Boundary Street, Roseville – Traffic Study

Report

December 2015
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1. Project background

The NSW Government is funding this $20 million project for essential work on Boundary Street to improve traffic flow and safety for road users.

The NSW Government is funding this project as part of its $246 million Pinch Point Program, which aims to reduce traffic delays, manage congestion and maintain travel times on Sydney’s major roads, particularly during weekday peak periods. This project will also improve road safety for all road users. As part of this Pinch Point Program, Roads and Maritime is investigating a number of key intersections along Boundary Street to determine if improvements can also be made to reduce delays and provide more consistent travel times.

Boundary Street is a freight corridor with heavy vehicle access for the northern beaches industrial areas. It provides a strategic transport link in Sydney’s road network. Traffic volumes are nearly 37,000 vehicles per day with average travel speeds as low as 13km/h in peak times.

In April 2012, Transport for NSW replaced the rail bridge over Boundary Street which included the raising and widening of the bridge support structures to facilitate the future road widening. Current congestion problems in this area include:

- The limited number of traffic lanes
- The right turn bay from Boundary Street to the Pacific Highway overflows and creates delays for traffic turning left, particularly in peak periods
- The right turn lane from Boundary Street to Archer Street creates delays for eastbound traffic
- Right turns in and out of Hill Street create delays for through traffic on Boundary Street.

2. Project features

Roads and Maritime Services will widen Boundary Street on the northern side from the Pacific Highway to Melnotte Avenue. The project aims to help reduce traffic congestion and provide more consistent travel times through features including:

- Two dedicated left turn lanes from Boundary Street into the Pacific Highway
- One dedicated right turn lane and one shared right turn and though lane from Boundary Street into the Pacific Highway / Corona Avenue
- Two dedicated eastbound through lanes in Boundary Street from the Pacific Highway to Archer Street
- A dedicated right turn lane from Boundary Street into Archer Street
- Hill Street converted to left in / left out access
- A shared pedestrian / bicycle path on Boundary Street between Hill Street and Archer Street
- Traffic light crossing facilities for both pedestrians and cyclists across Boundary Street at Archer Street
- Landscaping and urban design in consultation with Ku-ring-gai Council and Willoughby City Council.
3. Consultation

Roads and Maritime carried out consultation on the Pinch Point Program project for Boundary Street. Many respondents indicated they understood the need to improve traffic flows on Boundary Street and agreed in principal with the project. Some respondents, however, had reservations about one or more aspects of the proposal.

The most common concern was the flow-on effect the changes proposed at Hill Street / Boundary Road and Corona Street / Pacific Highway intersections would have on access and congestion in Roseville, west of the Pacific Highway and north of Boundary Street. Limited alternative travel routes and additional travel time were mentioned by respondents.

Submissions received during the community consultation suggested the access arrangements at the Boundary Street / Hill Street intersection could create a problem by worsening traffic congestion and compromising emergency vehicle and residential access to Roseville, the suburb north of Boundary Street.

Several people said they supported the changes proposed for Boundary Street with the exception - they do not support the closure of Hill Street to right turning traffic from Boundary Street and from Hill Street via Boundary Street to the Pacific Highway until improvements have been made to other access points for the area, notably the Pacific Highway / Clanville Road intersection, Clanville Road Railway Bridge and the Clanville Road / Hill Street intersection.

In response to these concerns Roads and Maritime carried three community workshops on:

- Saturday 24 November 2012 from 1pm to 4pm
- Tuesday 27 November 2012 from 6.30pm to 8.30pm
- Tuesday 5 February 2013.

Roads and Maritime prepared a community consultation report, which documented all matters raised by the local community. Following further representation from the local MP, on behalf of residents, Roads and Maritime made a commitment to review the previous findings and broaden the investigation.

This report details the findings of this investigation.
4. NSW Long Term Transport Master Plan

The NSW Long Term Transport Master Plan (LTTMP) (TfNSW 2012) provides a framework to deliver an integrated, modern transport system by identifying NSW’s transport actions and investment priorities for the next 20 years.

The Boundary Street proposal is consistent with the aim of the LTTMP of reducing congestion and improving safety at pinch point locations. Being able to travel safer, including the provision of safe travel options and networks is a key action of the LTTMP, and the Boundary Street project addresses this through:

- Vehicles turning left from Hill Street into Boundary Street are a potential safety issue, due to the lack of visibility for motorists.
- The proposal would allow for safer access from Hill Street into and out of Boundary Street.
- The removal of the right turn into Hill Street from Boundary Street would also assist in the reduction of risk taking for turning vehicles.
- Boundary Street is identified as a secondary B-Double truck route, linking the major north-south arterial road of the Pacific Highway to the industrial areas in northern Sydney, including Brookvale (Roads and Maritime 2012). The proposal would help to relieve congestion and improve network efficiency for freight movements.
- Formalising the pedestrian crossing on Corona Avenue, at the intersection with the Pacific Highway.
- Improving the pedestrian and cyclists facilities across Boundary Street at Archer Street, and along the northern footpath of Boundary Street.
5. Intersection Conditions along Boundary Street

This section of the report investigates the existing conditions of intersections along Boundary Street, specifically the turning restrictions from Boundary into the side streets, including:

- Hill Street: No Right Turn 6am-10am and 3pm-7pm Monday to Friday (Buses Excepted) into Hill Street
- Spearman Street: No Right Turn permitted
- Wandella Avenue: No Right Turn 6am-10am and 3pm-7pm Monday to Friday into Wandella Avenue
- Clermiston Avenue: Boundary Street median prohibits all right turn access
- Archbold Road: Full access

5.1 Hill Street

The proposed improvements to Boundary Street, at the intersection with Hill Street, are displayed in Figure 5-1.

![Figure 5-1 Proposed improvements to the intersection of Boundary Street / Hill Street](image)

Residents questioned why the right turn into Hill Street cannot be maintained outside of commuter peak periods being 6am-10am and 3pm-7pm Monday to Friday.

A limited right turn movement into Hill Street from Boundary Street cannot be provided on safety and network capacity grounds being:

- Vehicles wishing to turn right would have to wait for gaps in the opposing right turn bay, and would then need to traverse two lanes of through traffic on Boundary Street to gain access to Hill Street.
- High probability that vehicles travelling east in the kerbside lane of Boundary Street would not see the right turning vehicle, resulting in crashes. This crash scenario is considered
highly likely on the network where right turning vehicles needed to cross three lanes of traffic.

- Element of confusion for following vehicles as to whether the right turning vehicle is wishing to access Hill Street or the Pacific Highway.

Impact on Bus Services: The conversion of the Hill Street intersection with Boundary Street to a left in / left out arrangement would require some re-routing of bus movements. Discussions with the bus operator of the area indicate that they have no concerns with relocating the northbound movement from Hill Street to the Pacific Highway.

**Existing traffic volumes at Boundary Street / Hill Street**

Roads and Maritime carried out turning movement counts on Boundary Street at Hill Street on 24 April 2015 to ascertain the number of vehicles that would be impacted by the proposed left in / left out arrangement. Counts were carried out between 10am and 3pm as a right turn restriction was in operation between 6am-10am and 3pm-7pm Monday to Friday. Table 5-1 provides details of the recorded number of right turn movements for each hour of the survey.

**Table 5-1 Summary of traffic survey at Boundary Street / Hill Street**

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Right turn from Boundary Street into Hill Street</th>
<th>Right turn from Hill Street into Boundary Street</th>
</tr>
</thead>
<tbody>
<tr>
<td>10am – 11am</td>
<td>53</td>
<td>23</td>
</tr>
<tr>
<td>11am – 12pm</td>
<td>104</td>
<td>32</td>
</tr>
<tr>
<td>12pm – 1pm</td>
<td>89</td>
<td>34</td>
</tr>
<tr>
<td>1pm – 2pm</td>
<td>103</td>
<td>33</td>
</tr>
<tr>
<td>2pm – 3pm</td>
<td>121</td>
<td>44</td>
</tr>
</tbody>
</table>

All right turns into / out of Hill Street at Boundary Street were removed on 24 September 2015, which also required the single bus service (Number 558) that uses this route to be redirected. This bus service is now redirected via the Pacific Highway. No issues have been raised with Roads and Maritime or the project team since the implementation of these turning restrictions.

**5.2 Spearman Street**

The left in / out arrangement on Spearman Street at Boundary Street (Ku-ring-gai Council side) was installed in 2001/2002 in response to an adverse cross traffic crash history between the two sections of Spearman Street.

Crash analysis for the five year period, from 1997 to 2001, indicated that there had been 12 crashes associated with this movement. Both Councils installed a left in / left out arrangement at Boundary Street, with the Ku-ring-gai facility designed to actively prevent motorists attempting to traverse Boundary Street.

**Figures 5-2 and 5-3** display the Spearman Road approaches to Boundary from the north and south. These images clearly display the left in / left out road layout and supporting signage.
Commuter peak hour right turn restrictions from Boundary Street into Wandella Avenue are in force between 6am and 10am and between 3pm and 7pm from Mondays to Fridays. Figure 5-4 displays the Boundary Street approach, and no right turn signage, at Wandella Avenue.
4 Turn restriction from Boundary Street to Wandella Avenue

5.4 Clemiston Avenue

A centre carriageway median on Boundary Street, which starts 50m west of Clemiston Avenue, ensures that right turn access to / from Clemiston Avenue at Boundary Street is prohibited. The Clemiston Avenue intersection with Boundary Street is limited to left in/ left out movements. Figure 5-5 clearly shows the central median that limits right turn movements between Boundary Street and Clemiston Avenue.

5.5 Archbold Road

The intersection of Boundary Street and Archbold Road has traffic lights and provides full access for all turning movements. This includes right turns into and out of Archbold Road at Boundary Street. Figure 5-6 shows an aerial view of the Boundary Street / Archbold intersection with traffic lights.
Figure 5-6 Boundary Street / Archbold Road intersection with traffic lights allows for all movements
6. Alternative route to Roseville Village

The alternative routes from Boundary Street to Roseville Village have been identified and are displayed on an aerial photograph in Appendix A. Table 6-1 provides a description of the alternative routes available to motorists that wish to travel from Boundary Street to Roseville Village.

Table 6-1 Alternative route from Boundary Street to Roseville Village

<table>
<thead>
<tr>
<th>Route</th>
<th>Description</th>
<th>* Length</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route A</td>
<td>Boundary Street and then right into Hill Street</td>
<td>1.0 km</td>
<td>Existing situation / control route</td>
</tr>
<tr>
<td>Route B</td>
<td>Boundary Street, right into Wandella Avenue, left into Victoria Street</td>
<td>1.0 km</td>
<td>The same part time right turn restrictions apply at Hill Street and at Wandella Street, with the only difference being, buses are exempt from the turning restrictions at Hill Street.</td>
</tr>
<tr>
<td>Route C</td>
<td>Boundary Street then left into Macquarie Street, right into William Street, right into Archer Street, right into Boundary Street, left into Spearman Street and then left into Victoria Street</td>
<td>1.85 km</td>
<td>Westbound motorists on Boundary Street can also use Ferncourt Avenue or Darling Street if they wish to utilise this alternative route. A No Left Turn 6am to 10am Monday to Friday restriction applies at Spearman Street (Willoughby side).</td>
</tr>
<tr>
<td>Route D</td>
<td>Boundary Street then left into Macquarie Street, right into William Street, right at Pacific Highway, right into Boundary Street and then left into Hill Street</td>
<td>1.65 km</td>
<td></td>
</tr>
</tbody>
</table>

Note * All route distances start at the intersection of Boundary Street / Archbold Road and stop at the intersection of Hill Street / Victoria Street.

Overall, the alternative routes from Boundary Street to Roseville Village summarised within Table 6-1 are considered safe and viable options. The additional distance and travel time for the alternative routes are considered negligible to the overall journey.

Motorists whose journey originates east of Archbold Road are advised to turn right into Archbold Road then turning left into Lord Street or Roseville Avenue, which would bring them straight into the Roseville Village.
7. Boundary Street / Wandella Avenue Crash Data

Table 7-1 summarises the crash data recorded at the Boundary Street / Wandella Avenue intersection from July 2009 to June 2014.

Table 7-1 Summary of crash data for Boundary Street / Wandella Avenue from 2009-2014

<table>
<thead>
<tr>
<th>Crash Outcome</th>
<th>Date</th>
<th>Time</th>
<th>RUM Code</th>
<th>Crash Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injury</td>
<td>1/11/2009</td>
<td>1030</td>
<td>201</td>
<td>Opp - Head on</td>
</tr>
<tr>
<td>Non-casualty (towaway)</td>
<td>13/03/2011</td>
<td>1400</td>
<td>301</td>
<td>Same - Rear end</td>
</tr>
<tr>
<td>Non-casualty (towaway)</td>
<td>23/03/2011</td>
<td>0830</td>
<td>104</td>
<td>Adj - Right-thru from right</td>
</tr>
<tr>
<td>Non-casualty (towaway)</td>
<td>16/06/2011</td>
<td>1855</td>
<td>104</td>
<td>Adj - Right-thru from right</td>
</tr>
<tr>
<td>Non-casualty (towaway)</td>
<td>26/10/2012</td>
<td>0040</td>
<td>703</td>
<td>Left off cway into object</td>
</tr>
</tbody>
</table>

The crash data identified that five crashes were recorded at the Boundary Street / Wandella Avenue intersection over the five year period from 2009-2014. The recorded data includes one injury, and two right-through crash types.
8. Conclusion

This report has been prepared by Roads and Maritime in response to the community concern, specifically the loss of amenity and accessibility to the Roseville Village, from Boundary Street, that could arise if the left in / left out arrangement is installed on Boundary Street at Hill Street.

Permitting a right turn movement from Boundary Street into Hill Street would require motorists to traverse a right turn bay and two lanes of eastbound traffic, and thus cannot be endorsed on road safety and network efficiency grounds.

The Boundary Street / Hill Street intersection was converted to left in / left out in late 2015, which included the rerouting of one bus service. No issues have been raised with Roads and Maritime or the project team since the implementation of these turning restrictions.

Right turn movements from Boundary Street into Wandella Avenue remain available to motorists between 10am and 3pm from Mondays to Fridays and on weekends.

For those residents living west of Boundary Street / Archbold Road, three routes have been identified that provide residents with alternative access to the Roseville Village. These options are considered safe and efficient and are considered to be viable alternatives to turning right from Boundary Street into Hill Street.
Appendix A – Boundary Street alternate route

Boundary Street Alternate Route

No Right Turn
6am - 10am
3pm - 7pm
Mon - Fri
Buses Excepted

No Right Turn
6am - 10am
3pm - 7pm
Mon - Fri

No Left Turn
6am - 10am
Mon - Fri

No Entry

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