



# TECHNICAL ASSESSMENT OF THE OPTIONS FOR POTENTIAL CHANGES TO WRIGHT STREET/TORRENS ROAD INTERSECTION, RENOWN PARK/RIDLEYTON

This report responds to opposing petitions from members of the community to remove or retain the road closure at the intersection of Wright Street and Torrens Road, Renown Park. The report outlines the possible modifications to the intersection and provides details of the technical assessment on the infrastructure requirements and traffic impacts of each option.

## BACKGROUND

Wright Street is a local access street located within the suburbs of Renown Park and Ridleyton. The south-western section of the street in Ridleyton connects Hawker Street to Torrens Road with the north-eastern section in Renown Park running from Torrens Road to Lamont Street. The existing intersection of Torrens Road and Wright Street is unsignalised with a road closure located at the north-eastern leg of the intersection, preventing access into or out of Wright Street at that location.

Blight Street runs parallel to Wright Street and is unrestricted at Torrens Road. A roundabout is located in Blight Street approximately 100m north-west of Torrens Road at the intersection of Tait Street.

In March 2018 Council received a petition requesting the road closure at Wright Street (north-eastern extension) be removed, to allow access from/to Torrens Road, to provide better access to residences and businesses in the area. The petition stated that recent upgrades to South Road had highlighted access issues to their premises.

The petition to re-open the road closure was presented to Council's Asset Management Committee on 14 May 2018, during which, two deputations and an opposing petition were received. The opposing petition, to retain the existing road closure, stated that several residents felt the road closure is an effective traffic control which has worked for 40 years to reduce cut-through traffic in local streets and relieve congestion on Torrens Road.

### THE COMMITTEE RESOLVED AT THAT TIME:

- 1. THAT THE PETITION BE RECEIVED AND REFERRED TO A FUTURE MEETING OF THE ASSET MANAGEMENT COMMITTEE IN 2018 PRESENTING THE OUTCOMES OF CONSULTATION AND INVESTIGATIONS**
- 2. THAT COUNCIL NOTIFY THE HEAD PETITIONER OF COUNCIL'S DECISION.**

At the time that these petitions were received, South Road upgrade works were well progressed with an anticipated completion of September 2018. To ensure that the traffic data collected was not distorted by these works and the temporary access configurations that were in place at the time, it was decided to collect traffic data at the conclusion of the works to gain a true representation of typical traffic conditions.

### OPTIONS IDENTIFIED

Council staff identified 6 possible options for the intersection of Wright Street and Torrens Road:

- Option 1.** Retain the existing road closure and current turning arrangements
- Option 2.** Removal of the road closure with controls in place to create a Left In Only to the north-east extension (with or without retaining right turn movements into and out of the south-west extension)
- Option 3.** Removal of the road closure with controls in place to create a Left Out Only from the north-east extension (with or without retaining right turn movements into and out of the south-west extension)
- Option 4.** Removal of the road closure with controls in place to limit turning movements to Left In/Left Out only (existing right turn movements into and out of the south-west extension would be removed under this option)
- Option 5.** Removal of the road closure with controls in place to accommodate Left In/Left Out movements at the north-eastern extension and retain right turn movements into and out of the south-west extension
- Option 6.** Removal of the road closure to create a 4 Way intersection (either signalised or unsignalised)

## FEEDBACK FROM DEPARTMENT OF TRANSPORT PLANNING AND INFRASTRUCTURE

Being that Wright Street intersects with an arterial road (Torrens Road), any modifications to the intersection would require approval from the Department of Transport Planning & Infrastructure (DPTI). Feedback was therefore sought from DPTI on each of the identified options and their reply is summarised below:

- DPTI advised they would support Option 1 to retain the existing road closure.
- DPTI advised that they would be open to the idea of looking further into the possibility of providing access of some nature between Wright Street (north) and Torrens Road.
- DPTI provided in-principle support for Options 2-4, with proviso that appropriate measures be implemented to restrict the nominated movements.
- Option 5 could be considered, however, DPTI would require the installation of a solid seagull treatment to function correctly, and concerns were raised regarding available space for this design.
- DPTI advised that traffic signals would not be warranted at this location, and given this, they would not support Option 6 as the introduction of a 4-way priority-controlled intersection would increase the crash risk at a point on the network where existing access is operating satisfactorily.

## TECHNICAL ASSESSMENT OF OPTIONS

### ROAD GEOMETRY

An assessment was undertaken of the likely road geometry alterations that would be required for each of the options not excluded by DPTI. It was determined that a seagull treatment (required by DPTI for Option 5) would not be possible without realigning Torrens Road on the approaches to the intersection, removing the existing bicycle lanes, significantly narrowing the verge area and relocating existing services. Due to the likely high cost and negative impact this option would have on vulnerable road users such as cyclists and pedestrians it is not recommended that this option be pursued.

The assessment found that the balance of the options could be achieved with minimal to no change to the existing alignment of Torrens Road and making use of the existing Wright Street road reserve.

### INFRASTRUCTURE AND VEGETATION

Options 2, 3 and 4, which remove the existing road closure to allow left turns either into or out of Wright Street would require the installation of infrastructure to restrict traffic movements to those allowable. This could be done through the installation of a solid raised central median on Torrens Road, although this would impact right turns out of the south-west extension of Wright Street which would have flow on impacts to traffic movements through the local road network. Alternative designs could be explored to utilise an extended nose to prevent right turn movements, without the requirement of a centre median, however, these would need to be explored further in conjunction with approvals from DPTI.

Options 3 and 4, which allow a left turn out of Wright Street, would require relocation of Bus Stop 12 (north). A new location for the stop would need to be identified and agreed with DPTI and further consultation with any affected properties would be required. These options could also require the relocation of a stobie pole, which would increase the cost of implementation significantly.

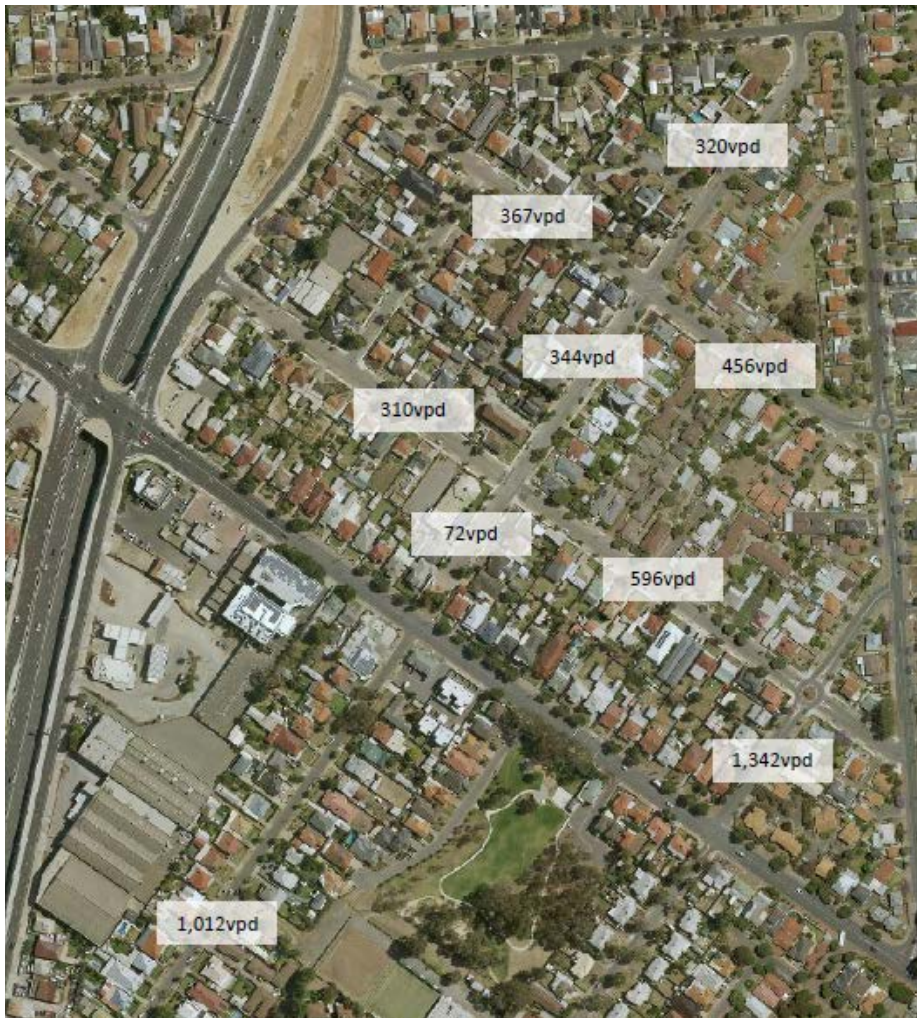
All options other than Option 1 (to retain the existing road closure) would require removal of several well-established trees and are likely to impact on underground services. Further detailed assessment of the impact on services would be required.



## TRAFFIC IMPACTS

### TRAFFIC VOLUMES

Traffic counts were undertaken in November 2018 (refer below) on local access streets in the area bound by Blight Street, Harrison Road, Lamont Street, South Road and Torrens Road, which showed generally low average weekday volumes (less than 600vpd) on all streets within the area. Blight Street showed slightly higher volumes of 1340vpd (weekday average), although this is still within tolerable levels for a local road.



### REDISTRIBUTION OF TRAFFIC

Additional onsite observations were undertaken during the AM and PM peak hours, to determine the direction of traffic movements in the area. An analysis was undertaken on the likely redistribution of traffic movements, should Options 2, 3 or 4 be implemented, and these results are shown over page.

It should be noted that if one of the options that provide access out onto Torrens Road from the north-east extension of Wright Street were implemented, there is a risk that some drivers may use Tait Street and Wright Street as a cut-through route to avoid delays at the South Road/Torrens Road intersection. Given the uncertainty about the extent of this risk no allowance for these movements has been made in the traffic redistribution estimates.

Existing Turning Movements at Torrens Road/Blight Street During AM/PM Peak Hours



Estimated redistribution of AM/PM peak hour movements from Blight Street to Wright Street, should the turning movement be made available through any modifications to the intersection.





Estimated AM/PM Peak Hour Movements in Wright Street as a result of Option 6 - Removal of the road closure to create a 4 Way intersection (either signalised or unsignalised).



Estimated AM/PM Peak Hour Movements in Wright Street as a result of Options 4 or 5 - Removal of the road closure with controls in place to accommodate Left In/Left Out movements at the north-east extension (with or without retaining right turn movements into and out of the south-west extension).



Estimated AM/PM Peak Hour Movements in Wright Street as a result of Option 2 - Removal of the road closure with controls in place to create a Left In Only to the north-east extension (with or without retaining right turn movements into and out of the south-west extension)



Estimated AM/PM Peak Hour Movements in Wright Street as a result of Option 3 - Removal of the road closure with controls in place to create a Left Out Only from the north-east extension (with or without retaining right turn movements into and out of the south-west extension)



*Typically, the peak hour volume represents approximately 10% of total daily traffic volume. i.e. 25 vehicles within the peak hour would equate to approximately 250 vehicles per day performing that movement.*



TRAVEL TIME INVESTIGATIONS

Travel time investigations were undertaken to determine the efficiencies gained through implementation of each modification option. Results of this exercise (shown below) identified a left in option would save commuters approximately 46 seconds, through reducing the trip distance by 500m and preventing vehicles from having to negotiate the roundabout at Blight Street and Tait Street. Introducing a left out turning movement from Wright Street into Torrens Road would reduce trip times by approximately 10 seconds. This option does not necessarily reduce trip distance; however, some vehicles would be able to access the arterial road network more quickly and avoid the roundabout located at Blight Street and Tait Street.



Wright Street road closure to Tait Street	6.3 seconds
Torrens Road (road closure) to Wright Street	52 seconds
<b>Left in saves</b>	<b>45.7 seconds</b>
Wright Street road closure to Tait Street	6.3 seconds
Torrens Road closure to Blight Street	20.2 seconds
Wright Street from Tait Street to Blight Street	35.9 seconds
<b>Left out saves</b>	<b>9.4 seconds</b>

While traffic assessments to date have focused on the impact the proposed options would have on the local road network north-east of Torrens Road, it is worth noting that should a centre median be required on Torrens Road to restrict traffic movements, it would significantly impact traffic movements south-west of Torrens Road, as it would restrict right turn movements both into and out of the south-western extension of Wright Street. Travel time efficiencies gained in the northern extension of Wright Street would negatively impact travel times for residents accessing the southern extension of Wright Street, due to the restrictions on movements currently available. These impacts would need to be evaluated should further investigations into Options 2, 3 or 4 be undertaken.

## ROAD CRASH DATA

Available road crash data was obtained for the most recent 5-year period at the intersections of Wright Street and Torrens Road and Blight Street and Torrens Road.



There have been 13 crashes at the intersection of Blight Street and Torrens Road in the most recent 5-year period (2013-17). Should alterations be made to the intersection of Wright Street and Torrens Road to allow additional turning movements, there is potential for a similar crash pattern to occur in this location.

At the Wright Street/Torrens Road intersection there have been 3 crashes in the past 5 years, 2 of which involve right turn movements in/out of the south-west extension of Wright Street. Should a solid centre median be installed on Torrens Road to restrict traffic movements through Options 2, 3 or 4, this crash risk would be eliminated.

If a design for these options retained right turn movements into and out of the south-west extension of Wright Street, the existing volume of crashes is unlikely to reduce, and there is potential for an increase in the crash rate due to the additional turning movement/s on the opposite side of the intersection.

There were no crashes in the past 5 years involving the north-eastern extension of Wright Street due to the existing closure at this location.



## SUMMARY OF TECHNICAL ASSESSMENT

	DPTI support	Infrastructure changes possible	Traffic impacts	Crash impacts
<b>Option 1 – No Change</b> Retain the existing road closure and current turning arrangements	Yes	Nil changes required	Nil impact	Nil impact
<b>Option 2 – Left In Only</b> Removal of the road closure with controls in place to create a Left In Only to the north-east extension (with or without retaining right turn movements into and out of the south-west extension)	In principle	Yes - at a moderate cost	Approximate 285% increase in traffic in Wright Street north-east extension.  If right turn movements into and out of Wright Street south-west extension are removed there will be a transfer of traffic to adjacent local streets.	Minor negative due to additional turning movement being created.
<b>Option 3 – Left Out Only</b> Removal of the road closure with controls in place to create a Left Out Only from the north-east extension (with or without retaining right turn movements into and out of the south-west extension)	In principle	Yes - at a high cost due to relocation of stobie pole and bus stop	Approximate 65% increase in traffic in Wright Street north-east extension.  If right turn movements into and out of Wright Street south-west extension are removed there will be a transfer of traffic to adjacent local streets.	Minor negative due to additional turning movement being created.
<b>Option 4 – Left In / Left Out – No Right Turns</b> Removal of the road closure with controls in place to limit turning movements to Left In/Left Out only (existing right turn movements into and out of the south-west extension would be removed under this option)	In principle	Yes - at a high cost due to relocation of stobie pole, bus stops and underground services	Approximate 350% increase in traffic in Wright Street north-east extension.  Loss of right turn movements into and out of Wright Street south-west extension will transfer traffic to adjacent local streets.	Minor positive – Right turns will be removed which can be a higher crash risk, however additional left turn conflict will be introduced.
<b>Option 5 – Left In / Left Out – Retain Right Turns</b> Removal of the road closure with controls in place to accommodate Left In/Left Out movements at the north-eastern extension and retain right turn movements into and out of the south-west extension	Could be considered further	No due to road reserve width not being sufficient to accommodate all road users	Approximate 350% increase in traffic in Wright Street north-east extension	High negative impact due to multiple increased conflict points
<b>Option 6 – 4 Way Intersection</b> Removal of the road closure to create a 4 Way intersection (either signalised or unsignalised)	No	No as it is not supported by the approving road authority	Approximate 610% increase in traffic in Wright Street north-east extension	High negative impact due to multiple increased conflict points