22 May 2015

Technical Memo to File

Subject: O'Connor Street Bikeway Project – Transportation Impacts

This memo summarizes the transportation impacts for the proposed O'Connor Street Bikeway proposed from Wellington Street to Fifth Avenue. The plan will introduce a bi-directional segregated cycle track along O'Connor Street from Wellington to Pretoria, bike lanes between Pretoria and Strathcona, and shared-use lanes between Strathcona and Fifth. It will provide safer and more attractive cycling and pedestrian environment during the entire day, but it will increase vehicle travel times and traffic queues along the corridor during the afternoon peak traffic period. The design strived to find the best balance between competing needs, and this summary report highlights the most important outcomes of the proposed design from a transportation operational impacts perspective. The project consultant, Parsons, has prepared a detailed traffic study report that has been provided to the City and provides further details of the vehicle traffic operational analysis.

Pedestrians

The recommended plan for the Bikeway does not propose any significant changes to the existing curbs, with the exception of a short segment of O'Connor Street between Catherine and Isabella Streets where the road will be widened to maintain three southbound vehicle lanes; as a result, there is no reduction to or encroachment on existing pedestrian sidewalks. The addition of the Bikeway will result in several indirect benefits for pedestrians including:

- Improved comfort and safety for sidewalk users by increasing the separation from motor vehicle traffic and reducing pedestrians' exposure to the splash zone of passing vehicles (along the east side between Wellington Street and Strathcona Avenue);
- A new pedestrian crosswalk on the east leg of the O'Connor Street / Isabella Street intersection so that pedestrians can cross on their own signal phase

City of Ottawa
Planning and Growth Management
110 Laurier Ave. West, 4th Floor
Ottawa, ON K1P 1J1
Tel. : (613) 580-2424 ext.: 28757
Fax: (613) 580-2578

Ville d'Ottawa
Urbanisme et Gestion de la croissance
110, avenue Laurier Ouest, 4e étage
Ottawa (Ontario) K1P 1J1
Tél. : (613) 580-2424 poste: 28757
Télécopieur: (613) 580-2578

separate from the three southbound left turn lanes, and also travel between the Glebe and Centretown without having to switch from east side to west side; and

- Reduced incidence of sidewalk cycling with the provision of a high quality cycling facility.

Cycling

Under existing conditions northbound cycling on O'Connor is prohibited, thus people travelling on bicycles from the Glebe to downtown have to make an approximately 1.3 to 1.4 kilometre (3 to 5 minute) detour along the Rideau Canal pathway if they want to travel away from traffic. With the implementation of the Bikeway, northbound cycling will be provided for, thus in addition to being a safe facility, it will provide time savings.

The Bikeway will also improve the quality and attractiveness of the cycling environment. The 2013 Ottawa Cycling Plan (OCP) defines the cycling Level of Traffic Stress (LTS) as the measure to be used to measure the quality of cycling facilities in areas where high cycling rates are anticipated, including along Cross-Town Bikeways. The lowest stress level (LTS 1) has the highest perceived level of safety and appeals to the widest range of residents, whereas the highest stress level (LTS 4) has the lowest perceived level of safety and appeals to only a very small proportion the population.

The implementation of the O'Connor Street Bikeway will improve the cycling LTS for O'Connor from LTS 4 (high traffic stress) to LTS 2 (relatively low traffic stress). The improvements to the corridor will make travel by bicycle along O'Connor more appealing to a much wider range of the population than under existing conditions. This is required to achieve to City's long term objective of increasing the cycling modal share, which is an increase from 8% to 12% in the inner area.

Under existing conditions, the majority of O'Connor (north of Isabella) is assessed at LTS 4, while the southern section (within the Glebe) is assessed at LTS 2.

The implementation of the Bikeway will improve the cycling LTS to 1 for mid-block locations north of Strathcona, and to 2 for intersections. The improvements planned for the southern section (within the Glebe) will not impact the level of traffic stress score, which will remain at LTS 2.

It is important to note that the improvements to the cycling environment apply for all times throughout the day.

Motor Vehicles

As part of the Study, the project consultant Parsons completed a thorough assessment of the projected traffic operational impact of implementing the proposed Functional Plan, focused on O'Connor between Wellington and Isabella Streets. The scope of this impact assessment was developed with input from representatives of the Ministry of Transportation of Ontario (MTO) and the City of Ottawa.

During most of the day, O'Connor operates well below capacity. Traffic volume in the corridor has one distinct peak during the p.m. "rush hour" (from approximately 4:15PM to 5:15PM). During this time period, some intersections currently operate close to but below capacity. The traffic analysis focused on this time period with the objective of identifying potential mitigation measures. It also looked at the AM peak period to ensure that the potential impacts on the Highway 417 eastbound off-ramp traffic are also addressed. The analysis approach was conservative: in terms of delay, it focused on the worst 15 minutes of the PM peak period; and in terms of queuing, it focused on the 95th percentile queue, which reflects the longest queues that typically last for about 5 minutes during the PM peak hour.

It has been observed during the last 25 years that the overall number of vehicles travelling to downtown has been slightly declining while the number of people travelling to downtown has been increasing. This trend has been observed in the O'Connor corridor as well, which exhibited an 18% decrease in vehicle volumes over 18 years (roughly 1% annually). In addition, similar to other city projects (such as the Laurier Avenue segregated bike lanes project) where there has been a reduction in vehicle capacity, traffic volume reductions can be anticipated both in the short and long term as some travelers shift to other, relatively more attractive modes, change their travel times or change routes. It is reasonable to expect that within the short term there will be a 10% to 20% reduction in vehicle traffic along the O'Connor Street corridor following implementation of the proposed plan. The traffic analysis incorporated this assumption, but to be conservative also considered the scenario where traffic volumes remain unchanged from existing (i.e. zero traffic volume reduction).

Based on the analysis of the proposed corridor, the following are the transportation-related findings of the study:

- With the proposed changes, the increase in vehicle travel time for the corridor is likely to be in the 2½ minutes (plus or minus 1½ minutes) range for approximately 15 minutes during the critical weekday PM peak period.

- Signal timing adjustments at key intersections are recommended to optimise intersection performance and mitigate southbound queuing/delays. Where signal timing, phasing and cycle length changes are proposed, retiming other intersections in the wider street network will be required to maintain signal coordination.

- If traffic volumes do not decrease, the result would be increased queuing and delay for certain movements at some intersections. Specifically, for a number of signal cycles during the 15 minute PM peak period the queues at Somerset Street and Catherine Street may not clear and potentially spill back through the adjacent intersections to the north, and this may last for 3 to 5 minutes as the 95th percentile queue analysis shows.

- With the projected traffic volume reductions, all intersections are projected to operate acceptably during the afternoon peak. Queuing for southbound traffic is expected to occur at Lisgar Street, Somerset Street and Catherine Street (the southbound right-turn lane queue at Catherine Street could extend back to the O'Connor/Argyle intersection, which is currently the case under existing conditions and road geometry).

- The queuing results are an output of the traffic (Synchro) model for average traffic conditions and actual queuing will vary based on the daily variation of traffic volumes and may be higher during short time periods during the PM peak. Also, following implementation and before traffic patterns adjust, longer queues are possible.

- MTO approval requires maintaining acceptable traffic operations for the Highway 417 off-ramps to Metcalfe (eastbound at Isabella/O'Connor and westbound at Catherine/Metcalfe). As such, a three lane southbound approach is recommended at the O'Connor/Isabella intersection in order to provide an additional bike/walk phase along the east side of the roadway, and to minimize the potential for queue spill back from the eastbound off-ramp onto the Highway 417 mainline. No significant issues are anticipated for the westbound off-ramp. In the event of excessive queuing on either of the highway off-ramps, mitigation may include signal timing changes to prioritize off-ramp traffic which could increase

queuing and delays on local streets (e.g. O'Connor, Metcalfe, Catherine and Isabella).

- The addition of the new pedestrian crosswalk on the east side of the O'Connor/Isabella intersection will require a minimum 20-second exclusive bicycle and pedestrian signal phase. This is included in the traffic analysis. The separate bike-pedestrian phase will result in less green time being allocated to vehicle traffic and therefore greater delays and queuing than would occur if no crosswalk were provided.

- It is expected that within six months to a year traffic will adjust to the new configuration and the proposed design will operate efficiently for all users. For the unlikely scenario that this does not happen, sufficient right-of-way should also be protected in the block between Argyle Avenue and Catherine Street to facilitate providing a fourth southbound travel lane in future should the recommended design result in excessive queuing or unsafe behaviour within the shared right-turn lane configuration. The resulting four approach lanes would be similar to the existing configuration.

- There is an existing Police Zone on the west side of O'Connor between Queen and Albert. When implementing Stage 2 of the project after 2017, if it turns out not to be feasible to relocate the Police Zone to Albert Street and it must remain in its current location, there will be additional impacts to traffic during those times when Police occupy the curb lane within the Police Zone. If this occurs during the peak morning or afternoon period, it will result in the Albert Street intersection operating near or at capacity with queuing which may extend beyond the Queen Street intersection. Outside of the peak periods, the traffic impacts anticipated are not significant.

- With the reduction in capacity proposed for O'Connor during the PM peak period, it is expected that some drivers will divert to other routes. In order to estimate traffic volumes diverted from O'Connor to other routes, the City's TRANS Regional Travel Demand Model was run assuming a reduced vehicle capacity on O'Connor. For a potential 20% reduction in traffic volumes on O'Connor, the model results indicate that diverted traffic would be distributed across several southbound road links, notably Lyon Street, Percy Street, Bronson Avenue, Nicholas Street, Elgin Street and Bank Street. The diverted volumes onto each street range from approximately 10 to 40 vehicles per hour, which is not considered to be significant in terms of traffic operational impacts.

The impacts on motor vehicle traffic south of Isabella Street are projected to be negligible because there are no changes proposed to the existing vehicle lanes and intersection configurations.

Public Transit

Minimal impacts to public transit are expected as a result of the implementation of the Bikeway. There are currently no OC Transpo bus routes on O'Connor north of Isabella, and the existing bus route south of Isabella will not be impacted. The design for the Bikeway also accommodates potential future bus routes in the downtown core.

Summary

In summary, implementing the proposed O'Connor Bikeway project has a number of implications. In the short and long term it will significantly contribute to making downtown Ottawa more people-friendly for all times of the day. In conjunction with other planned public transit, cycling, and pedestrian enhancements it will gradually contribute to lower vehicle volumes and lower vehicle travel speeds. However, it will have some negative short term implications on vehicle travel times, especially during the afternoon peak period as commuters leave downtown. This negative implication is expected to decrease over time as the downtown area matures (more residents and employment) and as the quality of public transit, walking and cycling improves.

Regards,

Robert Grimwood

Project Manager, O'Connor Street Bikeway Study

E. robert.grimwood@ottawa.ca

T. (613) 580-2424 x28757