## **Attachment A**

Traffic Management Plan - Brocks Lane, Newtown

# BROCKS LANE, NEWTOWN

## TRAFFIC MANAGEMENT PLAN

**FOR** 

**CITY OF SYDNEY** 



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Appendix A Swept Path Analysis – Brocks Lane



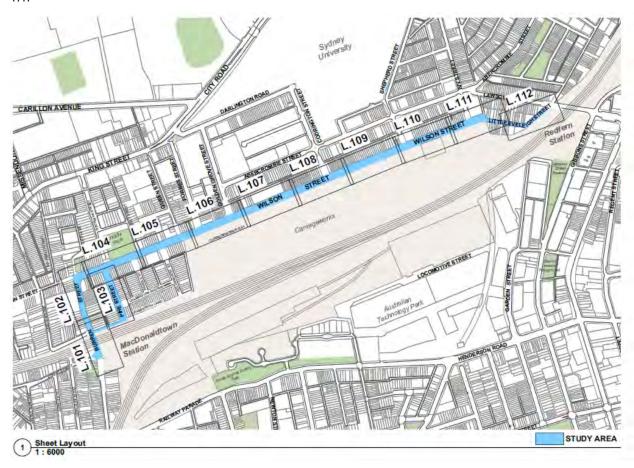
#### 1. Part A – Description of Detailed Plan of Proposed Measures

#### 1.1 Introduction

The purpose of this report is to describe the proposed Traffic Management Plan (TMP) for changed local access to Brocks Lane due to the proposed changes at the intersection of Wilson Street and Burren Street due to the proposed cycleway.

#### 1.2 BACKGROUND

The City of Sydney proposes to construct a cycleway linking Erskineville to Redfern, using Burren Street and Wilson Street. The cycleway would connect to others (such as the recently completed Broadway Link) to allow a variety of safe, cross suburban routes. Bitzios Consulting has been engaged by Spackman Mossop Michaels (the Lead Consultant) to provide traffic and parking advice. The proposed route is shown in Figure 1.1.



Source: Spackman Mossop Michaels

Figure 1.1 Proposed Wilson Street and Burren Street Cycleway

The existing traffic arrangements at the roundabout of Brocks Lane, Wilson Street and Burren Street are proposed to be changed to a T-intersection, where Brocks Lane is only accessible through the western approach of Wilson Street as shown in Figure 1.2. This is required to accommodate the separated cycleway, allowing cyclists to stop and travel through the intersection safely.



Figure 1.2 Existing and Proposed Brocks Lane/Wilson Street/Burren Street Intersection

Wilson Street western approach is a one-way eastbound traffic arrangement and, as shown in Figure 1.2, the proposed arrangement is to remove the roundabout and extend Wilson Street western approach to create a T-intersection with Burren Street and Wilson Street eastern approach. Brocks Lane will be inaccessible for traffic from the southern and eastern approaches of the intersection and three (3) alternative routes for trafficable routes have been considered. With multiple origin and destination points, it is expected that drivers will choose the most appropriate route for their origin and destination pair.

### 2. PART B – EXISTING CONDITIONS

#### 2.1 CYCLEWAYS

There is an existing cycleway on the western end of Wilson Street between Burren Street and Erskineville Road. This section of Wilson Street is one-way eastbound for general traffic and cyclists, with a contra-flow separated westbound cycleway.

East of Burren Street, the cycleway is in mixed traffic, with bicycle pavement symbols. The Broadway Link cycleway intersects with Wilson Street at Shepherd Street.

There is an existing contra-flow separated cycleway on Little Eveleigh Street, which is one-way westbound for general traffic.

#### 2.2 ROAD NETWORK

All roads affected by the cycleway are local roads, under the care and control of City of Sydney Council and have 50 km/h speed limits.

Burren Street and Wilson Street are collector/distributor roads, and form part of an alternative route to King Street and City Road for traffic travelling from Erskineville to Darlington and Chippendale. In the section between Burren Street and Golden Grove Street, Wilson Street typically carries around 900 vehicles per hour. The alternative route to King Street and City Road uses this section and the section of Abercrombie Street from Golden Grove Street to Shepherd Street.

Traffic volumes in the section of Wilson Street east of Golden Grove Street are substantially lower.

Peak hour cyclist volumes along Wilson Street are typically 200 to 300 per hour.

The Carriageworks arts and market precinct is located on the southern side of Wilson Street between Queen Street and Shepherd Street, and generates significant pedestrian volumes and parking demands.

#### 2.2.1 Crash Data

There was a total of 8 crashes involving cyclists in proximity to the intersection between 1st January 2011 and 31st December 2015. Their locations are illustrated in Figure 2.1.

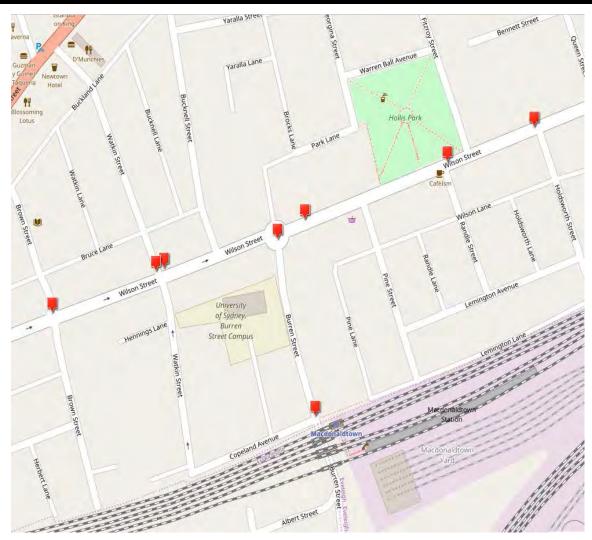


Figure 2.1 Crash Locations

## 2.2.2 Existing Traffic Counts

Surveys were undertaken on 28 October 2015 from 7am to 9am and 4pm to 6pm at the Brocks Lane/Wilson Street/Burren Street intersection. The AM and PM hourly peaks were found to be 8:00am to 9:00am and 5:00pm to 6:00pm respectively for Wilson Street and Burren Street as shown in Figure 2.2.

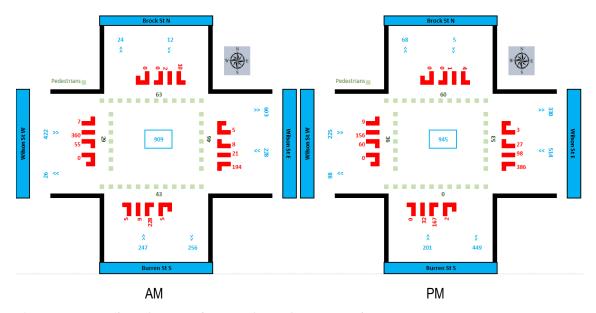


Figure 2.2 Wilson Street and Burren Street Survey Results



It should be noted that that, during the AM peak, 9 vehicles access Brocks Lane from Burren Street south and 8 vehicles from Wilson Street east. During the PM peak 32 vehicles access Brocks Lane from Burren Street south and 27 vehicles from Wilson Street east.



# 3. PART C – IDENTIFICATION AND ASSESSMENT OF IMPACT OF PROPOSED MEASURES

#### 3.1 Proposed Traffic Management Plans

The proposed changes to the Brocks Lane/Wilson Street/Burren Street intersection will restrict access to Brocks Lane. The restricted movements due to the proposed changes of the Wilson Street and Burren Street Cycleway are shown in Figure 3.1. Departure routes from Brocks Lane are not assessed as the changes proposed at the intersection of Wilson Street and Burren Street do not impact the current departure routes.

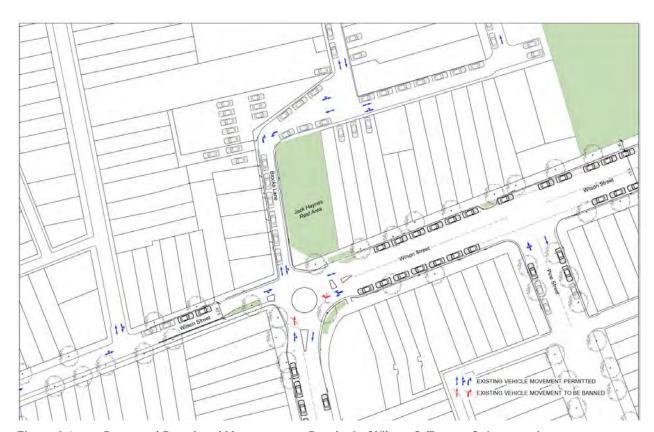


Figure 3.1 Proposed Restricted Movements at Brocks Ln/Wilson St/Burren St Intersection All access routes to Brocks Lane are shown in Figure 3.2, including the three (3) alternative routes.

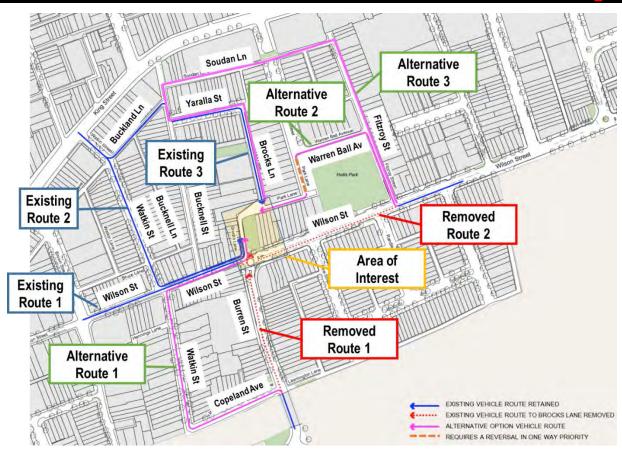


Figure 3.2 Existing and Proposed Alternative Routes

#### 3.2 LOCAL TRAFFIC MANAGEMENT

#### 3.2.1 Alternative Route 1 Local Traffic Management

Alternative Route 1 operates east along Copeland Avenue, north along Watkin Street, then west on Wilson Street to provide access to Brocks Lane. A map of Alternative Route 1 is shown in Figure 3.3.

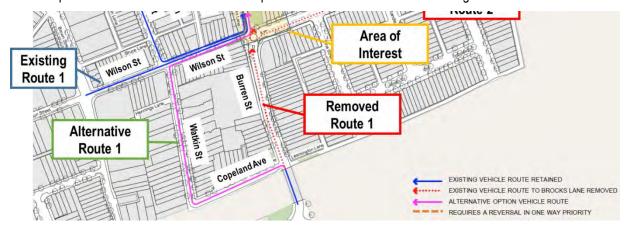


Figure 3.3 Alternative Route 1 route map

#### Wilson Street

The section of Wilson Street shown in the photos is between Watkin Street and Burren Street. It is a one-way, one-lane configuration with parking on the northern side and a dedicated cycle-way on the southern side, which allows cyclists' opposing movement to the one-way configuration, shown in Figure 3.4 and Figure 3.5. It currently intersects with Brocks Lane and Burren Street at a roundabout intersection, as shown in Figure 3.6, but in the future proposed traffic arrangements the existing intersection will be separated to create

two T-intersections – one with Brocks Lane and one with Burren Street. Brocks Lane will be inaccessible from Burren Street and from Wilson Street westbound traffic.



Source Google Maps

Figure 3.4 Wilson Street facing East (near Watkin Street)



Figure 3.5 Wilson Street facing East (near Bucknell Street)



Figure 3.6 Burren Street facing North (at Wilson Street)

#### **Copeland Avenue**

Copeland Avenue is accessible from Burren Street as shown in Figure 3.7. The initial stretch of Copeland Avenue has a two-way configuration up until an access road shown in Figure 3.8, where Copeland Avenue becomes one-way westbound. As shown in the photos, Copeland Avenue provides parking on both sides of the road and provides sufficient width for one-way traffic. Copeland Avenue continues west and turns right into Watkin Street, which is one-way northbound as shown in Figure 3.9.



Figure 3.7 Copeland Avenue facing West (from Burren Street)



Figure 3.8 Copeland Avenue facing North West (near side access street)



Figure 3.9 Copeland Avenue facing North-West (at Watkin Street)

#### Watkin Street

This section of Watkin Street runs between Copeland Avenue and Wilson Street and is a continuation of Copeland Avenue's one-way configuration. Parking is allowed on both sides of the road as shown in Figure 3.10 and Figure 3.11. Watkin Street intersects with Wilson Street at a priority controlled intersection shown in Figure 3.12, where only through and right turn movements are permitted owing to Wilson Street being one way eastbound at this intersection.



Figure 3.10 Watkin Street facing North (at Copeland Avenue)



Figure 3.11 Watkin Street facing North (at Herring Lane)



Figure 3.12 Watkin Street facing North (at Wilson Street)

### 3.2.2 Alternative Route 2 Local Traffic Management

Alternative Route 2 operates north along Fitzroy Street, west along Warren Ball Avenue, then south and west on Park Lane to provide access to Brocks Lane. A map of Alternative Route 2 is shown in Figure 3.13.

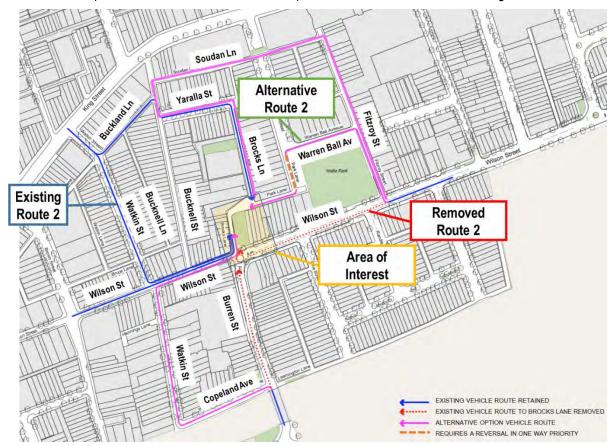


Figure 3.13 Alternative Route 2 route map



#### Fitzroy Street

The section of Fitzroy Street shown in the photos is between Wilson Street and Warren Ball Avenue. It is about 4.8m wide, with an upward incline from Wilson Street to Warren Ball Avenue as shown in Figure 3.14. It has parking on the eastern side, as shown in Figure 3.15. Although it is a two-way street, the reduced width due to parking on the eastern side only accommodates one through lane so opposing traffic movements must give way to each other. The intersection with Warren Ball Avenue is shown in Figure 3.16.



Figure 3.14 Wilson Street facing North-East (at Fitzroy Street)



Figure 3.15 Fitzroy Street facing North (near Wilson Street)

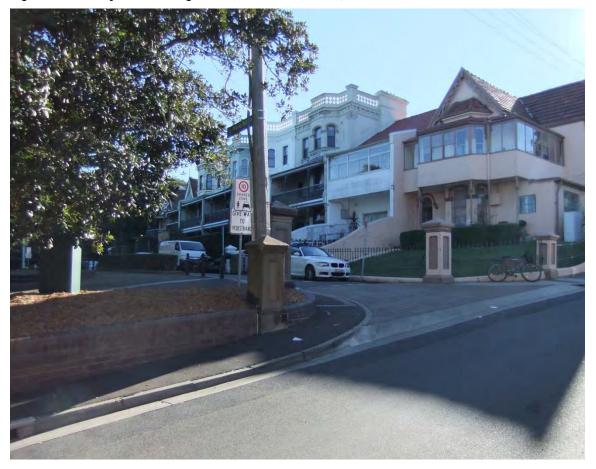


Figure 3.16 Fitzroy Street facing North-West (at Warren Ball Avenue)

#### Warren Ball Avenue

Warren Ball Avenue is a Shared Zone, with a speed limit of 10km/h. It has parking on the northern side, as shown in Figure 3.17 and Figure 3.18. Figure 3.19 is a photo of Park Lane looking north towards Warren Ball Avenue.



Figure 3.17 Warren Ball Avenue facing West (at Fitzroy Street)



Figure 3.18 Warren Ball Avenue facing West



Figure 3.19 Park Lane facing North (near Warren Ball Avenue)

#### Georgina Street/Park Lane

Georgina Street between Warren Ball Avenue and Park Lane is one-way northbound with a single traffic lane configuration. It has parking on the western side, as shown in Figure 3.20. Access from Warren Ball Avenue is prohibited due to the one-way traffic arrangement. The southern section of Park Lane is shown in Figure 3.21 and Figure 3.22, and the Brocks Lane/ Park Lane intersection is shown in Figure 3.23.



Figure 3.20 Park Lane facing South (at Warren Ball Avenue)



Figure 3.21 Park Lane facing West (from Park Lane/Georgina Street)



Figure 3.22 Park Lane facing West (near Georgina Street/Park Lane)

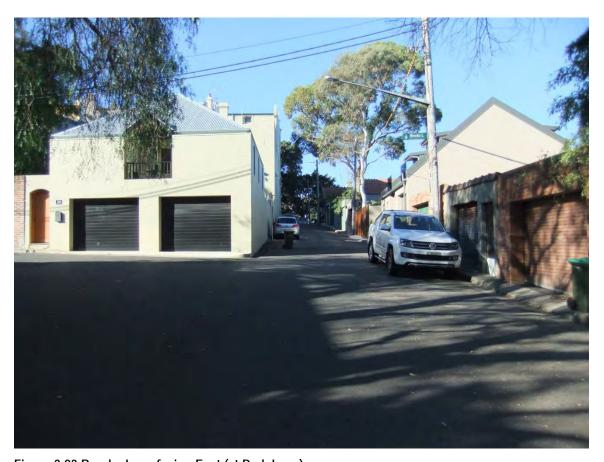


Figure 3.23 Brocks Lane facing East (at Park Lane)

#### 3.2.3 Alternative Route 3 Local Traffic Management

Alternative Route 3 operates north along Fitzroy Street, west along Soudan Lane, south on Bucknell Street, then east on Yaralla Street to provide access to Brocks Lane. A map of Alternative Route 3 is shown in Figure 3.24.

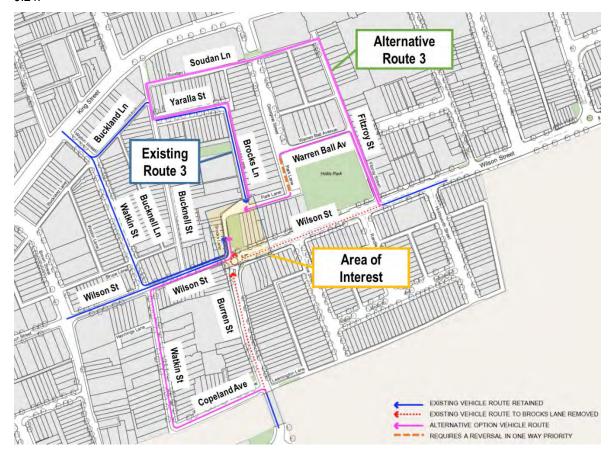


Figure 3.24 Alternative Route 3 route map

#### Fitzroy Street

The section of Fitzroy Street is between Wilson Street and Soudan Lane. It is about 4.8m wide, with an upward incline from Wilson Street to Warren Ball Avenue shown in Figure 3.14. It has parking on the eastern side, as shown in Figure 3.15. Although it is a two-way street, the reduced width due to parking on the eastern side only accommodates one through lane, so opposing traffic movements must give way to each other. The intersection with Warren Ball Avenue is shown in Figure 3.16. Alternative Route 3 continues north of Warren Ball Avenue, with similar road characteristics as shown in Figure 3.25 and Figure 3.26.



Figure 3.25 Fitzroy Street facing North (after Warren Ball Avenue)



Source: Google Maps

Figure 3.26 Fitzroy Street facing North (at Hollis Lane)

Fitzroy Lane / Soudan Lane

Fitzroy Lane / Soudan Lane is a narrow laneway with two-way traffic and no stopping posted on both sides of the lane as shown in Figure 3.27.



Figure 3.27 Soudan Lane / Fitzroy Lane facing West from Fitzroy Street

#### **Bucknell Street**

Bucknell Street is a narrow lane way with two-way traffic and no stopping posted on both sides of the lane as shown in Figure 3.28.



Source: Google Maps

Figure 3.28 Bucknell Street facing South at Buckland Lane

#### Yaralla Street

Yaralla Street is a narrow two-way street with parking on both sides in parallel and angle parking configurations as shown in Figure 3.29.



Figure 3.29 Yaralla Street facing East at Bucknell Street

#### 3.2.4 Assessment of the Alternative Routes

The three (3) alternative routes have been compared to current routes through Wilson Street and Burren Street, to calculate the extra distance travelled by vehicles. The results of this comparison are provided in Table 3.1.

Table 3.1 Route Distances to Brocks Lane

	Route Distance to Brocks Lane				
Route Intersection Points	Current Route 1	Alternative Route 1	Current Route 2	Alternative Route 2	Alternative Route 3
Distance from Copeland Ave / Burren St Intersection	Approx. 155m	Approx. 370m	N/A	N/A	N/A
Distance from Fitzroy St / Wilson St Intersection	N/A	N/A	180m	280m	640m
Alternative Route Extra Travel Distance	N/A	215m	N/A	100m	460m

#### Alternative Route 1

Alternative Route 1 requires an extra 215m, which is more than double the current route 1. This route does not require any changes to current local traffic management. Burren Street, Copeland Avenue and Watkin Street have the capacity for additional traffic based on site observations and existing low traffic counts as shown in Figure 2.2. The road widths at Copeland Avenue and Watkin Street are more than sufficient for a one-way traffic flow and is about an extra 215m detour compared to the existing route.

The very low volume of traffic detouring via this route is likely to have an insignificant impact on the surrounding traffic network. It should be noted that that, during the AM peak, 9 vehicles access Brocks Lane from Burren Street south and 8 vehicles from Wilson Street east. During the PM peak 32 vehicles access Brocks Lane from Burren Street south and 27 vehicles from Wilson Street east.



#### Alternative Route 2

Alternative Route 2 would require the existing one-way northbound traffic arrangement at Park Lane/Georgina Street to be reversed into a one-way southbound arrangement from Warren Ball Avenue. The Alternative Route 2 also utilises Warren Ball Avenue to access Brocks Lane for vehicles travelling from the east. This would also require residents from Park Lane/Georgina Street to utilise Warren Ball Avenue, therefore, potentially increasing the traffic volumes along Fitzroy Street and Warren Ball Avenue.

Further to this, Alternative Route 2 may have an impact on the current 10km/hour shared zone in Warren Bell Avenue during the PM peak.

In summary, Alternative Route 2 may only require an extra 100m of travel, however, this route may also impact current local traffic management at Warren Ball Avenue, Fitzroy Street and Park Lane. Warren Ball Avenue is a shared zone and is governed by the *Transport for NSW Safer Speeds Policy & Guidelines Shared Zones*. It states that Shared Zones must only be installed at locations that meet specific site conditions. The site conditions criteria stated by Transport for NSW for assessment are shown in Table 3.2.

Table 3.2 Site Criteria for Shared Zones

Features	Shared Zone
Current traffic flows	≤ 100 vehicles per hour (vph) and ≤ 1000 vehicles per day (vpd)
Current speed limit	≤ 50 km/h
Length of proposed Shared Zone	≤ 400 metres
Current speed limit of adjoining roads	≤ 50 km/h
Current carriageway width	minimum trafficable width of 2.8 metres
Route access	must not be located along bus routes or heavy vehicle routes except delivery or garbage trucks
Streets with narrow or no footpaths	where pedestrians are forced to use the road
Kerbs	kerbs must be removed unless excepted by the RMS (See Section 4)

The increase in traffic volume due to diverted traffic through Warren Ball Avenue shared zone may exceed 100 vehicles per hour criteria during the PM peak.

#### Alternative Route 3

Alternative Route 3 maintains the current traffic arrangements of Park Lane/Georgina Street. There should be no requirement for changes in traffic volumes passing through Warren Ball Avenue if the current traffic management for Park Lane/Georgina Street is maintained. Fitzroy Street, Soudan Lane, Bucknell Street and Brocks Lane are narrow streets with widths of about 5m wide, with parallel parking on one kerbside, therefore only allowing traffic in one direction at a time. Notwithstanding the narrow streets on Alternative Route 3, these streets are currently configured for two-way traffic, similar to other streets in the local area that are capable of being navigated in both directions without any issues. Further to this, any additional traffic using this route would be minimal and, therefore, would not be expected to impact the existing operations of these streets.



#### 3.3 SAFETY IMPROVEMENTS FOR CYCLISTS AND PEDESTRIANS

Overall the proposed changes at the Brocks Lane/Wilson Street/Burren Street intersection will increase safety for cyclists and pedestrians with dedicated crossing facilities and improved sight lines. The impact of the proposed measures will increase safety and provide benefits for pedestrians and cyclists. Cyclists currently travel at speed through the Brocks Lane/Wilson Street/Burren Street intersection given Wilson Street western approach is a downhill, narrow one-way lane and cyclists are travelling in mixed traffic. The separated cycleway will enable cyclists to stop and travel through the intersection safely then join the separated two-way cycleway.

There was a total of 8 crashes involving cyclists in proximity to the intersection between 1st January 2011 and 31st December 2015.

The new intersection design will slow cyclists and motorists to a "stop". Cyclists can travel through the intersection safely and join the separated two-way cycleway. In addition, removing the roundabout and constructing a zebra crossing across Wilson Street will improve safety for pedestrians. Sight lines will also be improved for all road users due to the intersection redesign and streetscape changes that allow increased awareness.

#### 3.4 Measures to Ameliorate the Impact of Re-assigned Traffic

Is an assessment required? Yes

See section 3.3 above for a description of the amelioration measures for the proposed measures.

### 4. PART D – ASSESSMENT OF PUBLIC TRANSPORT SERVICES AFFECTED

Is an assessment required? No

An assessment is not required as there will be no impact on bus services.

#### 4.1 Bus Services

No bus services use Wilson Street and therefore the proposed cycleway will have no impact on bus services. The closest bus services are available on King Street, which is serviced by bus routes 352, 370, 422, 423, 426, 428, M30, L23 and L28.

#### 4.2 TRAIN SERVICES

The proposed cycleway will have no impact on train services. Train services are available from Redfern station to the east along Wilson Street and Macdonaldtown station to the south along Burren Street. Redfern station is serviced by 10 different lines and has 12 platforms, and is ranked the 6th busiest station as per *Transport for NSW Train Statistics 2014* with a patronage of 13,770 (AM) and 15,810 (PM). Macdonaldtown station is only serviced by the T2 Inner West & South Line with a peak frequency of fifteen minutes per train.

# 5. PART E – DETAILS OF PROVISION MADE FOR EMERGENCY VEHICLES, HEAVY VEHICLES, CYCLISTS AND PEDESTRIANS

Are these details required? Yes

- Emergency vehicles no impact on existing operations.
- Medium Rigid Vehicles (MRV) swept path checks have been undertaken to ensure that MRVs would still be able to negotiate the Brocks Lane/Wilson Street/Burren Street intersection. See Appendix A.
- Cyclists enhanced facilities due to the separated cycleway along Burren Street and Wilson Street, priority controlled intersection at the corner of Burren Street and Wilson Street, and fewer obstructions on the cycling desire lines.
- Pedestrians enhanced facilities due to the pedestrian crossing on Burren Street, and separated along Burren Street and Wilson Street.



# 6. PART F – ASSESSMENT OF EFFECT ON EXISTING AND FUTURE DEVELOPMENTS WITH TRANSPORT IMPLICATIONS

Is an assessment required? No

The proposed works would enhance facilities for pedestrians and cyclists in an area that is proposed for urban redevelopment.

# 7. PART G – ASSESSMENT OF EFFECT OF PROPOSED MEASURES ON TRAFFIC MOVEMENTS IN ADJOINING COUNCIL AREAS

Is as assessment required? No

There will be no effect on adjoining Council areas.

#### PART H – PUBLIC CONSULTATION PROCESS

Is a public consultation process required? Yes

On 30 September 2016, Roads and Maritime Services provided in-principle approval to the design for Wilson and Burren Street cycleway.

In compliance with Section 116 of the Roads Act 1993, the City consulted with local residents and businesses for a period of 28 days and advertised the proposal in two newspapers; The Sydney Morning Herald and the Central Sydney Magazine.

In addition, the City sent out 3850 letters. Fourteen individual responses were received and changes to local access around Brocks Lane was noted as an item in a petition. There were submissions supporting the changes to the intersection at Wilson and Burren Street, citing the existing is not safe.

The main concern raised was re-routing to adjacent streets to access properties. Access into Brocks Lane from adjacent streets is available, and the proposal provides safety and pedestrian and cycling network benefits.



#### 9. CONCLUSIONS

Overall the proposed changes at the Brocks Lane/Wilson Street/Burren Street intersection will increase safety for cyclists and pedestrians with dedicated crossing facilities and improved sight lines. The new intersection design will slow cyclists and motorists to a "stop". Cyclists can travel through the intersection safely and join the separated two-way cycleway. In addition, removing the roundabout and constructing a zebra crossing across Wilson Street will improve safety for pedestrians. Sight lines will also be improved for all road users due to the intersection redesign and streetscape changes that allow increased awareness.

Alternative Route 1 does not require any changes to current local traffic management. Burren Street, Copeland Avenue and Watkin Street have the capacity for additional traffic based on site observations and existing low traffic counts in Section 2.2.2. The road widths at Copeland Avenue and Watkin Street are more than sufficient for a one-way traffic flow and is about an extra 215m detour to the existing route.

Alternative Route 2 would require the existing one-way northbound traffic arrangement at Park Lane/ Georgina Street to be reversed into a one-way southbound arrangement from Warren Ball Avenue. Alternative Route 2 only requires an extra 100m of travel, however, this route may also impact current local traffic management arrangements at Warren Ball Avenue, Fitzroy Street and Park Lane. Warren Ball Avenue is a shared zone and is governed by the *Transport for NSW Safer Speeds Policy & Guidelines Shared Zones*, which states that Shared Zones must only be installed at locations that meet specific site conditions. The increase in traffic volume due to diverted traffic through Warren Ball Avenue shared zone may exceed the 100 vehicles per hour criteria during the PM peak.

Alternative Route 3 maintains the current traffic arrangements of Park Lane/Georgina Street. Fitzroy Street, Soudan Lane, Bucknell Street and Brocks Lane are narrow streets with widths of about 5m wide, with parallel parking on one kerbside, therefore only allowing traffic in one direction at a time. Notwithstanding the narrow streets on Alternative Route 3, these streets are currently configured for two-way traffic, similar to other streets are in the local area that are capable of being navigated in both directions without any issues. Further to this, any additional traffic using this route would be minimal and, therefore, would not be expected to impact the existing operations of these streets.

Vehicles travelling to the areas impacted by the proposed changes at the Brocks Lane/Wilson Street/Burren Street Intersection will have Alternatives Route 1 and 3 to travel to access their destinations, as well as many other alternative routes, redistributing traffic within the study area. Further to this, the very low volume of traffic detouring via Alternative Routes 1 and 3 is likely to have an insignificant impact on the surrounding traffic network.

On 30 September 2016, Roads and Maritime Services provided in-principle approval to the design for Wilson and Burren Street cycleway.

In compliance with Section 116 of the Roads Act 1993, the City consulted with local residents and businesses for a period of 28 days and advertised the proposal in two newspapers; The Sydney Morning Herald and the Central Sydney Magazine.

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The main concern raised was re-routing to adjacent streets to access properties. Access into Brocks Lane from adjacent streets is available, and the proposal provides safety and pedestrian and cycling network benefits.



APPENDIX A

SWEPT PATH ANALYSIS - BROCKS LANE

