

# TORONTO STAFF REPORT

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May 30, 2006

To: Toronto and East York Community Council

From: Acting Director, Transportation Infrastructure Management

Subject: Summary of the traffic impacts resulting from the installation of bicycle lanes on Cosburn Avenue from Broadview Avenue to Oak Park Avenue.  
(Toronto-Danforth, Ward 29; Beaches-East York, Ward 31)

Purpose:

To provide a summary of the impacts on cycling, motor vehicle traffic and parking one year after the implementation of bicycle lanes on Cosburn Avenue, from Broadview Avenue to Oak Park Avenue.

Financial Implications and Impact Statement:

There are no immediate financial implications resulting from the receipt of this report.

Recommendations:

It is recommended that this report be received for information.

Background

During the public consultation process for bicycle lanes on Cosburn Avenue, from Broadview Avenue to Oak Park Avenue, concerns were raised regarding the impact of the bicycle lane design on parking, traffic delays and the potential diversion of traffic to the surrounding local streets. City Council, on September 28, 29, 30 and October 1, 2004, amended and adopted Clause No. 31 of Report No. 7 of Toronto and East York Community Council, which approved the installation of bicycle lanes on Cosburn Avenue, and requested that staff follow up on a number of traffic operations issues to minimize the potential negative traffic impacts on the community, including:

- signal timing enhancements to reduce delays at the signalized intersections of Donlands and Cosburn Avenues and Greenwood and Cosburn Avenues; and
- enforcing existing turn restrictions during peak periods from O'Connor Drive between Donlands and Coxwell Avenues to prevent traffic infiltration to Plains Road.

In addition, City Council amended the Clause by adding the following: “That the Director, Transportation Infrastructure Management, Works and Emergency Services, be requested to send out a survey to residents and businesses from Ward 29 and Ward 31 to gauge public impact and perception of the proposed bicycle lanes, traffic infiltration, traffic flows and parking issues on Cosburn Avenue and surrounding streets; and further, that the survey questions, timing and distribution be determined in consultation with the Councillors for Ward 29 and Ward 31, and the results be reported on in the follow-up transportation reports to be submitted to the Toronto and East York Community Council one year after the installation of the bicycle lanes.”

Comments:

In order to determine the impacts of the bicycle lanes both a quantitative traffic analysis was conducted as well as a qualitative summary of the impacts provided by a questionnaire which was distributed to the local area residents and businesses.

1. Traffic Analysis

In order to monitor the impact of the bike lanes on traffic on Cosburn Avenue and on the surrounding local road network, traffic data was collected to compare the conditions “before” and “after” the bike lanes were installed. The “before” data was collected in October, 2004 and the “after” data was collected in June, 2005. The data collected included:

- travel time surveys for Cosburn Avenue between Broadview Avenue and Woodbine Avenue;
- 24 hour volume counts on Cosburn Avenue, Mortimer Avenue and Plains Road; and
- bicycle volume counts on Cosburn Avenue.

Travel Time:

The analysis of the peak hour traffic conditions included in the original report for the installation of bicycle lanes on Cosburn Avenue predicted that reducing the number of traffic lanes would result in some additional delay to motorists in the peak periods. The travel time surveys were used as an indicator of the overall delay that a motorist would experience traveling on Cosburn Avenue. The travel time surveys recorded the actual time to drive between Broadview Avenue and Woodbine Avenue in the peak periods. Between 13 and 15 “runs” were made during each of the peak periods.

The critical directions when traveling on Cosburn Avenue in the peak periods are westbound in the morning and eastbound in the afternoon. Table 1 below summarizes the changes in the average travel time as well as the maximum travel time recorded in the critical peak period directions. The travel time surveys revealed little change in the travel times for the off-peak directions.

Table 1  
Change in peak period travel time - Broadview Avenue to Woodbine Avenue

	Average Time		Maximum Time	
	Before	After	Before	After
AM Peak Period – Westbound	4min 29sec	5min 27sec	6min 12sec	7min 37 sec
PM Peak Period - Eastbound	4min 42sec	5min 7sec	5min 51sec	6min 7sec

As expected the travel time surveys show that in both the morning and afternoon peak periods, there is an increase in delay traveling on Cosburn Avenue after the implementation of bicycle lanes. The data shows that the impact is more notable in the a.m. peak period than in the p.m. peak period. In the p.m. peak period, there is only a slight increase in the maximum travel time with the average travel time showing an increase of only 25 seconds. This translates to an increase of less than 10 percent. The a.m. peak period, however, shows a more significant increase in travel times when looking at both the average travel time and maximum travel time. The maximum travel time increases by one minute and 25 seconds. This represents just over a 20 percent increase. Similarly, the 58 second increase in average travel time also represents an increase of just over 20 percent.

**Traffic Infiltration:**

The traffic analysis undertaken as part of the bicycle lane study projected minimal vehicular delay for most intersections on Cosburn Avenue, with the exception of the Greenwood Avenue intersection. However, there was some concern expressed by area residents that any increase in vehicular delay would result in traffic infiltration to the local road network, specifically the parallel east-west routes such as Plains Road and Mortimer Avenue. The 24 hour counts on Cosburn Avenue were used as an initial indicator of possible infiltration. A decrease in traffic volumes on Cosburn Avenue after implementation of the bike lanes would indicate that some traffic had diverted from Cosburn Avenue to alternate routes. The 24 hour volumes were measured on three representative sections of Cosburn Avenue: from Logan Avenue to Pape Avenue, from Cardonia Avenue to St. Hubert Avenue and from Roblin Avenue to Glebemount Avenue. With the reduction in travel lanes to provide bicycle lanes, there was only a slight change in the 24 hour volumes on Cosburn Avenue. The maximum decrease in volumes on Cosburn Avenue was 328 vehicles over a 24 hour period in the westbound direction between Cardonia Avenue and St. Hubert Avenue. This represents a net decrease of less than 5 percent from the 24 hour volume of 6780 vehicles.

A closer look at the 24 hour volumes on Cosburn Avenue shows that the most significant change occurs during the a.m. peak hour. Table 2 illustrates the change in volume in the peak direction (westbound in the a.m. peak and eastbound in the p.m. peak) on Cosburn Avenue.

Table 2  
Change in peak hour volumes on Cosburn Avenue

	AM Peak Hour Westbound Volume		PM Peak Hour Eastbound Volume	
	Volume	Percent	volume	Percent
Logan to Pape	-106	-28.0 %	-71	-18.2 %
Cardonia to St. Hubert	-226	-24.1 %	-8	-1.5 %
Roblin to Glebemount	-106	-17.4 %	+3	+0.5 %

Just over two thirds (226 of 338) of the previously mentioned decrease in the 24 hour volume occurs during the a.m. peak hour. Whereas the overall volume over 24 hours showed a decrease of only 5 percent, the a.m. peak hour volume decreased much more significantly (almost 25 percent). While there is also some change in the p.m. peak volumes, it is clear that the more critical impact is in the a.m. peak hour. This finding is consistent with the travel time survey which found a greater increase in travel time in the a.m. peak westbound direction, suggesting increased congestion during the morning commute time.

A review of the 24 hour volumes measured on Plains Road and Mortimer Avenue suggests that some of the traffic diverted from Cosburn Avenue in the a.m. peak hour has been redistributed to these parallel routes. Table 3 shows the change in volumes in the peak directions on Plains Road and Mortimer Avenue.

Table 3  
Change in peak hour volumes on Plains Road and Mortimer Avenue

	AM Peak Hour Westbound Volume		PM Peak Hour Eastbound Volume	
	Volume	Percent	volume	Percent
Mortimer – Broadview to Jackman	+2	+0.03 %	-6	-0.9 %
Mortimer – Woodmount to Woodbine	+74	+11.4 %	+72	+11.5 %
Plains – Cardonia to St. Hurbert	+105	+74.5 %	+20	+18.3 %
Plains – Roblin to Glebemount	+21	+16.9 %	-19	-16.4 %

Combining the additional traffic on Mortimer Avenue just west of Woodbine (+74) and the additional traffic on Plains Road just west of Woodbine (+105) would account for most of the total traffic no longer using Cosburn Avenue in the same area (-226). Mortimer Avenue already carries similar volumes to Cosburn Avenue, so the overall impact is not so significant (11.5 percent). The 24 hour volumes in the westbound direction for Cosburn Avenue and Mortimer Avenue are comparable at 6,780 vehicles/day and 6,000 vehicles per day respectively. The impact on Plains Road, where the traffic volumes are relatively light (1180 vehicles/day westbound), means that the volume in the a.m. peak hour increased from 141 vehicles to 246 vehicles. Local roads typically have traffic volumes up to 2,500 vehicles per day.

## Bicycle Counts:

The number of cyclists was measured in both directions on Cosburn Avenue at a location between Glebemount Avenue and Roblin Avenue. Counts were taken in the morning peak period between 7:30 a.m. and 9:30 a.m., the midday period between 11:30 a.m. and 1:15 p.m. and during the afternoon peak period between 3:30 p.m. and 5:15 p.m.. Prior to the implementation of the bicycle lanes, 42 cyclists were counted traveling in both directions on Cosburn Avenue for the noted time periods. With the implementation of the bicycle lanes, the number of cyclist more than doubled to a total of 94. The count location was close to the eastern end of Cosburn Avenue, between Coxwell and Woodbine Avenues, and as a result did not count westbound cyclists who joined the bicycle lanes west of Roblin Avenue. Regardless of the count location, this is a relatively low bicycle traffic volume for a street with bicycle lanes in the Toronto and East York District.

## 2. Community Survey Results

In order to help identify and address potential areas for improvement of the Cosburn Avenue bike lane design, a questionnaire was distributed to the community around the bike lane installation. The goal of the survey was to gather information and feedback from the primary users of Cosburn Avenue on how their daily use of the road network has been affected by the bicycle lane installation. Questionnaires were distributed in July, 2005 to households and businesses in the area bounded by Broadview Avenue to the west, Oak Park Avenue to the east, O'Connor Drive to the north and Mortimer Avenue to the south. In all, over 8000 questionnaires were distributed and 983 responses were received, with 93 responses from residents and businesses located on Cosburn Avenue.

The survey was comprised of six questions. The first question was used to establish whether or not the respondent was a resident or business on Cosburn Avenue. The next two questions, targeting only the residents and businesses on Cosburn Avenue, asked respondents to indicate any parking impacts they experienced. The fourth and fifth questions were intended to measure whether cycling and/or driving habits were influenced by the introduction of bicycle lanes. The final question was open-ended, asking respondents to provide for any further comments or concerns about the bicycle lanes.

## Parking Concerns:

The second and third questions asked residents and businesses on Cosburn Avenue about the impact of the bicycle lane design on both the access to their driveways as well as their access to on-street parking. Of the 93 residents and businesses on Cosburn Avenue who responded to the survey, 40 percent expressed a concern with access to on-street parking. The most common concern was that the number of available parking spaces has been reduced or are less convenient to a particular home or business. However, considering the small sample size it is hard to draw any real conclusions for changes from these results. A survey of the current parking usage shows that the available parking is substantially underutilized on most sections of Cosburn Avenue because many residents have driveways.

A smaller number of respondents (28%) replied that the access to their driveways was affected by the bicycle lanes. The most frequent concern was that increased traffic queuing or congestion on Cosburn Avenue was making it more difficult to exit their driveways.

#### Encouraging Bike Ridership:

The fourth question attempted to measure changes in bicycle use as a result of the new bicycle lanes. Of the 983 respondents to the survey, a significant number of households (71 percent) owned bicycles. Thirty-five percent of those owning bicycles said the installation of bicycle lanes on Cosburn Avenue encouraged them to ride more often. While this response is encouraging because one of the primary goals of the Toronto Bike Plan is to increase bicycle ridership, the actual bicycle volumes on Cosburn Avenue are still relatively light.

#### Change in Driving Route:

The fifth question was intended to measure to what extent the reduction in traffic lanes on Cosburn Avenue affected driver route choice. A little more than a third of all respondents (38 percent) indicated that they had changed their driving route after the installation of bicycle lanes on Cosburn Avenue. The most significant reason cited for a change in route was congestion or additional delays on Cosburn Avenue (44 percent). Other specific reasons for changing routes included additional delays behind buses (9 percent) and the added difficulty in making turns from the local roads on to Cosburn Avenue (7 percent). This would seem to confirm and to some extent explain the level of diversion shown by the 24 hour traffic data.

#### General Comments:

The sixth question asked respondents to provide any further comments or concerns about the bicycle lanes. A total of 645 comments were provided in response to this final open-ended question. Many respondents provided more than one comment. Multiple comments were coded for each questionnaire and all comments were classified into one of 30 different comments/concerns. The 30 different comments were grouped into the following five basic categories:

- positive comments regarding the bike lanes
- negative comments regarding the bike lanes
- comments on traffic impacts
- comments on the bike lanes design
- general comments

Overall, 19 percent of respondents commented that the implementation of the bike lanes was a good idea. Other positive comments included: requests for more bike lanes; comments about the positive environmental impacts of the bike lanes; and being encouraged to cycle more often. Ten percent of respondents commented that the bike lanes were a bad idea. Twenty-two percent of respondents said they felt the bike lanes had very little use by cyclists and that there had been no increase in the number of cyclists on Cosburn Avenue as a result of the bike lanes.

General comments on the impacts of the bike lanes on traffic mirrored the responses to the survey question regarding changing driving routes. Most of these comments expressed concerns about an increase in congestion, an increase in traffic on local road and the difficulty in turning to and from the local roads. However, there were also some comments that with the installation of the bike lanes that it was more comfortable or calmer to drive on Cosburn Avenue since the traffic speeds were lower and the traffic was more orderly.

The most common concern respecting the design of the bike lanes was that the pavement markings were unclear or confusing. This concern was mainly attributed to the lack of parked cars for long stretches on some sections of Cosburn Avenue. Parked cars between the curb and the bicycle lane provide a visual cue marking the right edge of the bicycle lane. When there are no parked cars at the curb guiding cyclists and drivers into their proper lane alignment, the use of the lanes is not intuitive.

### 3. Opportunities For Improvements

In order to address the concerns with congestion and delays on Cosburn Avenue, the potential to adjust the signal timings at key signalized intersections was investigated. Increasing the east-west green time at the Donlands Avenue, Greenwood Avenue and Coxwell Avenue intersections were evaluated. At the Donlands Avenue and Greenwood Avenue intersection, field observations revealed no occurrences of motorists experiencing any significant delays. Signal timing changes were not recommended for this intersection.

At the Coxwell Avenue intersection observations revealed that some vehicles experienced minor delays during both the a.m. and p.m. peak periods. These delays were not the result of insufficient east-west green time but can be attributed to the heavy pedestrian and vehicular traffic associated East York Collegiate Institute located on the northeast corner of the intersection. In order to mitigate the delay at the Coxwell Avenue intersection, changes to the on-street parking are being proposed so that a centre median on Cosburn Avenue can be provided for eastbound left turns into the school. A pick-up/drop-off zone on Coxwell Avenue just north of Cosburn Avenue will also be provided to reduce the delays created by the pick-up/drop-off activity on Cosburn Avenue. The details of these changes are covered under a separate report.

The relatively low bicycle traffic volume on Cosburn Avenue post-implementation of the bicycle lanes can likely be attributed to a number of factors, including the lack of developed bikeway network connections in this part of the city. The Toronto Bike Plan recommends several important bikeway routes which would provide continuity with the Cosburn Avenue bicycle lanes. Transportation Services staff will investigate the feasibility of advancing these connecting bikeway network routes in 2007, in consultation with the Ward Councillors and the Cycling Committee.

Regarding the concerns with traffic infiltration, Toronto Police Services were made aware of the changes on Cosburn Avenue with the implementation of the bicycle lanes and were requested to monitor and enforce the exiting turn restrictions.

4. Summary:

For most of the day there has been little, if any, impact on traffic operations on Cosburn Avenue following the introduction of bicycle lanes. The reduction in travel lanes on Cosburn Avenue to accommodate the bicycle lanes has resulted in a small reduction in the 24 hour motor vehicle traffic volume, with the greatest change occurring in the westbound direction. However, the impacts are more noticeable in the peak periods with increased travel time ranging from 25 to 85 seconds. Approximately two thirds of the reduced westbound traffic volume occurred in the a.m. peak hour. The reduced traffic volume on Cosburn Avenue has been accompanied by a corresponding increase on both Plains Road and Mortimer Avenue during the peak periods.

The community survey revealed a mixed response to the bicycle lanes. Some residents expressed concern that the number of parking spaces on Cosburn Avenue had been reduced or were less convenient although the on-street parking is under-utilized in many sections of Cosburn Avenue. A significant number of respondents felt that the bicycle lanes had resulted in little or no increase in bicycle traffic, an observation supported by the bicycle counts. A majority of the households responding to the community survey own bicycles and many stated that the bicycle lanes have encouraged them to ride more often. However, the bicycle volumes on Cosburn are still relatively light compared to other streets with bicycle lanes in the Toronto and East York District.



Conclusions:

The installation of bicycle lanes and corresponding reduction in general traffic lanes on Cosburn Avenue has improved conditions for cyclists, while introducing some delay for drivers during the peak periods and diverting some traffic to parallel streets. Changes are being proposed, under separate report, in the vicinity of East York Collegiate Institute to mitigate the a.m. peak hour congestion resulting from the heavy pedestrian and vehicular traffic accessing the school. Despite the improved conditions for cyclists, bicycle traffic volume on Cosburn is relatively light compared to other streets with bicycle lanes. Transportation staff will investigate the feasibility of advancing other bikeway network routes that connect with Cosburn Avenue, in consultation with the Ward Councillors and the Cycling Committee, to increase bicycle ridership on this route.

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