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8 November 2018

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Dear Ted

## SCOTCHMER PRECINCT – NORTH FITZROY

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I refer to your request for a traffic engineering assessment of the impact of various traffic management treatment options on the surrounding road network, specifically:

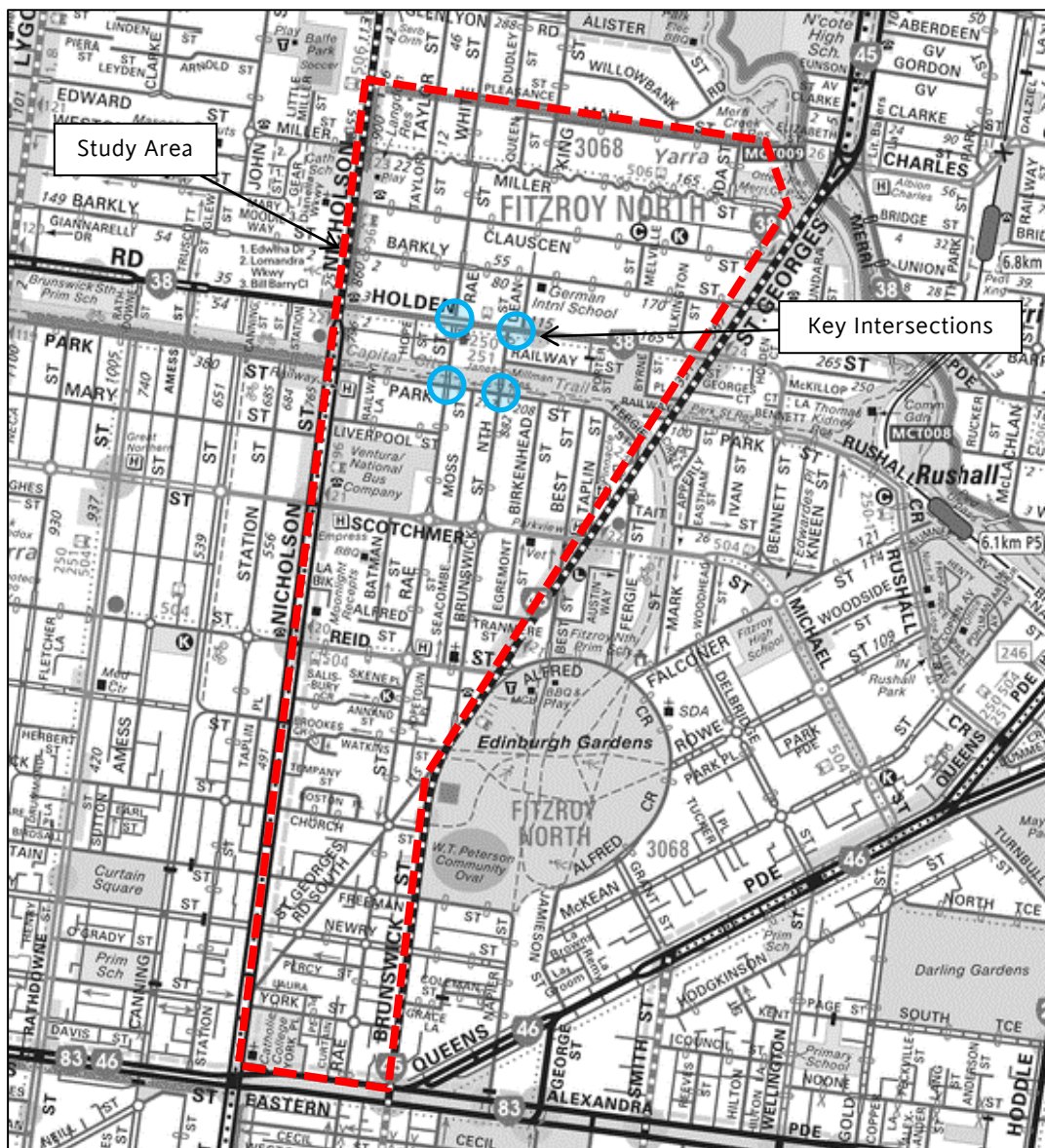
1. Right turn ban on Holden Street at Brunswick Street North;
2. Median island on Holden Street at Brunswick Street North (i.e. left-in/left-out only);
3. Median island on Holden Street at Brunswick Street North and Dean Street (i.e. left-in/left out only);
4. Partial closures – southbound closure on Rae Street and northbound closure on Brunswick Street North at the Capital City Trail; and
5. Full closure at Rae Street at the Capital City Trail and median island on Holden Street at Brunswick Street North and Dean Street.

In the course of preparing this letter we have undertaken turning movement counts at key intersections and determined the likely traffic distribution and implications for each treatment option. Our assessment is as follows.

## BACKGROUND

Yarra City Council is undertaking a Local Area Place Making (LAPM) Study in the Scotchmer Precinct, North Fitzroy.

The study area is shown in **Figure 1** and is bounded by Nicholson Street, May Street, St Georges Road, Brunswick Street and Alexandra Parade in North Fitzroy.



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FIGURE 1: LOCATION OF SUBJECT SITE

As part of the LPM Study, Council is considering various treatment options to reduce traffic volumes and rat running, and to improve pedestrian and cyclist safety, on Brunswick Street North and Rae Street in the vicinity of the Capital City Trail.

## EXISTING CONDITIONS

### Key Intersections

The Rae Street / Holden Street intersection is a cross intersection with Stop controls on Rae Street and a median island restricting access to left-in/left-out. An aerial photo of the intersection of Rae Street / Holden Street is shown in Figure 2.



FIGURE 2: AERIAL PHOTO OF RAE STREET / HOLDEN STREET INTERSECTION

The Rae Street / Park Street intersection is a cross intersection with Stop controls on Rae Street. Park Street permits one-way westbound traffic flow. An aerial photo of the intersection of Rae Street / Park Street is shown in **Figure 3**.



FIGURE 3: AERIAL PHOTO OF RAE STREET / PARK STREET INTERSECTION

The Brunswick Street North / Dean Street / Holden Street intersection is a staggered intersection with Stop controls on Brunswick Street North and Dean Street. An aerial photo of the intersection of Brunswick Street North / Dean Street / Holden Street is shown in **Figure 4**.



FIGURE 4: AERIAL PHOTO OF BRUNSWICK STREET NORTH / DEAN STREET / HOLDEN STREET

The Brunswick Street North / Park Street intersection is a cross intersection with Give Way controls on Park Street. Park Street is restricted to one-way westbound to the west of Brunswick Street North and one-way eastbound to the east of Brunswick Street North. An aerial photo of the intersection of Brunswick Street North / Park Street is shown in Figure 5.



FIGURE 5: AERIAL PHOTO OF BRUNSWICK STREET NORTH / PARK STREET

### Existing Traffic Volumes

O'Brien Traffic commissioned turning movement counts of the 4 key intersections on Thursday 18 October 2018 at the following times:

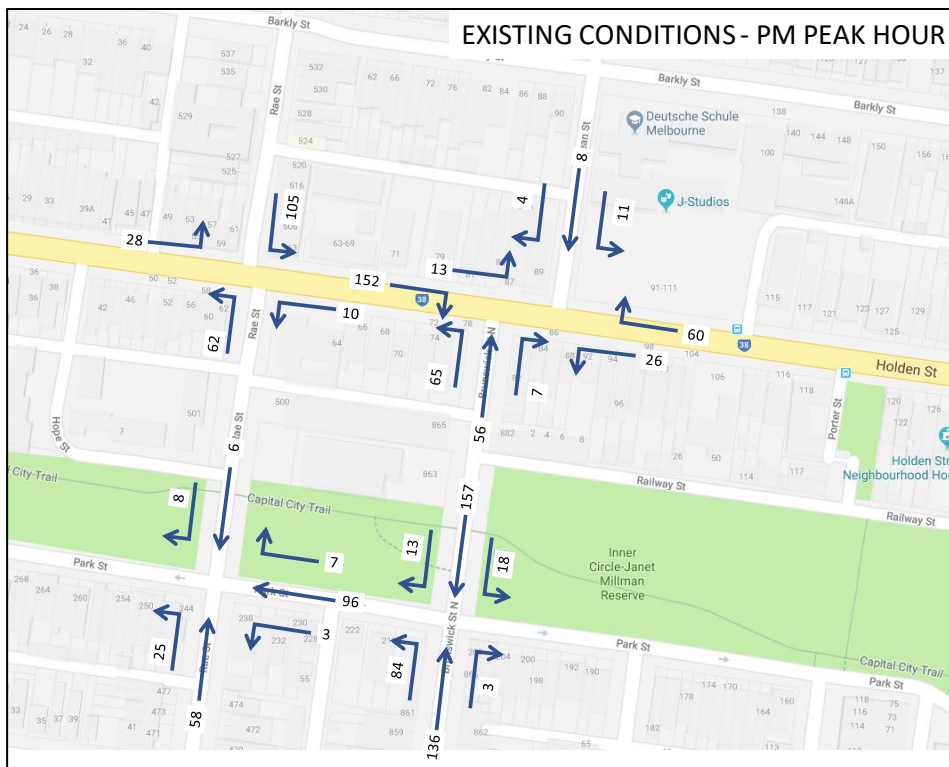
- 6:30am to 9:30am; and
- 3:30pm to 7:00pm.

These times were selected as they represent typical commuter peak periods.

The existing on-road peak hour volumes are presented in **Figures 6 – 7**.



**FIGURE 6: EXISTING TRAFFIC VOLUMES – AM PEAK HOUR (7AM – 8AM)**



**FIGURE 6: EXISTING TRAFFIC VOLUMES – PM PEAK HOUR (5:30PM – 6:30PM)**

## TRAFFIC RE-DISTRIBUTION & IMPACT

For each treatment option, vehicles will be required to find an alternative route to their destination. Where there is a convenient alternative local route, the majority of vehicles will simply transfer to it. However, where the alternative local route is not convenient, a proportion of vehicles will re-route to the arterial road network.

In this case, it is assumed that 40% of traffic will transfer to the arterial network where an obvious alternative route is not available.

This is consistent with Council's findings of the *Stage 1 Works Review – LATM 16 Victoria Precinct (Richmond)* (Stage 1 constructed in 2014). This post construction evaluation found reductions in traffic volumes of 39-65% in streets where traffic movements were restricted (eg. left in/left out treatments) without an increase in traffic volumes on other local streets.

Based on the above, the likely traffic re-distribution of each traffic management option is discussed as follows.

### Option 1 – Right turn ban from Holden Street to Brunswick Street North

Option 1 will ban the right turn from Holden Street in Brunswick Street North. This will impact vehicles currently travelling north to south via the Rae Street - Holden Street - Brunswick Street North route. It is likely that some vehicles currently utilising this route will transfer to Dean Street, turn right into Holden Street, then left into Brunswick Street North.

The following assumptions have been made in regard to the traffic re-distribution of Option 1:

- Traffic approaching from Holden Street west (Nicholson Street intersection) to turn right into Brunswick Street North will transfer to/stay on the arterial road network;
- Of the existing traffic turning left from Rae Street (north) into Holden Street, 90% currently turns right into Brunswick Street North and 10% continues eastbound on Holden Street;
- Of the existing traffic turning left from Rae Street (north) into Holden Street, then right into Brunswick Street North:
  - 40% will transfer onto the arterial roads
  - 60% will transfer onto Dean Street, turn right onto Holden Street, then left onto Brunswick Street North.

The traffic redistribution for Option 1, for the AM and PM peak hours, is shown in **Figures 7 and 8** respectively.

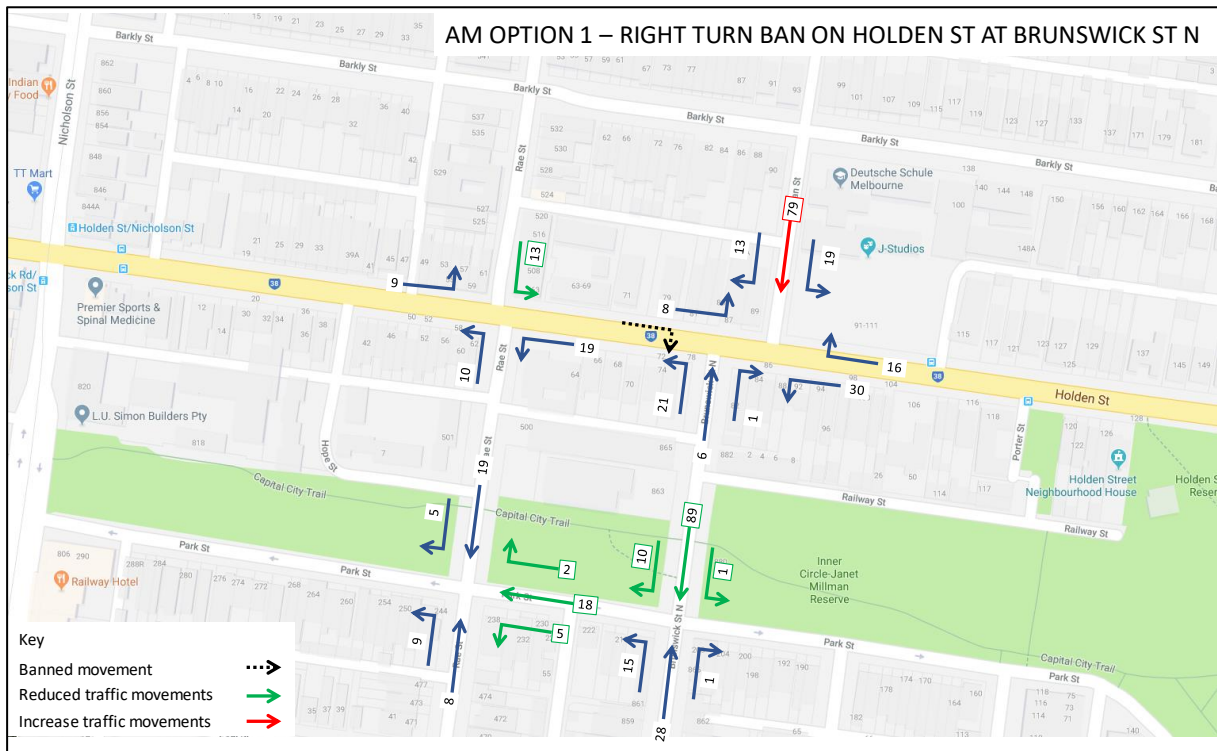


FIGURE 7: OPTION 1 – AM TRAFFIC RE-DISTRIBUTION

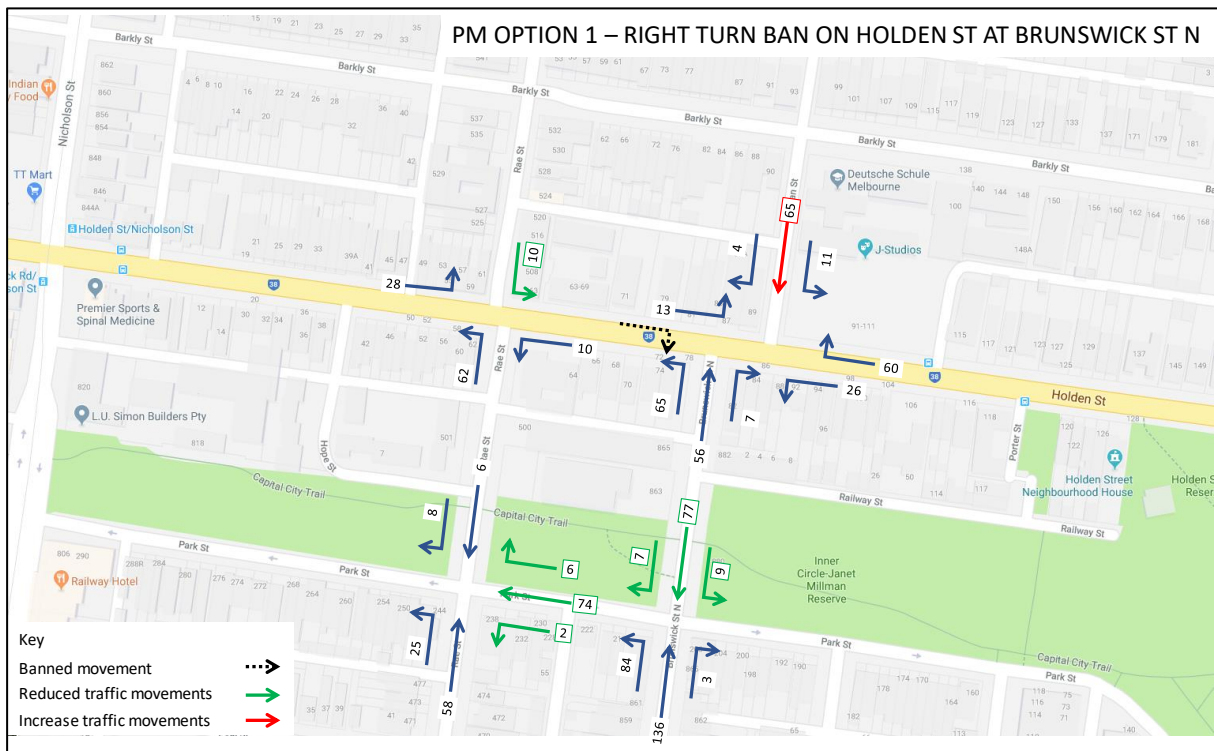


FIGURE 8: OPTION 1 – PM TRAFFIC RE-DISTRIBUTION

## Option 2 – Median island on Holden Street at Brunswick Street North

Option 2 will install a median island on Holden Street at Brunswick Street North, restricting Brunswick Street North to left-in/left-out. This option will prevent the right turn movement into Brunswick Street North from Holden Street, similar to Option 1. In addition it will prevent vehicles travelling from south to north via the Brunswick Street North – Holden Street - Dean Street route. It is likely that vehicles travelling north will transfer onto Park Street to access St Georges Road / Nicholson Street.

The following assumptions have been made in regard to the traffic re-distribution of Option 2:

- Existing traffic turning right from Holden Street to Brunswick Street North will transfer as per Option 1.
- Of the existing traffic turning right from Brunswick Street North to Holden Street (including traffic continuing into Dean Street):
  - 40% will transfer onto the arterial network
  - 50% will transfer eastbound on Park Street to St Georges Road
  - 10% will transfer westbound on Park Street to Nicholson Street.

The traffic redistribution for Option 2, for the AM and PM peak hours, is shown in **Figures 9 and 10** respectively.

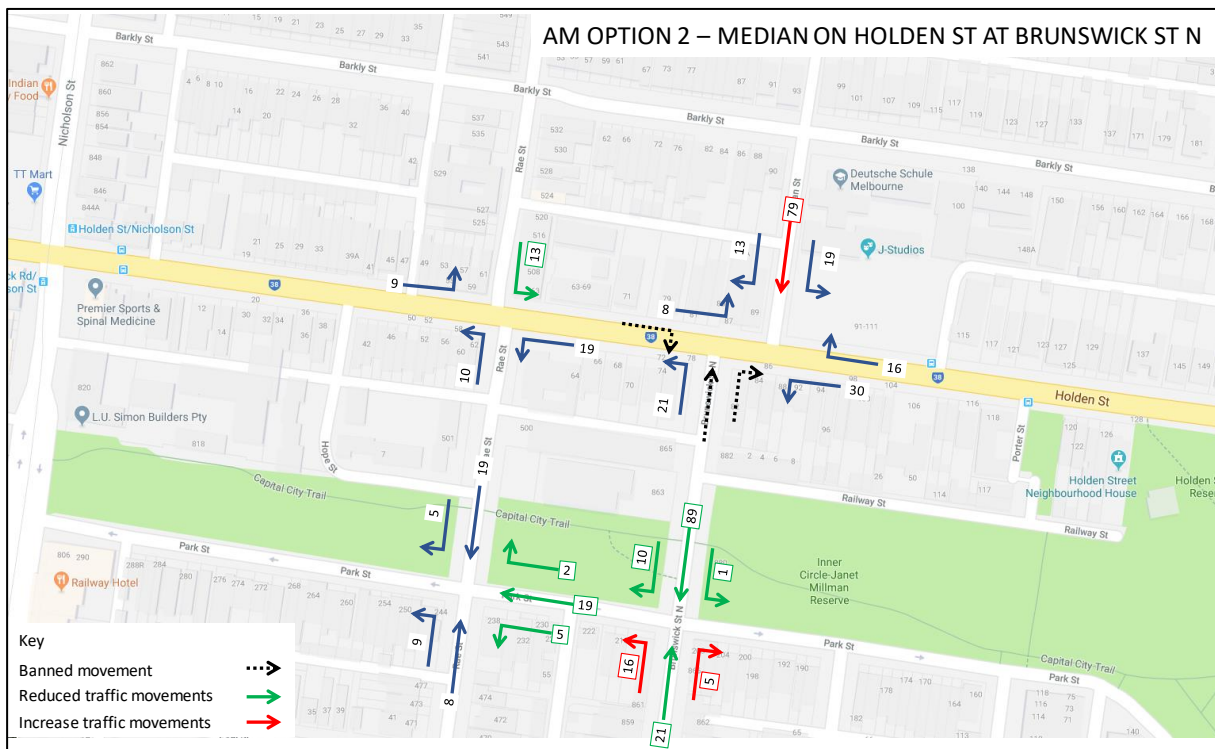


FIGURE 9: OPTION 2 – AM TRAFFIC RE-DISTRIBUTION



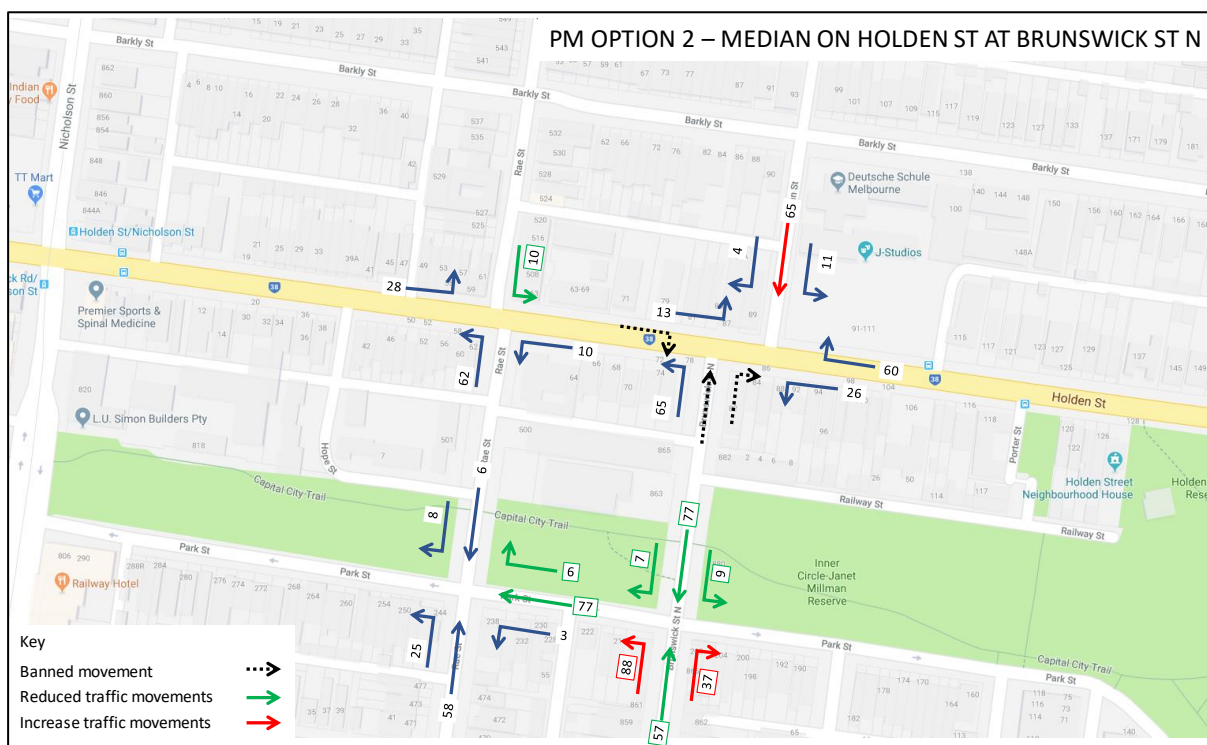


FIGURE 10: OPTION 2 – PM TRAFFIC RE-DISTRIBUTION

### Option 3 – Median island on Holden Street at Brunswick Street North and Dean Street

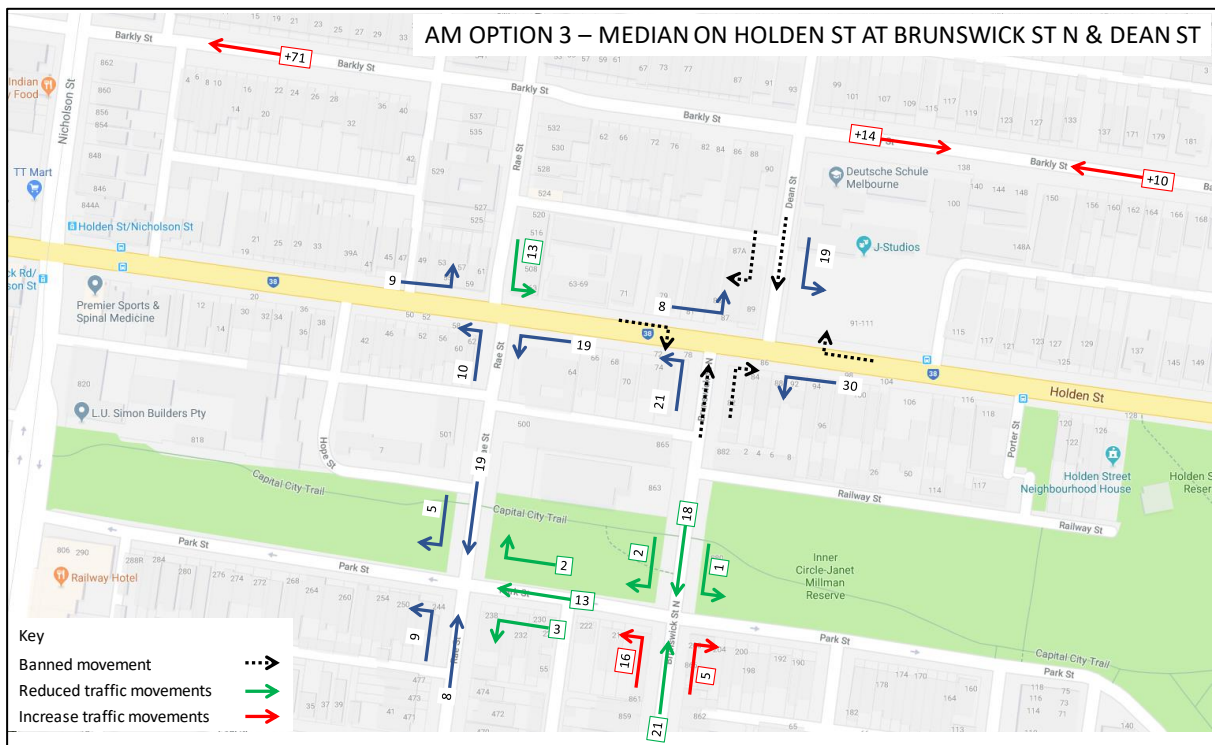
Option 3 will install a median island on Holden Street at Brunswick Street North and Dean Street, restricting both streets to left-in/left-out only. This option will restrict vehicles from travelling between the north and south of Holden Street via the local road network. It is likely that vehicles travelling north will transfer onto Park Street and vehicles travelling south will transfer onto Barkley Street to access St Georges Road or Nicholson Street.

The following assumptions have been made in regard to the traffic re-distribution of Option 3:

- Existing traffic turning right from Holden Street to Brunswick Street North will transfer as per Options 1 and 2.
- Existing traffic turning right from Brunswick Street North to Holden Street (including traffic continuing to Dean Street) will transfer as per Option 2.
- Restricting Dean Street to left-in/left-out will transfer traffic currently travelling from the north side to the south side of Holden Street onto the arterial network. It is assumed that of the existing traffic currently travelling north to south:
  - 40% will transfer to (i.e. stay on) the arterial network without travelling through the local area;
  - 50% will transfer to Barkly Street and travel westbound to Nicholson Street;
  - 10% will transfer to Barkly Street and travel eastbound to St Georges Road.

- Of the existing traffic turning right into Dean Street from Holden Street:
  - 40% will transfer to the arterial network;
  - 60% will transfer to Barkly Street (westbound from St Georges Road).

The traffic redistribution for Option 3, for the AM and PM peak hours, is shown in **Figures 11 and 12** respectively.



**FIGURE 11: OPTION 3 – AM TRAFFIC RE-DISTRIBUTION**

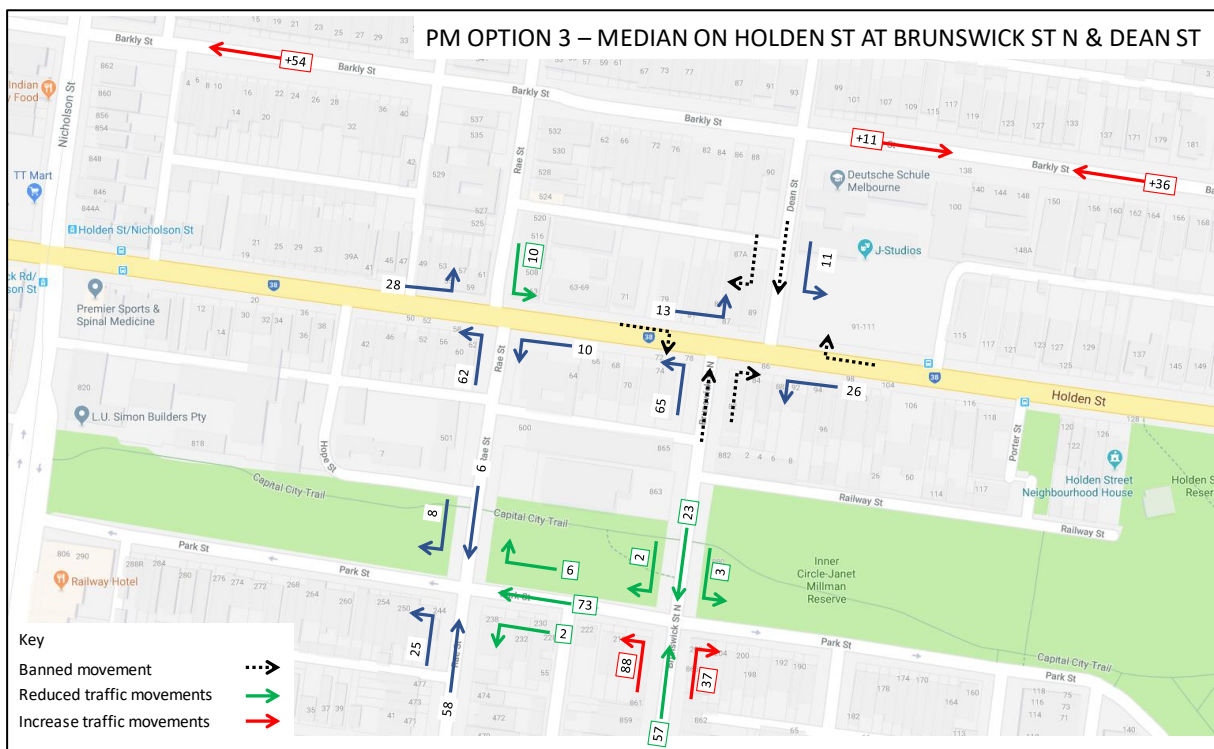


FIGURE 12: OPTION 3 – PM TRAFFIC RE-DISTRIBUTION

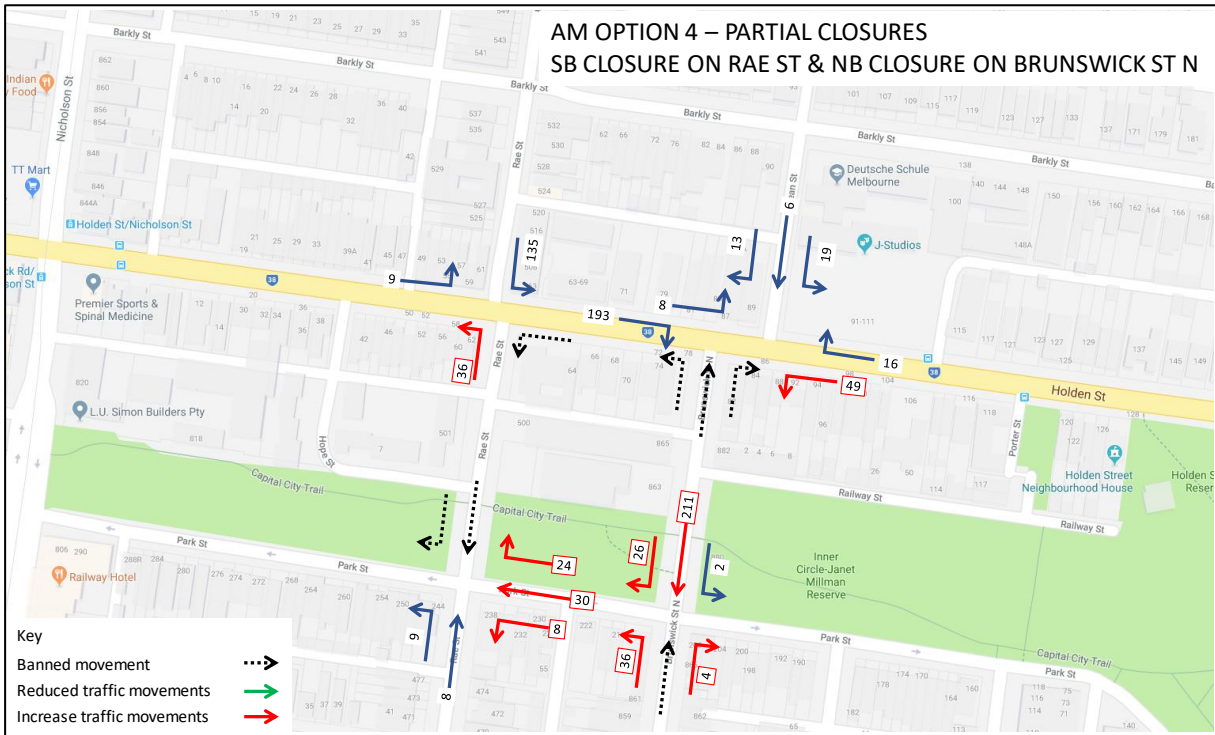
### Option 4 – Rae Street southbound closure and Brunswick Street North northbound closure at Capital City Trail

Option 4 will close Rae Street to southbound traffic and close Brunswick Street North to northbound traffic at the Capital City Trail. This option is anticipated to shift existing northbound/southbound traffic between Rae Street and Brunswick Street North based on the new one-way traffic flows.

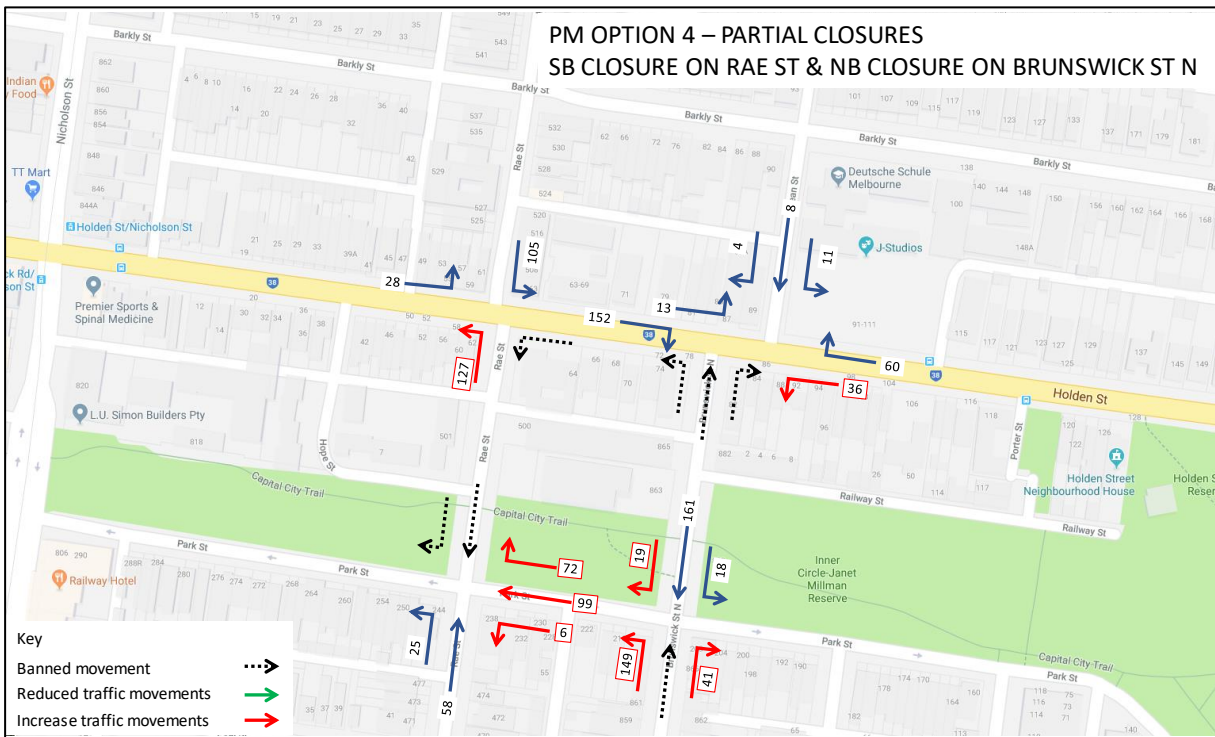
The following assumptions have been made in regard to the traffic re-distribution of Option 4:

- Existing traffic turning right from Brunswick Street North into Holden Street (including into Dean Street) will transfer as per Option 2.
- Existing traffic turning left from Brunswick Street North into Holden Street will transfer to Rae Street;
- Existing traffic turning left from Holden Street into Rae Street will turn left into Brunswick Street North.

The traffic redistribution for Option 4, for the AM and PM peak hours, is shown in **Figures 13 and 14** respectively.



**FIGURE 13: OPTION 4 – AM TRAFFIC RE-DISTRIBUTION**



**FIGURE 14: OPTION 4 – PM TRAFFIC RE-DISTRIBUTION**

## Option 5 – Rae Street closure at Capital City Trail and median island on Holden Street at Brunswick Street North and Dean Street

Option 5 will close Rae Street at the Capital City Trail and install a median island on Holden Street at Brunswick Street North and Dean Street, restricting traffic movements at both streets to left-in/left-out only. This option will restrict vehicles from travelling between the north and south of Holden Street via the local road network and transfer existing traffic travelling north/south on Rae Street to Brunswick Street North.

The following assumptions have been made in regard to the traffic re-distribution of Option 5:

- Existing traffic turning right from Brunswick Street North into Holden Street (including traffic continuing into Dean Street) will transfer as per Option 2;
- Existing traffic travelling from north of Holden Street (via Rae street or Dean Street) to south of Holden Street will transfer as per Option 3;
- Existing traffic turning left at Rae Street will transfer to Brunswick Street North.

The traffic redistribution for Option 5, for the AM and PM peak hours, is shown in **Figures 15 and 16** respectively.

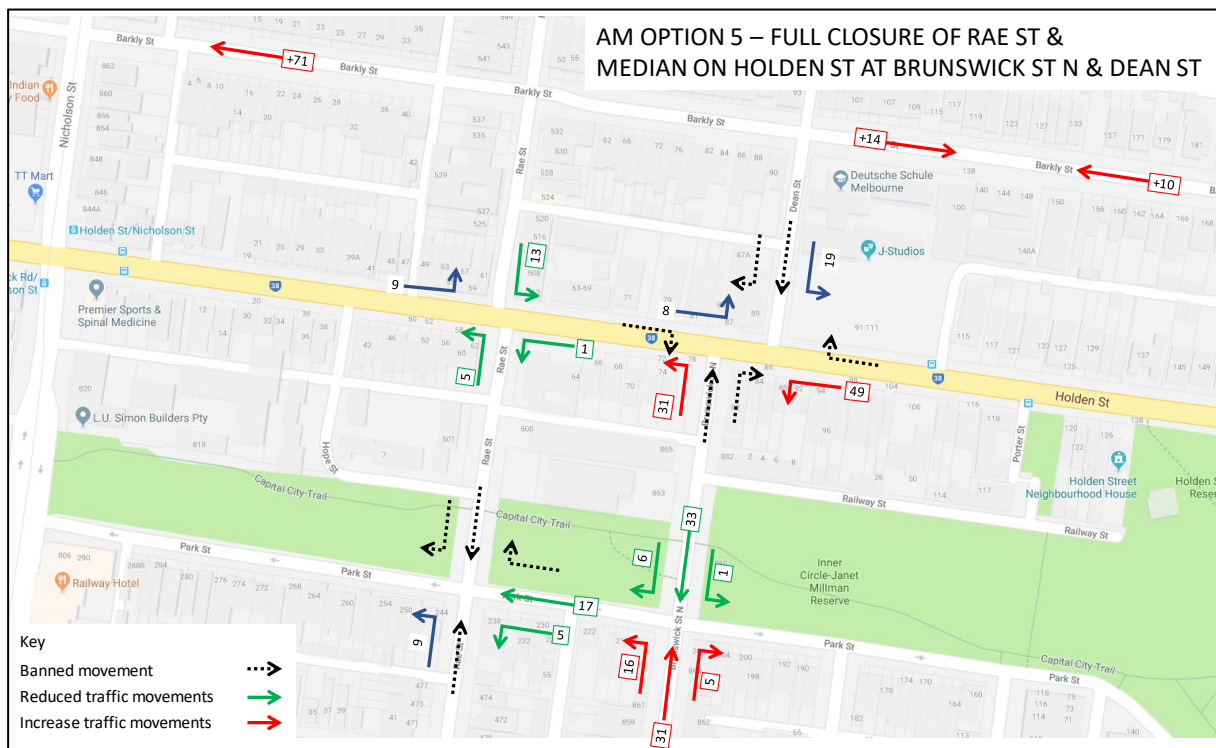


FIGURE 15: OPTION 5 – AM TRAFFIC RE-DISTRIBUTION

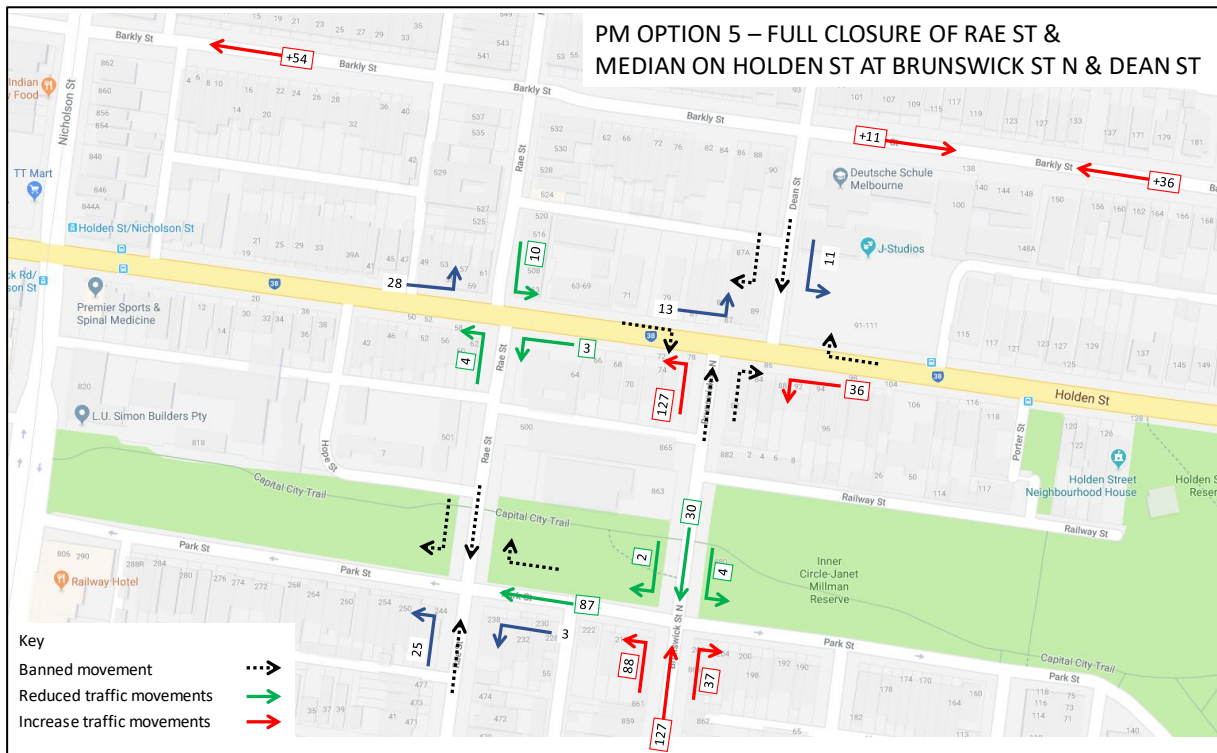


FIGURE 16: OPTION 5 – PM TRAFFIC RE-DISTRIBUTION

## COMPARISON OF TREATMENT OPTIONS

### Pros and Cons

The pros and cons of each treatment option is summarised in **Table 1** below.

TREATMENT OPTION	PROS	CONS
<b>Option 1:</b> Turn ban on Holden Street at Brunswick Street North	<ul style="list-style-type: none"> <li>Reduces peak hour traffic volumes on Rae St (north of Holden St) and Brunswick St N (south of Holden St)</li> <li>Maintains accessibility between the local areas north and south of Holden St</li> </ul>	<ul style="list-style-type: none"> <li>Increases peak hour traffic volumes on Dean St</li> <li>Increases right turn movement from Dean St to Holden St</li> <li>Does not stop the north-south/south-north rat-run</li> </ul>
<b>Option 2:</b> Median island on Holden Street at Brunswick Street North	<ul style="list-style-type: none"> <li>Reduces peak hour traffic volumes on Rae St (north of Holden St) and Brunswick St N (south of Holden St)</li> <li>Maintains accessibility from the local area north of Holden St to the local area south of Holden St</li> </ul>	<ul style="list-style-type: none"> <li>Increases peak hour volumes on Dean St and Park St</li> <li>Does not stop the south-north rat-run</li> <li>Increases right turn volumes on Dean St</li> </ul>
<b>Option 3:</b> Median island on Holden Street at Brunswick Street North and Dean Street	<ul style="list-style-type: none"> <li>Reduces peak hour traffic volumes on Rae St (north of Holden St), Brunswick St N (south of Holden St) and Dean St (north of Holden St)</li> <li>Removes all rat-run routes between the local areas north and south of Holden St</li> </ul>	<ul style="list-style-type: none"> <li>Increases peak hour volumes on Barkly St</li> <li>No vehicle accessibility between the local areas north and south of Holden St</li> </ul>
<b>Option 4:</b> Rae Street southbound closure and Brunswick Street northbound closure at Capital City Trail	<ul style="list-style-type: none"> <li>Simplifies intersections on Capital City Trail (one-way vehicular traffic only)</li> <li>Removes the rat-run route from the local area south of Holden St to the local area north of Holden St</li> </ul>	<ul style="list-style-type: none"> <li>Transfers northbound traffic on Brunswick St N to Rae St and southbound traffic on Rae St to Brunswick St N</li> <li>No vehicle accessibility from the local area south of Holden St to the local area north of Holden St</li> </ul>
<b>Option 5:</b> Rae Street closure at Capital City Trail and median island on Holden Street at Brunswick Street North and Dean Street	<ul style="list-style-type: none"> <li>Removes Rae Street intersection from Capital City Trail</li> <li>Reduces peak hour traffic volumes on Rae St (north and south of Holden St), Brunswick St N (south of Holden St) and Dean St (north of Holden St)</li> <li>Removes all rat-run routes between the local areas north and south of Holden St</li> </ul>	<ul style="list-style-type: none"> <li>Increases peak hour volumes on Barkly St</li> <li>No vehicle accessibility between the local areas north and south of Holden St</li> </ul>

TABLE 1: OPTION COMPARISON

### Impact on Brunswick Street North and Rae Street traffic volumes

The likely change in traffic volumes in Brunswick Street North and Rae Street for each treatment option is summarised in Table 2.

TREATMENT OPTION	LIKELY CHANGE IN TRAFFIC VOLUMES (APPROXIMATE)	
	BRUNSWICK STREET NORTH	RAE STREET
Option 1: Turn ban on Holden Street at Brunswick Street North	25% decrease	No change
Option 2: Median island on Holden Street at Brunswick Street North	33% decrease	No change
Option 3: Median island on Holden Street at Brunswick St North and Dean St	50% decrease	No Change
Option 4: Rae Street southbound closure and Brunswick Street northbound closure at Capital City Trail	40% decrease north of Park St Minimal change south of Park St	100% increase
Option 5: Rae Street closure at Capital City Trail and median island on Holden Street at Brunswick Street North and Dean Street	30% decrease	All through traffic removed

TABLE 2: IMPACT ON BRUNSWICK STREET NORTH TRAFFIC VOLUMES

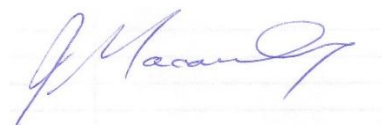
## CONCLUSION

The above analysis provides an assessment of the traffic impacts of various treatment options for Rae Street and Brunswick Street North in the vicinity of the Capital City Trail for consideration as part of the Local Area Place Making Study.

Should you have any queries, please do not hesitate to contact me on 9804-3610.

Yours sincerely

**O'BRIEN TRAFFIC**



Jemima Macaulay  
Senior Associate