

## Dupont Street Bicycle Lanes – Options Report

<b>Date:</b>	August 23, 2012
<b>To:</b>	Public Works and Infrastructure Committee
<b>From:</b>	Acting General Manager, Transportation Services
<b>Wards:</b>	Ward 13 – Parkdale-High Park Ward 14 – Parkdale-High Park Ward 17 – Davenport Ward 18 – Davenport
<b>Reference Number:</b>	P:\2012\Cluster B\TRA\TIM\pw12021tim

### **SUMMARY**

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The Public Works and Infrastructure Committee, at its meeting of June 23, 2011, in considering a report titled "Bikeway Network – 2011 Update" (PW5.1) requested the Acting General Manager, Transportation Services to investigate and submit a report "addressing issues related to the Dupont Street bicycle lane between Lansdowne Avenue to the underpass immediately west of Osler Street."

From a transportation perspective, there are two primary issues related to the Dupont Street bicycle lanes. Firstly, the Annette Street - Dupont Street bicycle lanes, installed in 2009, provide a critical link for cyclists from Jane Street to Lansdowne Avenue. However, the bicycle lanes are not connected to bikeways to the east and south of the Dupont Street and Lansdowne Avenue intersection. Secondly, the installation of bicycle lanes reduced the motor vehicle capacity on Dupont Street during the morning and afternoon peak periods, resulting in increased delay and queuing for drivers during these periods.

Transportation Services staff have identified several potential options for mitigating traffic congestion along Dupont Street, between Dundas Street West and Lansdowne Avenue, and improving connectivity of the bikeway east of Lansdowne Avenue. The purpose of this report is to present the potential options to the Public Works and Infrastructure Committee and then to undertake a community and stakeholder consultation process to develop a strategy for improving conditions for drivers and cyclists along Dupont Street. Other options, in addition to those presented in this report,

will likely emerge from the community consultation process. Some of the options may be subject to the Municipal Class Environmental Assessment process. Consequently, Transportation Services is requesting authority to undertake an Environmental Assessment Study. The scope of work for the study would be developed in consultation with the affected Ward Councillors and the community.

## **RECOMMENDATIONS**

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### **The Acting General Manager, Transportation Services recommends that:**

1. City Council authorize staff to undertake a Municipal Class Environmental Assessment Study of measures to mitigate traffic congestion along Dupont Street between Lansdowne Avenue and Dundas Street West, which would include the development and evaluation of any options that would retain the Annette Street – Dupont Street bicycle lanes and improve connections to existing and proposed bikeways to the east of Lansdowne Avenue.

### **Financial Impact**

The estimated cost to undertake the proposed Municipal Class Environmental Assessment Study is in the range of \$200,000 to \$250,000. Funds for this project are contained within the Transportation Services, Cycling Infrastructure Approved 5-Year Capital Plan for the years 2012-2016.

The Deputy City Manager and Chief Financial Officer has reviewed this report and agrees with the financial impact information.

## **DECISION HISTORY**

City Council, at its meeting of June 24, 25, and 26, 2001, adopted the Toronto Bike Plan (Clause No. 3 of Report No. 8 of the Planning and Transportation Committee). One of the key recommendations of the Bike Plan was the development of a comprehensive bikeway network, comprised of bicycle lanes, off road paths and signed routes. The Bike Plan included bicycle lanes for Annette Street and Dupont Street, from Jane Street to Lansdowne Avenue.

City Council, at its meeting on June 23, 2008, approved the installation of bicycle lanes on Annette Street, from Runnymede Road to Dundas Street West, and on Dupont Street from Dundas Street West to Lansdowne Avenue. Subsequently, on October 29, 2008, City Council approved the installation of bicycle lanes further west on Annette Street, from Jane Street to Runnymede Road. The Dupont Street and Annette Street bicycle lanes were installed in the summer of 2009.

City Council, at its meeting of July 12, 13 and 14, 2011, adopted the June 9, 2011 staff report (Item PW5.1) entitled, "Bikeway Network – 2011 Update," which among other things approved modifications to the Dupont Street and Lansdowne Avenue intersection, to move the terminus of the Dupont Street bicycle lanes, from a point approximately 30 metres east of the intersection, to a point approximately 70 metres west of the intersection. This change in the easterly limit of the bicycle lane was intended to improve traffic flow through the Dupont Street/Lansdowne Avenue intersection. The intersection modifications were implemented in September 2011.

The Public Works and Infrastructure Committee, at its meeting of June 23, 2011, requested the Acting General Manager, Transportation Services to submit a report to the Public Works and Infrastructure Committee addressing issues related to the Dupont Street bicycle lane between Lansdowne Avenue to the underpass immediately west of Osler Street.

## **COMMENTS**

### **1. Existing Conditions:**

Dupont Street, between Dundas Street West and Lansdowne Avenue, is an east-west major arterial roadway with one general traffic lane and one bicycle lane in each direction with a posted speed limit of 40 km/h. Between Edwin Avenue and Campbell Avenue, parking is permitted on the north side of the street. Left turn lanes are provided at the signalized intersections of Dundas Street West, Edwin Avenue, and Symington Avenue and a pedestrian crossover exists at Perth Avenue. This section of Dupont Street passes under two railway corridors: the Georgetown Corridor between Dundas Street West and Osler Street; and the GO Barrie Corridor between Campbell Avenue and Lansdowne Avenue. The TTC operates the 26 – Dupont bus route on Dupont Street. A context map illustrating the Dupont Street bicycle lanes is attached to this report as Appendix 1.

Dupont Street is an important route for both drivers and cyclists because there are few alternative east-west routes crossing the two rail corridors in this part of the City. The closest route to the north is St. Clair Avenue West and the closest route to the south is Bloor Street West.

### **2. Summary of Issues Related to the Dupont Street Bicycle Lanes**

There are two primary issues of concern related to the Dupont Street bicycle lanes. Firstly, the installation of bicycle lanes reduced the peak period motor vehicle capacity on Dupont Street, resulting in increased delay and queuing for motor vehicles during morning and afternoon peak periods. Prior to the bicycle lane installation, Dupont Street operated with two general traffic lanes per direction in the morning and afternoon peak periods. During the rest of the day Dupont Street generally operated with one traffic lane per direction and curb-side parking on both sides of the street, except in the vicinity of the two railway underpasses. Through the underpasses two traffic lanes in each direction

were maintained at all times because stopping/parking is prohibited at all times in an underpass.

The staff report dated May 20, 2008 entitled, "2008 Bikeway Network Program – Phase 2 Installation of Bicycle Lanes," identified anticipated increased traffic delay at the intersections of Symington Avenue and Lansdowne Avenue during peak periods, and additional delay to westbound traffic on Dupont Street approaching Dundas Street West.

Secondly, the Dupont Street bicycle lanes are discontinuous, with gaps between their eastern terminus at Lansdowne Avenue and existing bikeway to the east and south. The Bike Plan recommended that the Dupont Street bikeway be connected via Lansdowne Avenue to the Lappin Avenue bikeway and to the College Street bikeway. Recognizing that there is a need to connect the Bikeway Network in this area, City Council approved bicycle lanes for Lansdowne Avenue in 2010. However, these bicycle lanes have not been installed due to community concerns about the impact that reducing on-street parking would have on residents and property owners on Lansdowne Avenue.

### 3. Assessment of Motor Vehicle and Bicycle Traffic Operations

As part of the assessment of Dupont Street, staff reviewed motor vehicle and bicycle traffic volume data, and observed traffic and cycling patterns, along Dupont Street. The 24-hour motor vehicle volumes on Dupont Street are generally at comparable levels pre- and post-bicycle lanes. Prior to the installation of bicycle lanes in 2009, this section of Dupont Street carried approximately 21,700 vehicles per day, based on 2005 traffic counts. Dupont Street currently carries approximately 23,000 motor vehicles per day, based on 2010 traffic counts. In addition, between the hours of 7:30 a.m. to 6:00 p.m., the two-way motor vehicle volumes have also remained relatively stable, ranging between 10,000 to 12,000 vehicles per day. Table 1 below presents the motor vehicle volume data.

**Table 1 - Motor Vehicle Volumes along Dupont St. at Symington Ave.**

Location	Count Date	AM Peak Hour	PM Peak Hour	24 Hour Total
<b>Before Bike Lane Installation</b>				
Dupont St. E/B W of Symington Ave.	January 2005	1,079	810	10,810
Dupont St. W/B E of Symington Ave.	January 2005	580	927	10,381
<b>After Bike Lane Installation</b>				
Dupont St. E/B W of Symington Ave.	April 2010	1,272	1,008	12,036
Dupont St. W/B E of Symington Ave.	April 2010	740	1,064	11,466

When road capacity is reduced there is often a corresponding diversion of traffic to alternate parallel routes as drivers adjust their travel patterns. However, the traffic counts indicate that there has been little, if any, diversion of traffic to other routes. One

explanation for this outcome is because of the few alternative east-west options for drivers crossing the two north-south rail corridors in this area as indicated previously.

Generally, motor vehicle delays and queuing have increased along the corridor because capacity has been reduced during peak periods. More specifically, there are a couple of congestion points, or "bottlenecks", which contribute to the increased congestion along Dupont Street. Westbound traffic merges from two lanes to one lane at the Lansdowne Avenue intersection. In an attempt to alleviate congestion at this bottleneck, Transportation Services moved the start of the bicycle lane to the west of the intersection so that the merging would take place after drivers had passed through the intersection. While this modification has provided a minor improvement to the operation of the intersection for drivers, it has worsened conditions for cyclists travelling through the intersection. Overall, it has not made a significant difference to traffic flow along Dupont Street. Transportation Services staff will conduct further analysis along Dupont Street to determine if there is a more effective location to make the transition from two to one westbound traffic lane.

The most significant bottleneck affecting capacity is the underpass west of Osler Street combined with the complex configuration of the intersection of Dupont Street, Annette Street, Dundas Street West and Old Weston Road. The Dupont Street bicycle lanes connect with the Annette Street Bicycle lanes at this five-legged intersection. The fifth leg of the intersection, Old Weston Road, has low traffic volumes. Nevertheless, the presence of the fifth leg requires a more complex signal timing plan, whereby the fifth leg of the intersection is provided with its own traffic signal phase. This additional signal phase limits the amount of green time available for the primary traffic carrying streets (Dupont Street, Annette Street and Dundas Street West), thereby reducing the capacity of each of these streets.

Further, the railway bridge has a centre pier support in the roadway which prevented a more efficient re-allocation of road space when the bicycle lanes were added. Without the centre pier, two westbound traffic lanes could have been maintained through the underpass, which would have maintained the pre-bicycle lane capacity approaching intersection of Dupont Street, Annette Street, Dundas Street West and Old Weston Road. An effective strategy to improve traffic flow on Dupont Street must address this underpass in combination with the design and operation of this intersection.

Bicycle traffic counts conducted in July and August, 2012 at three locations on Dupont Street and Annette Street indicate that most cyclists on Dupont Street are also travelling along the Annette Street section of the bikeway. Bicycle traffic volumes, generally more than 1,000 cyclists per day, are comparable to downtown bikeways such as Sherbourne Street. Tables 2 below presents the bicycle traffic data, including bicycle traffic data for Sherbourne Street, for comparative purposes. Reliable bicycle traffic data for the pre-bicycle lane period is not available.

**Table 2 - Bicycle Volumes on Dupont St. Compared with other Bicycle Lanes**

<b>Location</b>	<b>Average 24-Hr Volume Weekdays</b>	<b>Highest 24-Hr Weekdays</b>
Annette St. east of Keele St. (August 4 to 9, 2012)	820	1,027
Dupont St. west of Edwin Ave. (May 23 to June 3, 2012)	1,062	1,277
Dupont St. east of Campbell Ave. (July 25 to 31, 2012)	1,042	1,207
Sherbourne St. north of Shuter St. (June 11 to 16, 2012)	1,288	1,440
Sherbourne St. north of Gerrard St. E (July 17 to 23, 2012)	1,169	1,285

Bicycle turning movement counts undertaken at the Dupont Street and Lansdowne Avenue intersection indicate that the majority of cyclists are also travelling along Dupont Street east of Lansdowne Avenue, rather than travelling along Lansdowne Avenue. In the morning peak period 78% of eastbound cyclists continued straight along Dupont Street and in the afternoon peak period 75% of westbound cyclists accessed the bicycle lanes from Dupont Street east of Lansdowne Avenue. The current cycling patterns suggest that bicycle lanes on Lansdowne Avenue, as recommended by the Bike Plan, may not be the most effective route for cyclists to connect to bikeways east of Lansdowne Avenue. Transportation Services staff will conduct a more detailed network planning study to investigate and evaluate options for connecting the Dupont Street bicycle lanes.

While cycling activity is growing in all Toronto districts, Wards 14 and 18 (where the Dupont Street bicycle lanes are located) have some of the highest levels of cycling in the City. The 2006 Canada Census, found that 1.7% of Toronto residents rode their bicycle to work in 2006 (bicycle mode share), up from 1.3% in 2001. The bicycle mode share for Wards 14 and 18 are significantly higher than these city averages – 4.7% and 6.0% respectively. Bicycle mode share data is presented in Table 3 below. The 2006 Canada Census, does not include bicycle trips made for non-work purposes (e.g., to school, running errands and for recreation) and predates the installation of the Annette Street and Dupont Street bicycle lanes.

**Table 3 - Percentage of Work Trips Made by Mode per Ward**

<b>Area</b>	<b>Bicycle %</b>	<b>Walk %</b>	<b>Transit %</b>	<b>Driver / Passenger %</b>	<b>Other %</b>
<b>Ward 14</b>	<b>4.7</b>	<b>8.2</b>	<b>43.3</b>	<b>42.6</b>	<b>0.9</b>
<b>Ward 18</b>	<b>6.0</b>	<b>7.1</b>	<b>44.6</b>	<b>41.4</b>	<b>0.8</b>
All of Toronto, 2006	1.7	7.1	34.4	56.1	0.7
All of Toronto, 2001	1.3	6.4	33.8	57.9	0.6

Source: 2006 Canada Census

## **4. Identification of Potential Options for Review and Consultation**

Staff have identified several potential options to improve traffic flow and bikeway connectivity along Dupont Street, which have not yet been evaluated. Following the September 12, 2012 meeting of the Public Works and Infrastructure Committee, staff will undertake a community and stakeholder consultation process to begin the evaluation process. The initial list of options presented below is not in order of preference or feasibility, and may likely expand through the community consultation process. The options are not mutually exclusive; the most effective solution may be a combination of two or more of the following options.

### **4.1 Maintain Current Design**

Environmental Assessment studies always include a "do nothing" alternative to be evaluated against other alternatives. While this option would not satisfy the objectives of the community or Transportation Services it is a useful baseline against which the other options can be compared. This option assumes no change to traffic capacity and bikeway connectivity.

### **4.2 Redesign the Annette Street, Dupont Street, Dundas Street West and Old Weston Road Intersection:**

As described earlier, the five-legged configuration of the intersection restricts the amount of green time that is available for the main streets of Dupont Street, Dundas Street West, and Annette Street, which contributes to the traffic delay for westbound traffic on Dupont Street. Redesigning this critical intersection could have the most potential to significantly improve traffic flow on Dupont Street, while at the same time maintaining the bicycle lanes. For example, one option is to convert Old Weston Road to one-way operation and allowing entry only from Dupont Street, in combination with changing the direction of travel on Hook Avenue and providing a traffic control signal at the intersection of Dundas Street West and Indian Grove. This would remove the fifth leg from the intersection and make more green time available for the intersection. This and any other redesign options must be reviewed in consultation with the community and the property owners affected by traffic operations changes.

### **4.3 Traffic Signal Timing Adjustments:**

Staff will review the signal timings along the corridor intersections with a view to optimizing vehicle flow along Dupont Street, to the extent feasible. This option could complement any of the other options presented below. However, any traffic flow improvements gained at the signalized intersections at Lansdowne Avenue, Edwin and Symington Avenue may have minimal overall impact unless a significant improvement is also achieved at the intersection of Dupont Street, Dundas Street West, and Annette Street and Old Weston Road.

#### **4.4 Re-route the Dupont Street bikeway to local Streets south of Dupont Street:**

In this option the bicycle lanes would be maintained through the rail underpass between Dundas Street West and Osler Street and then be re-routed onto local streets south of Dupont Street, between Edwin Avenue and Lansdowne Avenue. While this option could improve traffic flow between Edwin Avenue and Lansdowne Avenue it does not address the most critical traffic operations issue; the westbound traffic flow through the underpass approaching the Dupont Street, Annette Street, Dundas Street West and Old Weston Road intersection.

Unfortunately, no direct route exists on the local streets connecting to the Lappin Avenue bikeway or further south to College Street. Furthermore, while this option is currently available, few cyclists have chosen to use the local street network to reach their destinations. The bicycle traffic counts on Dupont Street demonstrate a strong preference by cyclists to remain on Dupont Street east of Lansdowne Avenue. During the community consultations staff will work with the cycling community to get a better understanding of their trip destinations and the route options for serving those trips.

#### **4.5 Converting the Existing Bicycle Lanes to a Bi-directional Cycle Track:**

Converting the existing bicycle lanes to a bi-directional cycle track (separated bicycle lanes) on one side of the road to provide an additional traffic lane could increase the motor vehicle capacity along the corridor. This option could provide a continuous bikeway facility, however, there are several issues that would have to be evaluated to determine if this option is feasible and whether it improves traffic flow. Generally, bi-directional cycle tracks require a separate signal phase for cyclists at the signalized intersections to minimize the conflicts between cyclists and turning motor vehicles. This additional cycle phase would reduce the available green time for motor vehicles and TTC buses, potentially offsetting any benefits of an additional traffic lane. In addition, the physical separation between the cycle track and the adjacent traffic lane would significantly reduce the road space available in the two rail underpasses. This narrower width may be an issue for emergency vehicle access, TTC buses and winter maintenance. Parking may also have to be restricted during peak periods.

#### **4.6 Remove the Dupont Street Bicycle Lanes:**

This option would restore Dupont Street to its pre-bicycle lane configuration, with four general traffic lanes and off peak parking on both sides. This scenario would negatively impact safety for cyclists currently using the Dupont Street bicycle lanes and would greatly diminish the utility of the bicycle lanes along Annette Street to the west. This option would also reduce the bikeway network connectivity in an area of Toronto with high and growing cycling use, and reduce access to the West Toronto Rail Path.



#### **4.7 Extend the Dupont Street Bicycle Lanes East of Lansdowne Avenue:**

The bicycle counts undertaken along the Dupont Street from Dundas Street West to Lansdowne Avenue indicate a consistent cycling demand along the corridor, including a demand to continue the bicycle lanes east of Lansdowne Avenue. By extending the bicycle lanes there would be more consistency in the cross-section along Dupont Street east and west of Lansdowne Avenue. This would eliminate the transition from four to two general traffic lanes that currently exists, and would provide consistent driver and cyclist expectation along the entire Dupont Street corridor. In addition, extending the bicycle lanes eastward to a north-south bikeway route would provide an improved east-west bikeway connection through Wards 18 and 19, and perhaps Ward 20, all of which have the highest bicycle mode share in the City. However, extending the bicycle lanes easterly would obviously decrease motor vehicle capacity, which is one of the main objectives of this exercise, as well as reduce the parking supply along this section of Dupont Street.

#### **5. Conclusions and Next Steps**

The above presents a wide range of options for improving the motor vehicle capacity of Dupont Street, from Dundas Street West to Lansdowne Avenue, including some options that would also improve the bikeway connectivity in the area. These options will need to be examined more thoroughly and in consultation with many stakeholders, including Residents Associations, Councillors, motorists, cyclists, businesses, and the general public. A planning and design study should be undertaken to fully evaluate the options presented in this report. Other options may also emerge from consultation with the community. A key part of the study will be a network planning exercise. As part of this network planning work, the study would also evaluate the bicycle lane design approved for Lansdowne Avenue and make recommendations on whether to include bicycle lanes on Lansdowne Avenue as part of the recommended network.

The planning and design study would satisfy the requirements of a Municipal Class Environmental Assessment and produce the preliminary design for the preferred alternative so that it could be implemented as soon as possible following Council approval. The study would incorporate a significant public and stakeholder consultation process. The Request for Proposals could be prepared this Fall, in consultation with the local Councillors representing Wards 13, 14, 17 and 18 and the study could commence in early 2013.

## **CONTACT**

Daniel Egan  
Manager,  
Cycling Infrastructure and Programs  
Transportation Services Division  
Tel: 416-392-9065  
Fax: 416-392-4808  
Email: degan@toronto.ca

Lukasz Pawlowski  
Senior Engineer,  
Cycling Infrastructure and Programs  
Transportation Service  
Tel: 416-338-6583  
Fax: 416-392-4808  
Email: lpawlow@toronto.ca

## **SIGNATURE**

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John Mende, P.Eng.  
Acting General Manager, Transportation Services

LP/DE/sr

## **ATTACHMENT**

Appendix 1 – Dupont Street Bicycle Lanes – Context Map

# APPENDIX 1

## Dupont Street Bicycle Lanes – Context Map

