

City of North Bay

Report to Council

Report No: EESW 2018-06
Date: June 5, 2018
Originator: Megan Rochefort
Subject: Algonquin Avenue Traffic Study

Recommendation:

That Council refer Report to Council EESW 2018-06 to Engineering, Environmental Services and Works Committee.

Corporate Strategic Plan

- | | |
|--|---|
| <input type="checkbox"/> Natural North and Near | <input type="checkbox"/> Economic Prosperity |
| <input type="checkbox"/> Affordable Balanced Growth | <input checked="" type="checkbox"/> Spirited Safe Community |
| <input type="checkbox"/> Responsible and Responsive Government | |
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Background:

Algonquin Avenue ('Algonquin') between Highway 11/17 and Copeland Street is an undivided arterial road located in North Bay. This section of Algonquin acts as a connection for a total of 17 urban roads and includes 3 signalized intersections. City sidewalks are located on both sides of the road along its length.

Following requests from the public and Council, Engineering staff conducted an investigation into concerns with this section of Algonquin Avenue. This report summarizes results of the investigation with focus on the following four issues:

1. Pedestrians crossing mid-block near 1221 Algonquin Avenue ('the Medical Building')
2. Algonquin Intersection at Lansdowne Avenue & Norwood Avenue
3. Algonquin Intersection at Front Street & Jane Street
4. Consideration for Speed Reduction to 40km/hr

The above mentioned study boundary is illustrated in Figure 1 – Traffic Study Boundary, for reference.

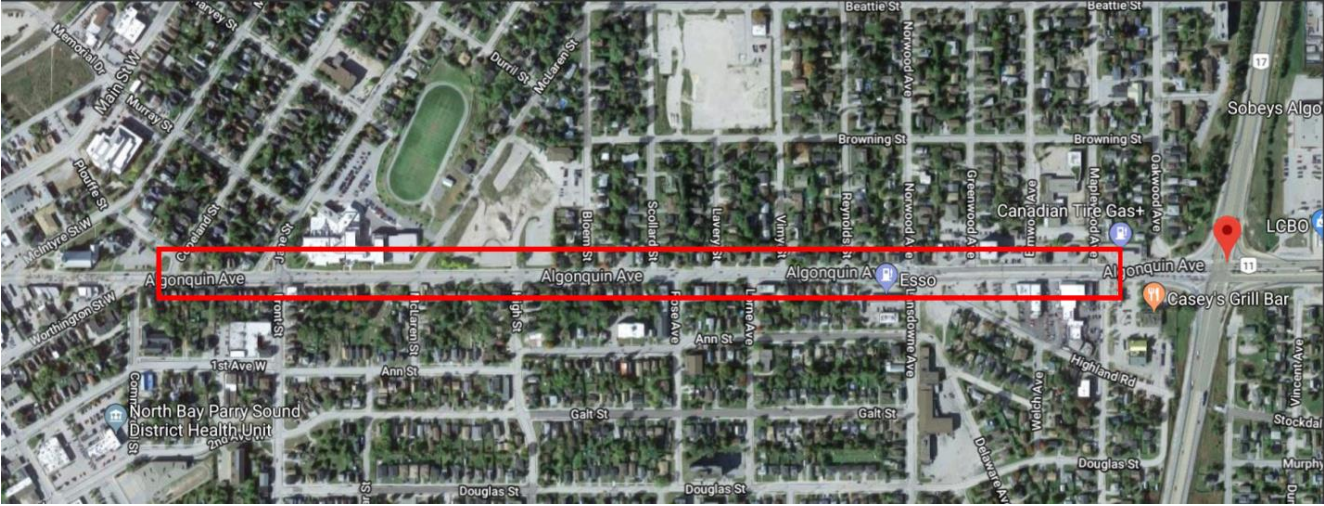


Figure 1 - Traffic Study Boundary

Analysis Summary:

The appendix provides more details on the analysis and methods used. This section provides a summary of the findings.

1. Pedestrians crossing mid-block near the Medical Building on Algonquin Avenue

Due to the proximity to the existing traffic signals at the Lansdowne/Norwood intersection, traffic volume, speed, number of lanes and total road width, the implementation of a pedestrian crossover is not recommended. Measures to mitigate pedestrians crossing at this location include moving the bus stop from this location to the south side of the Lansdowne/Norwood intersection, which encourages people destined for the Medical Building to use the traffic signals to cross Algonquin, as well as the owner of the overflow parking lot at 1212 Algonquin exploring future possibilities to increase parking on the side of Algonquin with the Medical Building.

2. Algonquin Intersection at Lansdowne Avenue & Norwood Avenue

To eliminate left-turn collisions immediately south of the intersection, reduce congestion and rear-ending collisions, the southern intersection median should be extended by 22m. This will increase the volume of left turning traffic at the intersection therefore the intersection timing could be altered for a longer protected left-turn.

3. Algonquin Intersection at Jane Street and Front Street

The majority of collisions occurring at the intersection are due to left-turning traffic from the northbound and southbound lanes. In order to reduce the frequency of this type of collision occurring, dedicated left-turn lanes would need to be provided on both northbound and southbound approaches along with a protected left-turn traffic signal phase. Capital funds will be required to purchase

additional City land, design and reconstruct the intersection.

4. Consideration for Speed Reduction to 40km/hr

Applicable guidelines such as the Transportation Association of Canada: Canadian Guidelines for Establishing Posted Speed Limits do not recommend a reduced speed on Algonquin Avenue.

Recommendation

That Council refer Report to Council EESW 2018-06 to Engineering, Environmental Services and Works Committee.

Respectfully submitted,

Megan Rochefort, EIT
Engineer in Training

We concur in this report and recommendation.

David Euler, P.Eng., PMP
Managing Director, Engineering

A. Keith Robicheau
Chief Administrative Officer

Personnel designated for continuance: Megan Rochefort
Engineer in Training

Appendix: Analysis

1. Pedestrians crossing mid-block near the Medical Building on Algonquin Avenue

In May 2016, two pedestrians crossing mid-block between Greenwood Avenue and Elmwood Avenue were hit by a vehicle driving northbound on Algonquin Avenue. After the collision, City staff received suggestions from the public to install a pedestrian crossing treatment near the Medical Building on Algonquin Avenue.

1.1 Information on Pedestrians Crossing:

In June 2016, City staff installed traffic cameras for 5 days to count pedestrian traffic crossing Algonquin around the same location as the May collision. Results showed an average 8-hour peak pedestrian crossing volume of 178 people near this mid-block location.

Data showed that most pedestrians crossing Algonquin at this location were travelling to/from a parking lot at 1212 Algonquin to the Medical Building. The parking lot at 1212 Algonquin is owned by a tenant of the Medical Building for purpose of additional parking. The crossing location and both properties described are illustrated in Figure 2 – Pedestrian Desired Crossing Location near the Medical Building.



Figure 2 - Pedestrian Desired Crossing Location near the Medical Building

1.2 Meeting with the Medical Building Management Staff:

On two separate occasions, City staff met with the tenant that owns the

overflow parking lot at 1212 Algonquin Avenue. The tenant was acting as a representative for the Medical Building owners from southern Ontario. During the meetings, it was explained to City staff that the parking lot at 1212 Algonquin is meant to be used as an overflow lot for employees of the Medical Building. The representatives indicated that they would send a notice to staff in the building to remind them to use the overflow parking lot and use the signalized intersection to cross. This would create free space in the main lot at the Medical Building for visitors. Additionally, the representative said they would look to convert some of the existing spots adjacent to the building into accessible parking reserved for seniors. The representative also indicated that they would explore future possibilities to purchase additional land on the west side of Algonquin for parking purposes.

1.3 Pedestrian Crossing Treatment:

City staff has evaluated the feasibility of including a pedestrian crossing treatment at this location. Technical guidelines such as the Ministry of Transportation's Ontario Traffic Manual (OTM) Book 12 (Traffic Signals) and Book 15 (Pedestrian Crossing Treatments) were used. These OTM manuals detail guidelines for the application of pedestrian crossovers (PXO). Additionally, the Transportation Association of Canada's Geometric Design Guide for Canadian Roads Chapter 6 was consulted as a guide on Pedestrian Integrated Design.

In accordance with the guidelines, design factors that are to be considered when assessing a potential PXO are vehicular volumes and speeds, roadway width and number of lanes, stopping sight distance and sightlines, distance to the next controlled crossing, night-time visibility, grade, origin-destination of trips, left turning conflicts, and pedestrian volumes (Transportation Association of Canada, TAC).

A crosswalk would be best located where the greatest volumes of pedestrians are crossing the road (also referred to as pedestrian desire lines). From the data collected in June 2016, pedestrian's desire lines are located less than 100m away from the intersection of Lansdowne/Norwood. OTM Book 12 indicates that pedestrian crossing treatments should not be installed less than 200m away from other signal-protected pedestrian crossings. The 200m separation point would be mid-block between Maplewood and Elmwood, but the distance between this point and the pedestrian desire lines would be the same as the current distance between desire lines and the intersection at Lansdowne/Norwood.

1.3.1. Traffic Volume at Crossing Location:

On Algonquin, the Average Annual Daily Traffic (AADT) count at this location is approximately 16,162 (2018). Studies show that there is a statistically substantial relationship between the pedestrian collision rate and traffic volume. Specifically, at locations with marked crosswalks,

collision rates increase significantly as a function of traffic volume, for AADT's greater than 9,000 vehicles per day (OTM Book 15).

1.3.2. Traffic Speed at Crossing Location:

The speed limit at this location of Algonquin Avenue is 50km/hr. Traffic radars were installed on Algonquin between Norwood Avenue/Lansdowne Avenue and Greenwood Avenue from April 9-11, 2018. The 85th percentile speed (the range of speeds that 85% of drivers are driving at or lower) was captured at 57km/hr. Traffic engineers and public safety personnel have analyzed flow, speed and collision data over numerous years and have determined that the 85th percentile speed is an acceptable speed chosen by drivers using any particular roadway – i.e. the speed they feel comfortable driving at for that specific road environment.

1.3.3. Crossing Distance at Crossing Location:

Studies show that crossing distance has an impact on the likelihood of a pedestrian collision, particularly on roads with higher volumes. With Algonquin being a 5 lane road, pedestrians crossing are exposed to a multiple-threat situation. Collisions involving multiple threats typically occur when the driver and pedestrian fail to see each other because of the sight obstruction created by a vehicle that has already stopped for the pedestrian in another lane. This is why the OTM notes that pedestrian crossings should not be installed on roadways with a more than 4 lanes of two-way traffic or where there are heavy volumes of turning traffic (OTM Book 12 & 15).

1.3.4. Ministry of Transportation:

In the fall of 2016, City staff contacted corridor control at the Ministry of Transportation (MTO) to discuss approvals required for a crosswalk at this location due to the close proximity to the By-pass. Current MTO policies (Building and Land Use Policy, 2009) indicate that the MTO has jurisdiction with changes taking place within a 395m radius from a controlled access highway. As per the policy, permits through the MTO are required for a crosswalk at this location. In order to get permits, a traffic study would need to demonstrate that the crosswalk would have no negative effect on their intersection.

Prior to installing pedestrian crossovers, road authorities must take into consideration numerous factors to ensure that the operation of crossovers do not create notable traffic disruptions (OTM Book 15). At this location on Algonquin, the combination of factors such as the crossing distance, speed, proximity to an existing signalized intersection and the traffic volume does not support the installation of a crosswalk.

With efforts to reduce the number of pedestrians crossing Algonquin near the Medical Building, the northbound City bus stop was relocated on December 4 2017. The bus stop was previously located directly across from the Medical Building. The new location of the bus stop is in front of the Gas Station/Tim Hortons commercial property. By relocating this bus stop, transit users heading to the Medical Building are encouraged to cross at the signalized intersection at Lansdowne/Norwood Avenue as it is the most direct route. An illustration of the previous location of the bus stop and the relocation is found in Figure 3 – Relocated City Transit Stop #1009.

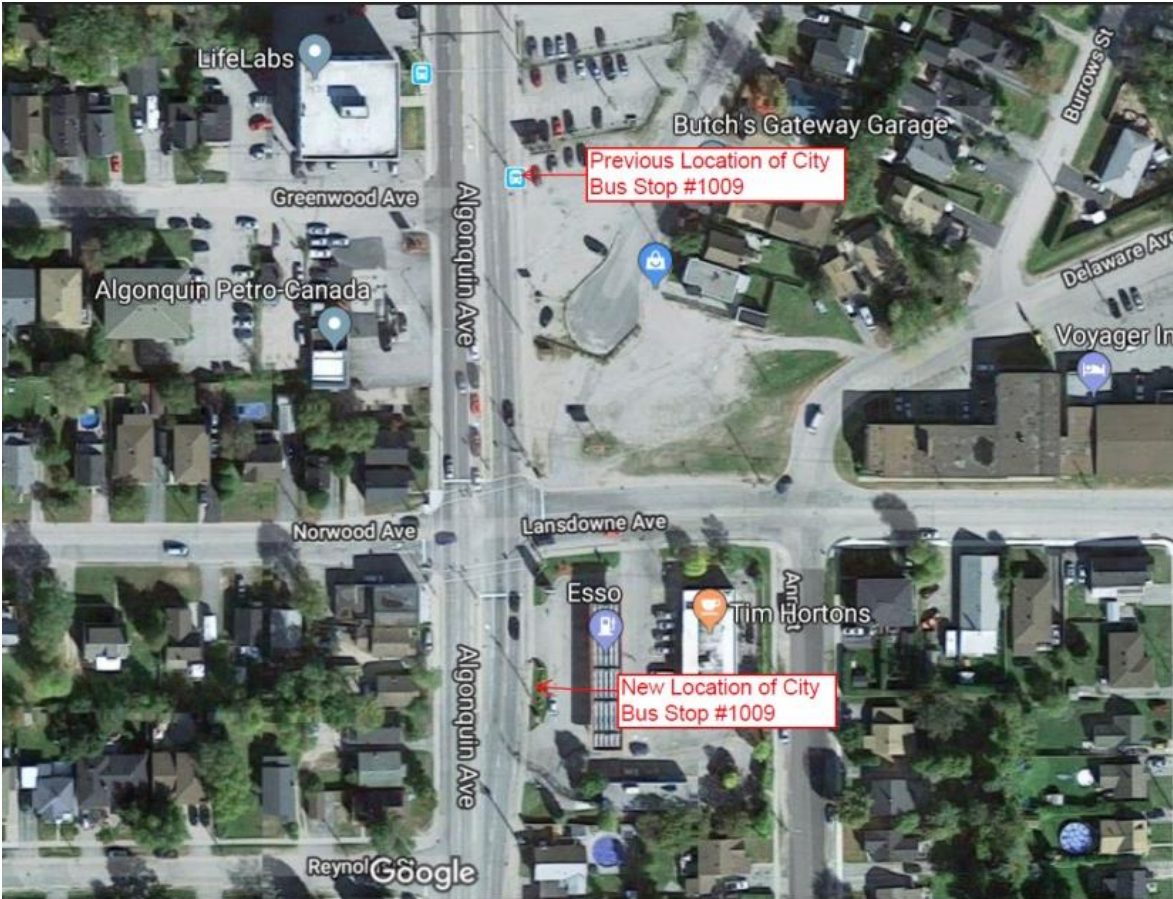


Figure 3 - Relocated City Transit Stop #1009

2. Algonquin Intersection at Lansdowne & Norwood Avenue

Collision data in the immediate area of the intersection of Algonquin and Lansdowne Avenue/Norwood Avenue was reviewed. Data between July 2014 and July 2017 showed a total of 23 collisions around this intersection. From these reports, 13 of them were rear end collisions, 4 were side swipe collisions, 5 were right-angle turning collisions, and 1 was with a pedestrian crossing at Lansdowne.

Among these collisions, 6 occurred immediately south of the intersection in the

southbound direction. The collisions that occurred were as a result of southbound left turning traffic into the Gas Station/Tim Hortons at 1000 Algonquin Avenue. In order to prevent this type of collision at this location, the southern median should be extended to prevent left turns. As a result, intersection congestion would be reduced and rear-end collisions should reduce as well. As illustrated in Figure 4 – Algonquin Median Extension, extending the median 22m would physically block left turns at this location. This modification would slightly increase the volume of southbound vehicles turning left at the intersection. In order to compensate for the additional volume, the intersection timing could be altered for a longer protected left-turn.

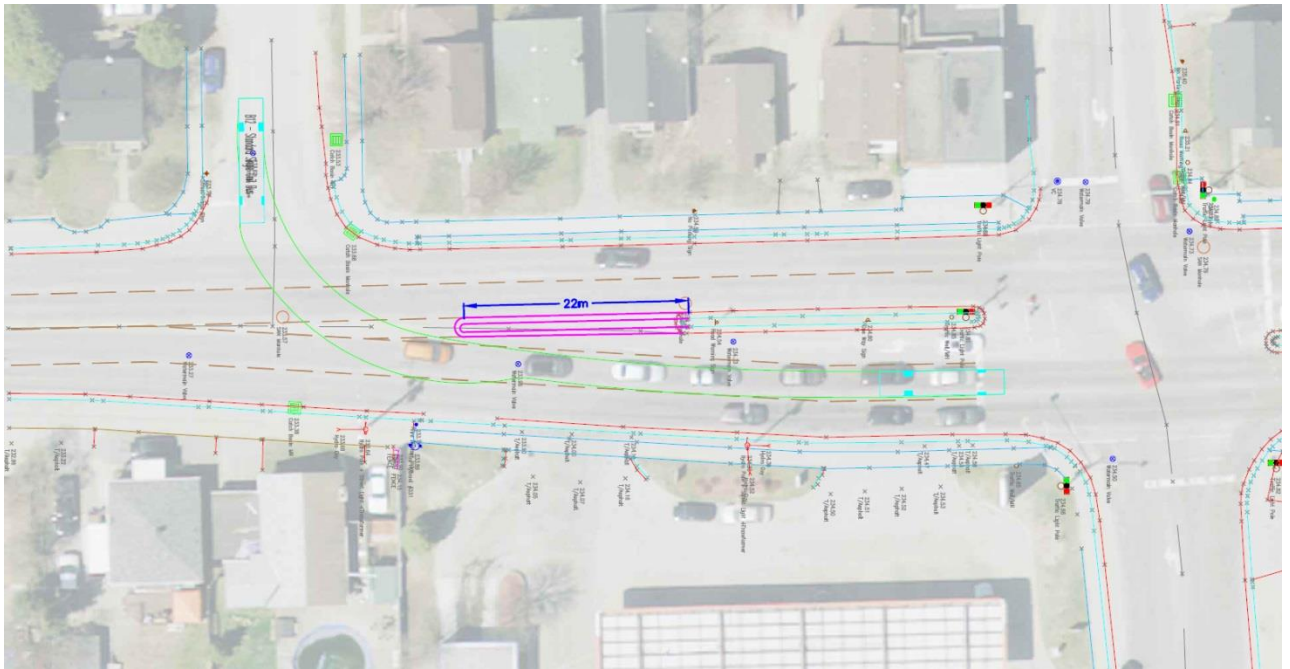


Figure 4 - Algonquin Median Extension

3. Algonquin Intersection at Jane Street and Front Street

Collision data at the intersection of Algonquin and Jane Street/Front Street was reviewed. Data between July 2014 and July 2017 showed a total of 44 collisions at this intersection. These collisions included 29 angle and turning movement collisions, 11 rear-ending collisions, 3 side-swipe collisions and 1 front end collision with a utility pole.

Of the 29 collisions, 3 were due to northbound traffic failing to stop at a red light resulting in a collision with east or westbound traffic. It is apparent from the data that the majority of right-angle collisions occurred as a result of left-turning movements from Algonquin to Jane Street and Front Street. 16 collisions occurred as a result of a southbound vehicle turning left to Front Street and 10 collisions were as a result of a northbound vehicle turning left to Jane Street.

In order to reduce the frequency of this type of collision, dedicated left-turn

lanes would need to be provided for northbound and southbound approaches, along with a protected left-turn traffic signal phase.

To accommodate a new turning lane on Algonquin Avenue, additional City land will need to be purchased near the intersection along with physical modifications to the intersection. These modifications to the intersection will require future budgeted capital funds for the design, land purchase, and reconstruction.

4. Consideration for Speed Reduction to 40km/hr

The current speed limit is 50km/hr along the entire length of Algonquin with the exception of the Community Safety Zone between High Street and Jane Street from 8:00AM-4:00PM Monday to Friday from September 1 to June 30 inclusive (By-Law 2014-38 & 2016-18).

Transportation Association of Canada (TAC) has developed the *Canadian Guidelines for Establishing Posted Speed Limits* to provide guidance and consistency for evaluating speed limits for Municipal roadways. The intent of the guideline is to provide municipalities with an evaluation method of assessing appropriate posted speed limits based on the classification, function and geometric configuration of a roadway.

The methodology in the TAC guideline was used and determined that an appropriate speed limit for Algonquin Avenue would be 60km/hr.