. However, the two white stop bars for southbound cyclists are right in the middle of the east-west cycling path which could create a blockage of cyclists waiting to cross Riverdale while others were coming through either westbound from across Main or eastbound down from Mutchmor (they shouldn't be coming down Riverdale on that side).

Finding #7

**Sign on the cycling path partially blocks both east bound and southbound cycling paths**. We agree that simply moving the sign to a more appropriate place on this intersection would suffice.

Finding #8

**Light fixture encroaching on cycling path**. We did not fully agree with the recommendation to just remove the fixture. This location needs a review of overhead lighting requirements and then this steel light post might be considered for simple removal if a City light on the nearby hydro pole proves to be sufficient.

Near this location, we observed that the storm drain on the west side between #296 and #300 Main Street was elevated such that the curb does not drain at this location and even a light rain causes a significant buildup and a risk of splashing pedestrians.

We also observed at #252 that the sidewalk pavers were uneven, there was a water filled depression and a tripping hazard. It might also prove to be a hazard for strollers or for the mobility-impaired.

Finding #9 and 10

**Bike box [green] used with stop control at Herridge intersection**. This T-intersection is not controlled with signal lights. There is no opportunity for cyclists to advance in preference to vehicles so they should be treated like a road vehicle at this intersection. One of the main entrances for St. Paul's is directly across Main Street from where Herridge comes to a T and there are several bicycle racks on university property that would attract cyclist to come across at this point. We saw no reason why southbound cyclist would not otherwise cross at Hazel or then Clegg where there are signals-controlled intersections, and that there would be limited west-to-east cycle traffic on Herridge to require either a special cycle box or a controlled crossing.

Finding #11

**Bicycle signal heads and signage are obscured by other signage at Hazel**. While we agreed with the recommendation about improving sign placements, we wanted to make sure that these placements are consistent along the complete-street concept and also consistent with the City's communications strategy. Cyclist signage beyond an intersection (that is, the next-nearest pole was <u>after</u> the critical turns) needed to be reconsidered for placement in advance of these potentially conflict locations.

Finding #12

**Tree branches encroached on cycling lane signage** on southbound lane near Watson's Pharmacy. Indeed, we viewed that the sign was completely covered by new sunburst locust and mountain ash growth but the sign was really not in a place more normally visible to cyclist anyway. We would suggest moving the sign left to the side of the cycling lane where it might better be observed by both cyclist and southbound vehicles.

Findings #13 and #14

There appeared to be **cluttered signage near Oblate Avenue for southbound traffic**. We observed this area to be contentious as a start to a section where buses stop and park for school students along the west side of Main from Canadian Martyrs Church down to Oblates left-turn lane. Stopping (OC Transpo buses and parents in their vehicles) in this area blocks Main down to one lane with traffic pushed into the left-turn lanes at Springhurst and then Oblates with the expected frustration and entitlement-road-rage ensuing when left-lane drivers attempt to re-merge to the right ongoing lanes. We were of the view that the street design had not accommodated school-bus pick-up during peak commuter hours. Notwithstanding, there is no aspect of "traffic calming" in the next two blocks. As we commented

below, creating green bars on the sidewalk margin at the Immaculata bus stop would signal to pedestrians that they are stepping across a cycle route to get to waiting buses. The zigzag sharrows on the cycle route need to be better socialized in City advertising. We observed cyclist regularly failing to stop at either Evelyn or Lees southbound (and at least one travelling northbound on the west side) when the lights on Main were red at those intersections and the cycle signs were equally red but ignored.

Finding #15

**Inappropriate cyclist behaviour at Evelyn.** As we noted below and caught up in general comments, better and more consistent ground-based signage might help in this situation; but, there are always scofflaws including those who ride up the wrong way on the cycle tracks because it is more convenient for them and there is no enforcement. The use of Graham as a cyclist-preference track was considered relative to using Hawthorne or even Clegg to get to Colonel By and Pretoria and, from a Main Street perspective, Graham was the least favoured. See the next Finding below.

Finding #16

**Location of Bike Box at Lees creates conflict points.** The position of the turn-waiting box on Lees has a number of problems including causing turning cyclists to have to cross a pedestrian sidewalk and to then turn and wait with their backs to oncoming westbound traffic from Lees, effectively blocking a right turn lane. The effect is supposed to be to allow cyclists to cross over to Graham more safely as the light changes. At this point we gained a member for Cycling Ottawa who provided other insights. We viewed that Graham is likely not the best route to try and attract turning cyclists especially those headed for Pretoria Bridge or Colonel By and that either Clegg further south or Hawthorne at the next set of lights would be better and safer routes. The rationale we heard was that Graham then requires, at its west end, cyclists to cross two lanes of traffic on northbound Colonel By as there is no direct bike route after the dead-end on Echo, and vehicles are busy trying to turn right onto Hawthorne or to proceed straight while the left lane is blocked for left-turning traffic. A bike box may still be useful to protect cyclist arriving westbound on Lees so we suggested that the box remain but that the turn arrow be removed and that signs be posted on Lees about yielding to cyclists for right-hand turns.

Finding #17

**The start of the southbound cycle track at Graham in not clearly indicated.** We agree with the recommendation that the re-start of the west-side (southbound) cycle pathway at Graham should be indicated with green-coloured pavement. The track exists off and on north of Hawthorne under the Queensway bridge but then disappears as Main broadens to four lanes and there is no room along the west-side curb by the fitness studio and OCBC.

Finding #18

**Curbside sharrows are faded from the Queensway underpass to Graham**. These road markings are supposed to alert motorists that they are sharing a lane with a cycling pathway but were noted to be so faded that their value was much diminished. We agree with the recommendation that these needed to be constantly maintained by the City until such time as a better solution can be obtained when the two adjacent projects are being designed: namely, Greenfield/North Main and Hawthorne complete street. Nevertheless this is an area for north-south cycling traffic that remains problematic for safety concerns.

Finding #19

**Left-turning cyclists at Hawthorne (north side) may block through northbound bicycle traffic.** This issue is directly in front of the old City Hall but there were other concerns viewed – we saw several cyclists coming southbound on this northbound side since there is no continuous cycling pathway on the west side. One cyclist indeed turned at Hawthorne and proceeded properly further south on the west side of Main while the other continued south on the wrong side and out of sight past Lees. Neither had lights and it was getting dark.

There is some room at this intersection for minor modifications but this would be a good place to indicate to cyclists with pathway markings that they are approaching an area of potential conflict and also to mark edges of the pedestrian walkways with a green bar so that walkers can more readily see that they are stepping across a cycling pathway.

Finding #20

**A short section of cycle track runs along Hawthorne westbound from Main but is cut off by a bus stop**. We observed that buses turning from Main onto Hawthorne routinely swing into this cycling lane but also do not fully clear the intersection at the designated stop such that both westbound lanes on Hawthorne can be blocked by the bus' rear-end. This is a strange finding and also off the beaten path for a Main Street audit and should perhaps be included in the design issues for Hawthorne complete street. Given that there is usually parking further up Hawthorne (except during rush hours) this early lane entry for a cyclist seems to be only problematic for westbound buses but its backup effect can be clearly seen during rush hours along Main.

Finding #21

**The tight right-hand turning radius combined with limited set-back for existing buildings at the corner of Main and Hawthorne creates a serious hazard for pedestrians** attempting to cross either from Main Street north towards Gordon's or across Main where Hawthorne jogs. We observed that a time-limited advanced green for turning may also create expectations for vehicle drivers, coming east on Hawthorne, of a right-of-way over pedestrians at all times. We further observed that this was simply an issue of obeying the normal rules of the road (or rather of not obeying them). The recommendation for a curb bulb-out we saw as being impractical for this as a bus route (cars stopped over the designed line then need to back up or divert by pulling to the side to allow buses to negotiate this intersection); and then, set-backs for signals stops would need to be increased – they are largely ignored anyway, especially by buses and cars already committed to turn across this intersection – we observed as many as five vehicles continuing to turn well after the lights had turned red. We did not agree that future redevelopment would need to specify deeper building set-backs at this corner.

Findings # 22 to 25

We noted that this area of Main Street north from the Queensway underpass has **a number of issues and complex arrangements** that the City and designers need to address during the major reconstruction of Main North and Greenfield Avenue scheduled to be undertaken within the next eighteen months. While both surface and buried infrastructure are currently over-stressed in this neighbourhood of Old Ottawa East, future-looking street design to accommodate pedestrians, cyclist, commuter and tourist motorists, as well as heavy construction vehicles and other commercial uses all need to be considered.

Current roadway infrastructure is inadequate and at times the surface conditions are dangerous to cyclists travelling north on the east side of Main towards Greenfield. Access to the Rideau Canal Eastern Pathway appears to be paramount but is currently severely limited: there is no easy or safe route across Colonel By Drive at the north end of Main. However, without an adequate review-by-destination survey we have no clear idea about where our various travelers intend to go, nor a clear understanding about from where. Creating a new crossing of Colonel By Drive at the north end of Main Street does not, to us, seem to be responding to a clear and solid understanding of where various travelers through Old Ottawa East intend to go – morning and then in the evening. We will be party to the Greenfield rebuilding project and need to have a better expression of current issues and future needs to feed into the City's consultative process and these remaining Findings and Recommendations (#20-25) are therefore seen to be somewhat stillborn until the larger and overall routing processes are agreed upon by the City.

**General Comments**

While the walk-about was underway, in the period of about an hour and a half, we observed a large number of infractions by cyclists, vehicles and pedestrians all of which served to put one or the other among them at some risk but not because of road design or signage issues – the terms knuckleheads, idiots and jerks were too often heard, with reference to drivers, cyclists and walkers alike. These were concerns for education and enforcement.

The road and sidewalk markings were not always consistent. We suggest that at any place there is a potential conflict between the different modes of transportation, there should be something on the surface to alert <u>both</u> parties of the conflict. For example, wherever a sidewalk or bus-stop pad would require pedestrians to cross a cycling path, there should be a green bar on the edge of the cycle path, as there is at the entrance to the Cuban embassy compound, or at the Canadian Martyrs residence. Similarly, where cyclists are about to cross such a sidewalk intersection there should be some indication painted on the pathway. Stop lines for cyclists at lights should be more evident and consistent. There are some bike boxes (waiting areas) set in line with the cycling path such that cyclists waiting for a light could be blocking through bicycle traffic on the dedicated pathway. If these cannot be relocated, then some kind of on-path sign needs to alert cyclists to an approaching conflict area.

Signage for yielding to cyclists at right turns is not consistent in either location (for example, none on westbound Lees) or common positioning on poles so that drivers could look in a familiar and constant place at each signed intersection. (See Finding 12)

We would suggest that all of these road-painted signs and signs on posts should be continuously socialized through City advertising campaigns.

The timing and synchronization of signals at various intersections to allow a steady north south flow, especially during rush hours was a separate issue and not part of the audit. This request for priority flow needs to be tempered we saw, with both vehicle and pedestrian triggered light changes and it was evident that some have relatively long lag times, especially at Evelyn before the flow along Main is stopped – we thought this might tempt impatient pedestrians to make a dash across because of this long lag.

# B

Appendix B
City Response to Community Input

## B. City response to Community Input

The Old Ottawa East Community Association written feedback was taken into account when formulating the client response. In addition to the actions identified in Main Street RSA, the City will also initiate the following actions in response to community input:

- On the west side of Main Street, south of Riverdale: Move the “no left turn” sign to a separate pole than the “lane ends” warning sign.
- Near 296 Main Street: Review drainage & ponding
- Near 252 Main Street: Review condition of sidewalk (settled pavers).
- Review operations near Immaculata High School with regard to school bus pick-up/drop-off.
- Review concerns expressed regarding signal timing, particularly at Evelyn.