

# Wesbrook Mall

## Traffic and Safety Issues

Wesbrook Mall is the spine of the existing and planned road network in the Wesbrook Place neighbourhood, as illustrated in Figure 1. Wesbrook Mall is a neighbourhood collector road, and is also a regional transit route and primary emergency response route.

Residents and others in Wesbrook Place have raised concerns regarding traffic and safety on Wesbrook Mall. Reported concerns include pedestrian safety, speeding vehicles, stop sign compliance, and difficulty for motorists turning onto Wesbrook Mall. This report presents several changes that can be implemented on Wesbrook Mall to address these concerns.

**Figure 1 – Wesbrook Place road network (existing and planned)**



## Traffic Speeds

A study of traffic speeds was conducted during the first week of October 2012, using an automatic tube counter installed across Wesbrook Mall north of Gray Avenue. Prior to installation of the counter, northbound and southbound stop signs were removed at Birney and Gray Avenues, so that traffic speeds on Wesbrook Mall at the counter location would be unaffected by stop signs.

The results of the speed study are summarized in Table 1. Traffic speeds are represented by 85<sup>th</sup> percentile speeds, which are typically used for the purposes of assessing traffic speeds, as these represent the speeds below which 85% of the traffic is travelling. On Wesbrook Mall, traffic speeds are approximately 38 km/h.

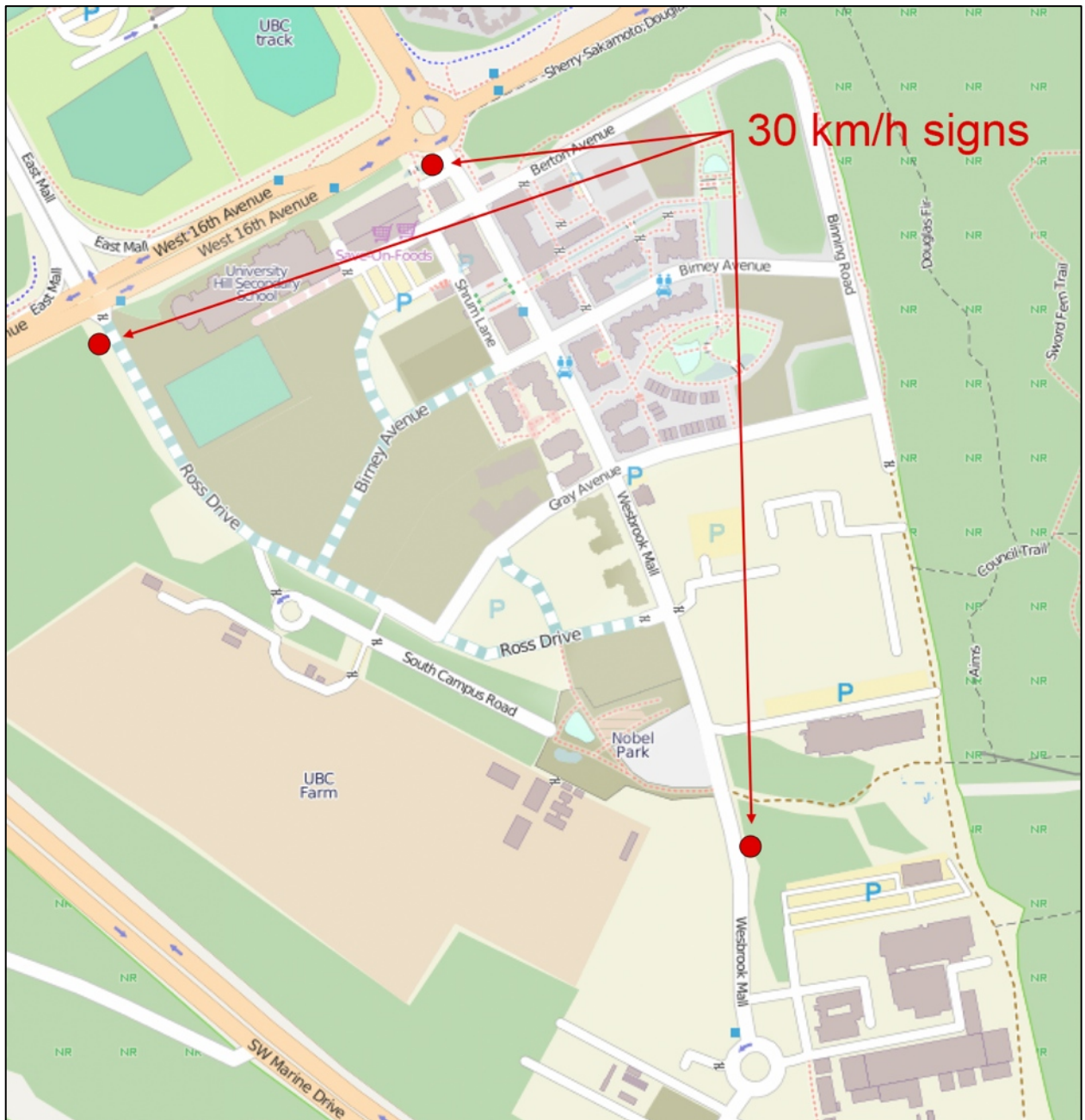
**Table 1 – Traffic speeds on Wesbrook Mall north of Gray Avenue (Oct. 2012)**

Time Period	Direction	Average Daily Traffic	85 <sup>th</sup> Percentile Speed
Weekday average	Northbound	2,160 veh/day	38.1 km/h
	Southbound	1,980 veh/day	38.8 km/h
	Both directions	4,140 veh/day	38.5 km/h
Weekend average	Northbound	1,550 veh/day	37.4 km/h
	Southbound	1,330 veh/day	38.3 km/h
	Both directions	2,880 veh/day	37.8 km/h

A 30 km/h speed limit is intended to apply on Wesbrook Mall through the Wesbrook Place neighbourhood. 30 km/h speed signs have not been installed, however, and consequently the default speed limit of 50 km/h currently applies. To address this, 30 km/h speed signs should be installed on Wesbrook Mall north of Berton Avenue and south of the greenway on the southern edge of the neighbourhood, as illustrated in Figure 2. A third 30 km/h sign should eventually be installed on Ross Drive south of 16<sup>th</sup> Avenue when this road is completed, so that 30 km/h speed signs are posted at all entrances to the neighbourhood.

In general, achieving 38 km/h traffic speeds in a 30 km/h speed zone would be considered an acceptable result. Because the speed limit on Wesbrook Mall is currently the default 50 km/h, a 38 km/h result is very good, and indicates that the road width, raised crossings and other design features of the roadway are effective in discouraging speeding. It can be expected that when 30 km/h speed signs are installed, traffic speeds might decrease slightly, but will remain in the mid-30 km/h range. No additional measures are necessary nor possible to further reduce traffic speeds.

Figure 2 – 30 km/h sign locations



## Pedestrian Safety

In cases where traffic speeds are not excessive, the root cause of concerns about speeding traffic is often issues affecting pedestrian safety. This is likely the case on Wesbrook Mall, where traffic speeds are in an acceptable range, but pedestrian crossing facilities are deficient. These deficiencies include:

- No pedestrian crossings signs at intersections without stop signs.
- Bollard-style pedestrian crossing signs at green streets that are obstructed by parked vehicles.
- No crossing markings at green streets and intersections without stop signs.

To eliminate these deficiencies and improve safety for pedestrians crossing Wesbrook Mall, the following should be implemented:

- At Berton Avenue, zebra crossing markings should be installed on the north and south sides of the intersection across Wesbrook Mall, with double-sided pedestrian crossing signs (TAC sign code RA-4) on all four corners.
- At the green street between Berton and Birney Avenues, dual zebra crossing markings should be installed as illustrated in Figure 3, with double-sided pedestrian crossing signs on the northwest and southeast “corners” of the crossing.
- At the green street between Birney and Gray Avenues, zebra crossing markings should be installed, with double-sided pedestrian crossing signs on the northwest and southeast “corners” of the crossing.

**Figure 3 – Zebra crossing markings at green street (simulated)**



## Intersection Operations

At various times, all-way stop signs were installed at the Berton, Birney, Gray and Ross intersections on Wesbrook Mall. The original traffic plan for the neighbourhood indicated that an all-way stop was only required at Berton Avenue. With the recent conversion of Berton Avenue to one-way operation west of Wesbrook Mall, this all-way stop was removed. As noted above, stop signs were removed at the Birney and Gray intersections in order to undertake a traffic speed study.

To determine what stop signs configurations are appropriate for current traffic conditions, traffic counts were conducted at the Berton, Birney, Grey and Ross intersections on 3 October 2012. These traffic counts were used in combination with traffic forecasts for full build out of the Wesbrook Place neighbourhood to also determine what stop sign configurations would be required in future. The results of an intersection operations analysis of existing and full build out traffic conditions are summarized in Table 2.

**Table 2 – Intersection operations on Wesbrook Mall (Oct. 2012)**

Intersection Control		Peak Hour	Oct. 2012		Full Build Out	
			Stop Sign Delay	Level of Service	Stop Sign Delay	Level of Service
Berton	East/west stops	AM	12.2 s	B	18.8 s	C
		PM	13.5 s	B	28.2 s	D
Birney	East/west stops	AM	11.4/17.2 s	B/C	19.9/36.2 s	C/E
		PM	12.1/20.3 s	B/C	30.6/60+ s	D/F
	All-way stops	AM	8.4–10.1 s	A	10.1–13.4 s	B
		PM	8.5–10.7 s	B	10.9–18.7 s	C
Gray	East/west stops	AM	10.3/12.5 s	B	13.2/22.0 s	B/C
		PM	11.4/12.4 s	B	26.4/29.9 s	D
Ross	East/west stops	AM	10.6/11.6 s	B	17.3	C
		PM	10.6/11.5 s	B	13.2	B

The results in Table 2 indicate the average delay in seconds that motorists at a stop sign would experience during morning and afternoon peak hours. Average delays at other times of the day would be less. This average delay is also expressed as a level of service, where A is the best possible level of service (equivalent to average delays of less than 10 seconds), and F is the worst possible (equivalent to average delays of more than 50 seconds). Generally, levels of service D or better are considered acceptable during peak hours.

The Berton, Birney and Ross intersections currently operate and will continue to operate at acceptable levels of service with stop signs on the eastbound and westbound approaches only. There is no need for all-way stop control at these intersections at this time, and based on forecast traffic volumes there is no need in the future. However, UBC should continue to monitor traffic conditions at these intersections to determine if all-way stop control would ever be required.

The Birney Avenue intersection currently operates at acceptable levels of service during peak hours, but eventually the average delays experienced by eastbound traffic would reach

unacceptable levels. The solution to this is all-way stop control. Although it would not be required for several years, it is recommended that all-way stop control be implemented at this time, for the following reasons:

- The Birney Avenue intersection has operated with all-way stop control for over three years.
- Birney Avenue is the primary egress route for traffic leaving the Wesbrook Village commercial centre.
- All-way stop control would provide a pedestrian safety benefit by assisting pedestrians crossing Wesbrook Mall at this intersection.

In conjunction with changes to stop signs, the following changes should also be made:

- Stop bars on Wesbrook Mall at the Berton, Gray and Ross intersections should be removed.
- The “stop ahead” warning sign on southbound Wesbrook Mall south of Berton Avenue should be removed.
- Temporary “traffic pattern change” signs should be installed on southbound Wesbrook Mall north of Berton Avenue and on northbound Wesbrook Mall south of Ross Drive, to alert motorists and other road users to the changes. These signs should be removed after three months.

## Summary

Table 3 and Figure 4 provide a summary of all changes described above. These include new 30 km/h speed signs, pedestrian crossings signs, zebra crossing markings, changes to stop signs, removal of stop bars and a “stop ahead” sign, and “traffic pattern change” signs.

**Table 3 – Summary of changes on Wesbrook Mall**

Item	Location	Notes
30 km/h signs	Southbound north of Berton	Former location of “stop ahead” sign
	Northbound south of greenway	Install on street light
Pedestrian crossing signs	Berton Avenue	Double-sided signs on all (4) corners
	Green street between Berton and Birney	Double-sided signs on NW and SE “corners”
	Green street between Birney and Gray	Double-sided signs on NW and SE “corners”
Zebra crossing markings	Berton Avenue	On north and south side of intersection
	Green street between Berton and Birney	As in Figure 3
	Green street between Birney and Gray	
Stop signs	Berton Avenue	Retain existing westbound stop sign
	Birney Avenue	Install all-way (4) stop signs
	Gray Avenue	Retain eastbound and westbound stop signs
	Ross Drive	Remove northbound and southbound stop signs, retain eastbound stop sign, retain westbound stop sign until site redeveloped to green street
Stop bars	Berton Avenue	Remove on north, south and west sides of intersection
	Gray Avenue	Remove on north and south sides of intersection
	Ross Drive	Remove on north and south sides of intersection
“Stop ahead” sign	Southbound between Berton and Birney	Remove
“Traffic pattern change” signs	Southbound north of Berton	Remove after 3 months
	Northbound south of Ross	Remove after 3 months

**Figure 4 – Summary of changes on Wesbrook Mall**

